

United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response



DIRECTIVE NUMBER: 9541.00-14

TITLE: State Programs Advisory Number Nine

APPROVAL DATE: January 8, 1992

EFFECTIVE DATE: January 8, 1992

ORIGINATING OFFICE: Office of Solid Waste
Permits and State Programs Division
State and Regional Programs Branch
Regional Coordination and Implementa-
tion Section

☒ **FINAL**

☐ **DRAFT**

STATUS: ☐ **A - Pending OMB Approval**
☐ **B - Pending AA-OSWER Approval**

REFERENCE (Other Documents):

Updates State Authorization Manual 9540.00-09A

OSWER OSWER OSWER OSWER
DIRECTIVE DIRECTIVE DIRECTIVE



United States Environmental Protection Agency
Washington, DC 20460

OSWER Directive Initiation Request

1. Directive Number

9541.00-14

2. Originator Information

Name of Contact Person
Zena AldridgeMail Code
OS-342Office
PSPD/SPB/RCISTelephone Code
260-9656

3. Title

State Programs Advisory Number Nine

4. Summary of Directive (include brief statement of purpose)

Updates State Authorization Manual, which replaced the State Consolidated Authorization Manual. This SPA #9 covers RCRA program changes for the period January 1 through June 30, 1990. Included are nine new revision checklists and ten revised existing checklists. A consolidated land disposal restrictions checklist is also included.

5. Keywords

State Programs/Advisory

6a. Does This Directive Supersede Previous Directive(s)?

☒ No☐ Yes

What directive (number, title)

b. Does It Supplement Previous Directive(s)?

☐ No☒ Yes

What directive (number, title)
State Authorization Manual
9540.00-09A

7. Draft Level

☐

A - Signed by AA/DAA

☒

B - Signed by Office Director

☐

C - For Review & Comment

☐

D - In Development

8. Document to be distributed to States by Headquarters?

☒

Yes

☐

No

This Request Meets OSWER Directives System Format Standards.

9. Signature of Lead Office Directives Coordinator

Date

1/22/92

10. Name and Title of Approving Official

Sylvia K. Lowrance, Director, Office of Solid Waste

Date

1/8/92

EPA Form 1315-17 (Rev. 5-87) Previous editions are obsolete.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 8 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSEMEMORANDUM

SUBJECT: State Programs Advisory Number Nine

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Regional Waste Management Division Directors
Regions I - X

The State and Regional Programs Branch (SRPB) periodically issues State Programs Advisories (SPAs) as new RCRA program policies, regulations, and self-implementing statutory provisions come into effect. These SPAs update the State Authorization Manual (SAM), which replaced the State Consolidated Authorization Manual (SCRAM).

The attached SPA 9 covers RCRA program changes for the period January 1 through June 30, 1990. Included in this SPA are nine new revision checklists and ten revised existing checklists. A Consolidated Land Disposal Restrictions Checklist is also in SPA 9, which consolidates all of the Land Disposal Restrictions from the first rule (solvents and dioxins) to the Third Thirds Rule. A revised Model Attorney General's Statement and other revised SAM materials are also included.

Each Region is asked to distribute the SPA to their States. Besides the attached hard copy, this SPA is available on diskette, and is also on the SRPB Bulletin Board Service which is available to Regions and States at no charge by calling 1-800-243-2792. If you have questions about these materials, please contact Richard LaShier, Chief of the Regional Coordination and Implementation Section, at FTS 260-2210.

Attachments

cc: RCRA Branch Chiefs, Regions I - X
State Program Section Chiefs, Regions I - X
ASTSWMO
State Programs Liaisons

Summary for State Program Advisory Nine

The following points briefly highlight the content of SPA 9. These points are organized by topic.

Checklists

a. New

- This SPA provides nine new revision checklists (Numbers 71 through 79) and one amended checklist (Number 24), covering RCRA regulatory changes for the period January 1, 1990 through June 30, 1990. Revision Checklists 71, 72, 73, 76 and 78 were added to non-HSWA Cluster VI. Revision Checklists 74, 75, 77, 78 and 79 were added to HSWA Cluster II. Revision Checklist 78 is in both clusters because it contains both HSWA and non-HSWA provisions.
- SPA 9 includes a Consolidated Land Disposal Restrictions Checklist which consolidates all of the land disposal restrictions from the first rule -- solvents and dioxins (Revision Checklist 34) through the Third Thirds Rule (Revision Checklist 78). This checklist was developed to allow States to apply for these restrictions at one time rather than in seven separate checklists (i.e., Revision Checklists 34, 39, 50, 62, 63, 66 and 78), since the LDRs have changed so dramatically with every subsequent revision checklist. States should bear in mind that the deadline for the provisions addressed by Revision Checklist 34 was July 1, 1988 (July 1, 1989 if a statutory change was necessary). The deadline for the remainder of the restrictions is July 1, 1991 or July 1, 1992 if a statutory change is necessary.
- This SPA provides revised Consolidated Checklists C1-C9 including changes to the RCRA regulations through June 30, 1990. These consolidated checklists were developed to help States meet the requirements of RCRA §3006(b) and 40 CFR 271.3(f) that require a State, applying for authorization, to include in its program all Federal self-implementing provisions and all regulations in 40 CFR Parts 124, 260-266, 268, and 270 that were in effect twelve months prior to the State's submission of its official application.

b. Existing

- Revision Checklist 17 H was revised to include a note at the beginning of this checklist explaining its relationship to Revision Checklist 77.
- Revision Checklist 19 was revised so that the November 19, 1986 Federal Register article (51 FR 41900) was removed from the title. This article did not affect any code, but instead addressed issues surrounding the potential listing of used oil as hazardous. This change was made to make the format of this checklist consistent with that of the other checklists.

STATE PROGRAM ADVISORY #9

A. STATE PROGRAM CHANGES FOR JANUARY 1, 1990 - JUNE 30, 1990

1. Mining Waste Exclusion II

Date: January 23, 1990

Reference: 55 FR 2322-2354

Effective: July 23, 1990

Summary: This rule removes five of twenty conditionally retained mineral processing wastes from the exemption from hazardous waste regulations under the Bevill exclusion (RCRA 3001(b)(3)(A)(ii)). These five wastes are subject to hazardous waste regulations if they are found to exhibit a hazardous characteristic or are otherwise identified or listed as hazardous. The Bevill exclusion is retained for fifteen other conditionally retained wastes and five previously retained wastes. The rule also makes technical corrections to the definition of "beneficiation" promulgated on September 1, 1989 (54 FR 36592), and amends the definition of "designated facility" under Subtitle C of RCRA.

This rule also waives the RCRA §3010 notification deadline for mineral processing plants that are located in authorized States and that generate wastes removed from exclusion in the September 1, 1989 final rule. This rule extends the deadline for such plants in unauthorized States, with notification required by April 23, 1990.

Note that the checklist addressed by this rule is entitled "Mining Waste Exclusion II" to indicate that this is the second of two amendments to the mining waste exclusion. The first occurred at 54 FR 36592 (September 1, 1989) and is addressed by Revision Checklist 65.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The State modification deadline is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 71, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 71 and its associated FR notice may be found in Attachment A.

Summary for State Program Advisory Nine (cont'd)

- The land disposal restriction checklists (34, 39, 50, 62, 63 and 66) were revised to make the optional designations consistent among these checklists and to make formatting changes which provide better guidance in handling the nondelegable portions of the land disposal restrictions.
- Revision Checklist 53 was revised, reflecting the recent judicial remanding of five (K064, K065, K066, K090 and K091) of the "Bevill" listings addressed by this checklist.
- Revision Checklist 54 was revised 1) to indicate the removal from the code of subparagraphs 270.41(a)(3)(i)-(iii) and 2) to correct the Federal RCRA Citation column so that it reads 270.42(i)-(o) instead of 270.42(i)-(p).

Cluster Information

- SPA 9 delineates timeframes by which States must obtain authorization for non-HSWA Cluster VI and HSWA Cluster II. Revision Checklists 71, 72, 73, 76, and 78 close non-HSWA Cluster VI and Revision Checklists 74, 75, 77, 78, and 79 close HSWA Cluster II. The due date for both clusters is July 1, 1991 (July 1, 1992 if a statutory change is necessary). For further information on the cluster rule, see September 26, 1986 (51 FR 33712).

SAM

- This SPA provides updated Tables G-1 and G-2, a Model Revision Attorney General's Statement, a Model Consolidated Attorney General's Statement, and a Checklist Linkage Table to insert into the SAM.
- The instructions to SAM Appendix G were revised to reflect several formatting changes made to Table G-1.

2. Modification of F019 Listing

Date: February 14, 1990

Reference: 55 FR 5340-5342

Effective: February 14, 1990

Summary: This rule amends the list of hazardous wastes from non-specific sources under 40 CFR 261.31 by modifying the scope of EPA Hazardous Waste No. F019--wastewater treatment sludges from the chemical conversion coating of aluminum. This rule excludes wastewater treatment sludges from the zirconium phosphating step, when such phosphating is an exclusive conversion coating process in the aluminum can washing process. The EPA believes that these sludges do not pose a substantial hazard to human health or the environment.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The standards promulgated in this rule are less stringent than or reduce the scope of existing Federal requirements. Therefore, States are not required to modify their program to adopt these provisions. The modification deadline for those States wishing to adopt these provisions is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 72, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 72 and its associated FR notice may be found in Attachment A.

3. Testing and Monitoring Activities; Technical Corrections

Date: March 9, 1990

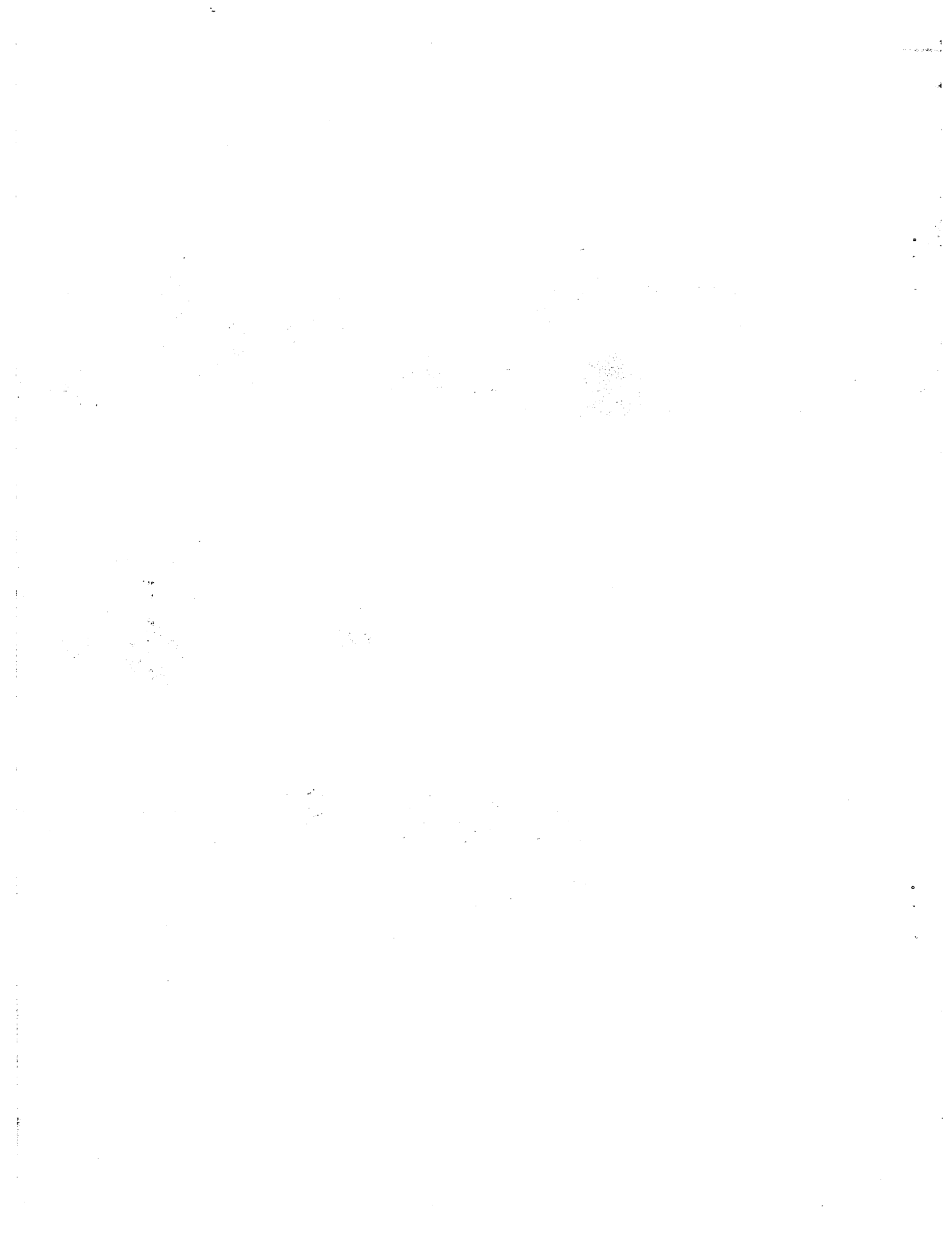
Reference: 55 FR 8948-8950

Effective: March 9, 1990

Summary: This rule provides technical corrections to the final rule issued for testing and monitoring activities on September 29, 1989 (54 FR 40260, Revision Checklist 67). The corrections add a list of the 47 analytical testing methods to the section of the regulations that incorporates these methods by reference (40 CFR 260.11(a)). The rule also corrects Tables 2 and 3 of Appendix III to 40 CFR Part 261.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The State modification deadline is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 73, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are



STATE PROGRAM ADVISORY #9 (cont'd)

SPA 9

necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 73 and its associated FR notice may be found in Attachment A.

4. Toxicity Characteristic Revisions

Date: March 29, 1990
June 29, 1990

Reference: 55 FR 11798-11877
55 FR 26986-26998

Effective: September 25, 1990
September 25, 1990

Summary: This rule revises the existing toxicity characteristics used to identify those wastes that are defined as hazardous and that are subject to regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. In this rule, the Extraction Procedure (EP) leach test is replaced by the Toxicity Characteristic Leaching Procedure (TCLP), 25 organic chemicals are added to the list of toxic constituents of concern, and regulatory levels are established for these organic chemicals based on health-based concentration thresholds and a dilution/attenuation factor that was developed using a subsurface fate and transport model. The overall effect of this rule is to subject additional wastes to control under Subtitle C of RCRA.

The June 29, 1990 (55 FR 26986) notice makes corrections to the March 29, 1990 (55 FR 11798) final rule in order to ensure consistency of the TCLP (Method 1311) with other methods contained in Test Methods for Evaluating Solid Waste (Physical/Chemical Methods) SW-846 and to clarify the section on quality assurance. The notice also corrects several errors in the March 29, 1990, notice.

An August 2, 1990 (55 FR 31387) notice corrected the preamble to the March 29, 1990, notice. The correction was made to an implementation timetable which contained a typographical error that has created confusion among small quantity generators regarding their notification responsibilities for TC wastes. The August 2, 1990, rule also extends the time period within which affected small quantity generators must comply with the new modification requirements necessitated by the March 29, 1990, Toxicity Characteristics Rule. An August 10, 1990 (55 FR 32733) notice corrected the August 2, 1990 notice. This rule did not affect the Federal code.

On September 27, 1990 (55 FR 39409) a clarification to the March 29, 1990 rule was published regarding the following four implementation issues: 1) the regulatory status of surface impoundments managing newly regulated TC wastes, 2) ground-water monitoring requirements for newly regulated land disposal facilities, 3) Section 3010 notification requirements, and 4) permit modification requirements. This final rule did not affect the Federal code; instead, it provides clarification of issues addressed in the preamble to the final rule.

An October 5, 1990 (55 FR 40834) interim final rule extended, for 120 days, the compliance date of the Toxicity Characteristics Rule for petroleum refining facilities, marketing terminals and bulk plants engaged in hydrocarbon recovery and remediation

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REPORT DOCUMENTATION PAGE	1. REPORT NO. <i>EPA 530-R-92-001</i>	2.	3. PB92-149285
4. Title and Subtitle STATE PROGRAMS ADVISORY NUMBER NINE (P.D.#: 9541.00-14)			5. Report Date JANUARY 1992
		6.	
7. Author(s) OFFICE OF SOLID WASTE			8. Performing Organization Rept. No.
9. Performing Organization Name and Address U.S. EPA Office of Solid Waste 401 M. Street SW Washington, DC 20460			10. Project/Task/Work Unit No.
		11. Contract(C) or Grant(G) No. (C) (G)	
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered SPA #9 - JANUARY 1992
		14.	
15. Supplementary Notes			

16. Abstract (Limit: 200 words)

State Programs Advisory No. 9 updates the State Authorization Manual (PD 9540.00-09A), which replaced the State Consolidated Authorization Manual. This SPA #9 covers RCRA program changes for the period January 1 through June 30, 1990. Included are nine new revision checklists and ten revised existing checklists. A consolidated land disposal restrictions checklist is also included.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161

c. COSATI Field/Group

18. Availability Statement RELEASE UNLIMITED	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages <i>1396</i>
	20. Security Class (This Page) UNCLASSIFIED	22. Price

(See ANSI-Z39.18)

OPTIONAL FORM 272 (4-77)
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i.a

United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response



DIRECTIVE NUMBER: 9541.00-14

TITLE: State Programs Advisory Number Nine

APPROVAL DATE: January 8, 1992

EFFECTIVE DATE: January 8, 1992

ORIGINATING OFFICE: Office of Solid Waste
Permits and State Programs Division
State and Regional Programs Branch
Regional Coordination and Implementa-
tion Section

☒ **FINAL**

☐ **DRAFT**

STATUS: ☐ **A - Pending OMB Approval**
☐ **B - Pending AA-OSWER Approval**

REFERENCE (Other Documents):

Updates State Authorization Manual 9540.00-09A

OSWER

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DIRECTIVE

DIRECTIVE

DIRECTIVE


 United States Environmental Protection Agency
 Washington, DC 20460

OSWER Directive Initiation Request

 1. Directive Number
 9541.00-14

2. Originator Information

Name of Contact Person Zena Aldridge	Mail Code OS-342	Office PSPD/SPB/RCIS	Telephone Code 260-9656
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 3. Title
 State Programs Advisory Number Nine

4. Summary of Directive (include brief statement of purpose)

Updates State Authorization Manual, which replaced the State Consolidated Authorization Manual. This SPA #9 covers RCRA program changes for the period January 1 through June 30, 1990. Included are nine new revision checklists and ten revised existing checklists. A consolidated land disposal restrictions checklist is also included.

5. Keywords

State Programs/Advisory

6a. Does This Directive Supersede Previous Directive(s)?

☒

No

☐

Yes

What directive (number, title)

b. Does It Supplement Previous Directive(s)?

☐

No

☒

Yes

 What directive (number, title)
 State Authorization Manual
 9540.00-09A

7. Draft Level

☐

A - Signed by AA/DAA

☒

B - Signed by Office Director

☐

C - For Review & Comment

☐

D - In Development

8. Document to be distributed to States by Headquarters?

☒

Yes

☐

No

This Request Meets OSWER Directives System Format Standards.

9. Signature of Lead Office Directives Coordinator

Date

1/22/92

10. Name and Title of Approving Official

Sylvia K. Lowrance, Director, Office of Solid Waste

Date

1/8/92

EPA Form 1315-17 (Rev. 5-87) Previous editions are obsolete.

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VE	DIRECTIVE	DIRECTIVE	DIRECTIVE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 8 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSEMEMORANDUM

SUBJECT: State Programs Advisory Number Nine

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Regional Waste Management Division Directors
Regions I - X

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Attachments

cc: RCRA Branch Chiefs, Regions I - X
State Program Section Chiefs, Regions I - X
ASTSWMO
State Programs Liaisons



Summary for State Program Advisory Nine

The following points briefly highlight the content of SPA 9. These points are organized by topic.

Checklists

a. New

- This SPA provides nine new revision checklists (Numbers 71 through 79) and one amended checklist (Number 24), covering RCRA regulatory changes for the period January 1, 1990 through June 30, 1990. Revision Checklists 71, 72, 73, 76 and 78 were added to non-HSWA Cluster VI. Revision Checklists 74, 75, 77, 78 and 79 were added to HSWA Cluster II. Revision Checklist 78 is in both clusters because it contains both HSWA and non-HSWA provisions.
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b. Existing

- Revision Checklist 17 H was revised to include a note at the beginning of this checklist explaining its relationship to Revision Checklist 77.
- Revision Checklist 19 was revised so that the November 19, 1986 Federal Register article (51 FR 41900) was removed from the title. This article did not affect any code, but instead addressed issues surrounding the potential listing of used oil as hazardous. This change was made to make the format of this checklist consistent with that of the other checklists.

Summary for State Program Advisory Nine (cont'd)

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- Revision Checklist 53 was revised, reflecting the recent judicial remanding of five (K064, K065, K066, K090 and K091) of the "Bevill" listings addressed by this checklist.
- Revision Checklist 54 was revised 1) to indicate the removal from the code of subparagraphs 270.41(a)(3)(i)-(iii) and 2) to correct the Federal RCRA Citation column so that it reads 270.42(i)-(o) instead of 270.42(i)-(p).

Cluster Information

- SPA 9 delineates timeframes by which States must obtain authorization for non-HSWA Cluster VI and HSWA Cluster II. Revision Checklists 71, 72, 73, 76, and 78 close non-HSWA Cluster VI and Revision Checklists 74, 75, 77, 78, and 79 close HSWA Cluster II. The due date for both clusters is July 1, 1991 (July 1, 1992 if a statutory change is necessary). For further information on the cluster rule, see September 26, 1986 (51 FR 33712).

SAM

- This SPA provides updated Tables G-1 and G-2, a Model Revision Attorney General's Statement, a Model Consolidated Attorney General's Statement, and a Checklist Linkage Table to insert into the SAM.
- The instructions to SAM Appendix G were revised to reflect several formatting changes made to Table G-1.

STATE PROGRAM ADVISORY #9

A. STATE PROGRAM CHANGES FOR JANUARY 1, 1990 - JUNE 30, 1990

1. Mining Waste Exclusion II

Date: January 23, 1990

Reference: 55 FR 2322-2354

Effective: July 23, 1990

Summary: This rule removes five of twenty conditionally retained mineral processing wastes from the exemption from hazardous waste regulations under the Bevill exclusion (RCRA 3001(b)(3)(A)(ii)). These five wastes are subject to hazardous waste regulations if they are found to exhibit a hazardous characteristic or are otherwise identified or listed as hazardous. The Bevill exclusion is retained for fifteen other conditionally retained wastes and five previously retained wastes. The rule also makes technical corrections to the definition of "beneficiation" promulgated on September 1, 1989 (54 FR 36592), and amends the definition of "designated facility" under Subtitle C of RCRA.

This rule also waives the RCRA §3010 notification deadline for mineral processing plants that are located in authorized States and that generate wastes removed from exclusion in the September 1, 1989 final rule. This rule extends the deadline for such plants in unauthorized States, with notification required by April 23, 1990.

Note that the checklist addressed by this rule is entitled "Mining Waste Exclusion II" to indicate that this is the second of two amendments to the mining waste exclusion. The first occurred at 54 FR 36592 (September 1, 1989) and is addressed by Revision Checklist 65.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The State modification deadline is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 71, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 71 and its associated FR notice may be found in Attachment A.

2. Modification of F019 Listing

Date: February 14, 1990

Reference: 55 FR 5340-5342

Effective: February 14, 1990

Summary: This rule amends the list of hazardous wastes from non-specific sources under 40 CFR 261.31 by modifying the scope of EPA Hazardous Waste No. F019--wastewater treatment sludges from the chemical conversion coating of aluminum. This rule excludes wastewater treatment sludges from the zirconium phosphating step, when such phosphating is an exclusive conversion coating process in the aluminum can washing process. The EPA believes that these sludges do not pose a substantial hazard to human health or the environment.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The standards promulgated in this rule are less stringent than or reduce the scope of existing Federal requirements. Therefore, States are not required to modify their program to adopt these provisions. The modification deadline for those States wishing to adopt these provisions is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 72, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 72 and its associated FR notice may be found in Attachment A.

3. Testing and Monitoring Activities; Technical Corrections

Date: March 9, 1990

Reference: 55 FR 8948-8950

Effective: March 9, 1990

Summary: This rule provides technical corrections to the final rule issued for testing and monitoring activities on September 29, 1989 (54 FR 40260, Revision Checklist 67). The corrections add a list of the 47 analytical testing methods to the section of the regulations that incorporates these methods by reference (40 CFR 260.11(a)). The rule also corrects Tables 2 and 3 of Appendix III to 40 CFR Part 261.

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The State modification deadline is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 73, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are

STATE PROGRAM ADVISORY #9 (cont'd)

SPA 9

necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 73 and its associated FR notice may be found in Attachment A.

4. Toxicity Characteristic Revisions

Date: March 29, 1990
June 29, 1990

Reference: 55 FR 11798-11877
55 FR 26986-26998

Effective: September 25, 1990
September 25, 1990

Summary: This rule revises the existing toxicity characteristics used to identify those wastes that are defined as hazardous and that are subject to regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. In this rule, the Extraction Procedure (EP) leach test is replaced by the Toxicity Characteristic Leaching Procedure (TCLP), 25 organic chemicals are added to the list of toxic constituents of concern, and regulatory levels are established for these organic chemicals based on health-based concentration thresholds and a dilution/attenuation factor that was developed using a subsurface fate and transport model. The overall effect of this rule is to subject additional wastes to control under Subtitle C of RCRA.

The June 29, 1990 (55 FR 26986) notice makes corrections to the March 29, 1990 (55 FR 11798) final rule in order to ensure consistency of the TCLP (Method 1311) with other methods contained in Test Methods for Evaluating Solid Waste (Physical/Chemical Methods) SW-846 and to clarify the section on quality assurance. The notice also corrects several errors in the March 29, 1990, notice.

An August 2, 1990 (55 FR 31387) notice corrected the preamble to the March 29, 1990, notice. The correction was made to an implementation timetable which contained a typographical error that has created confusion among small quantity generators regarding their notification responsibilities for TC wastes. The August 2, 1990, rule also extends the time period within which affected small quantity generators must comply with the new modification requirements necessitated by the March 29, 1990, Toxicity Characteristics Rule. An August 10, 1990 (55 FR 32733) notice corrected the August 2, 1990 notice. This rule did not affect the Federal code.

On September 27, 1990 (55 FR 39409) a clarification to the March 29, 1990 rule was published regarding the following four implementation issues: 1) the regulatory status of surface impoundments managing newly regulated TC wastes, 2) ground-water monitoring requirements for newly regulated land disposal facilities, 3) Section 3010 notification requirements, and 4) permit modification requirements. This final rule did not affect the Federal code; instead, it provides clarification of issues addressed in the preamble to the final rule.

An October 5, 1990 (55 FR 40834) interim final rule extended, for 120 days, the compliance date of the Toxicity Characteristics Rule for petroleum refining facilities, marketing terminals and bulk plants engaged in hydrocarbon recovery and remediation

activities. This interim final rule is addressed by Revision Checklist 80 which will be part of SPA 10. A Consolidated Toxicity Characteristics Checklist will also be available for States wishing to adopt the TC rule and all of its corrections at one time.

State Authorization: These are HSWA rules and will be included in HSWA Cluster II. Both interim and final authorization are available; interim authorization expires January 1, 1993. The State modification deadline is July 1, 1991 (or July 1, 1992, if a State statutory change is needed). The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 74, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 74 and its associated FR notice may be found in Attachment A.

5. Listing of 1,1-Dimethylhydrazine Production Wastes

Date: May 2, 1990

Reference: 55 FR 18496-18506

Effective: November 2, 1990

Summary: This rule lists as hazardous four wastes (K107-K110) generated during the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.

State Authorization: This is a HSWA rule and will be included in HSWA Cluster II. The State modification deadline is July 1, 1991. Both interim and final authorization are available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 75, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 75 and its associated FR notice may be found in Attachment A.

6. Criteria for Listing Toxic Wastes; Technical Amendment

Date: May 4, 1990

Reference: 55 FR 18726

Effective: May 4, 1990

Summary: This rule is a technical amendment to the final and interim final regulations implementing RCRA, promulgated May 19, 1980. The rule amends the language of the regulation to reflect EPA's intent and consistent interpretation of the criteria for listing

STATE PROGRAM ADVISORY #9 (cont'd)

SPA 9

wastes as hazardous under RCRA. Specifically affected are the criteria for listing toxic wastes at 261.11(a)(3).

State Authorization: This is a non-HSWA rule and will be included in non-HSWA Cluster VI. The State modification deadline is July 1, 1991. Only final authorization is available. The State revision application must include a revised program description if appropriate, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 76, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 76 and its associated FR notice may be found in Attachment A.

7. HSWA Codification Rule, Double Liners; Correction

Date: May 9, 1990

Reference: 55 FR 19262-19264

Effective: May 9, 1990

Summary: This rule is a correction notice to 50 FR 28702, July 17, 1985 (Revision Checklist 17 H) pertaining to certain landfill and surface impoundment units for which the Part B permit application was received by November 8, 1984. Permits issued for units in this category are not required to include conditions imposing double liner and leachate collection system requirements as a matter of statute (RCRA §3004(o)), except as deemed necessary on a case-by-case basis to protect human health and the environment (RCRA §3005(c)). This rule was necessitated by a Court of Appeals decision which found the requirements at 40 CFR 265.221 and 264.301 invalid to the extent that they impose RCRA §3004(o) technological requirements on owners and operators whose applications for a final determination on their RCRA §3005 permits were received before November 8, 1984.

State Authorization: This is a HSWA rule and will be included in HSWA Cluster II. The State modification deadline is July 1, 1991. Both interim and final authorization are available. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 77 and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 77 and its associated FR notice may be found in Attachment A.

8. Land Disposal Restrictions for Third Third Scheduled Wastes

Date: June 1, 1990

Reference: 55 FR 22520-22720

Effective: May 8, 1990

Summary: This rule promulgates regulations implementing the final of five Congressionally mandated prohibitions on the land disposal of hazardous wastes, the third one-third (referred to as the Third Third) of the schedule of restricted hazardous wastes. The notice also promulgates specific treatment standards and effective dates for "soft hammer" First and Second Third wastes, five newly listed wastes, four wastes that fall into the F002 and F005 (spent solvent) waste codes, F025, multi-source leachate, certain mixed radioactive/hazardous wastes, and characteristic wastes except TC wastes. Treatment standards are revised for petroleum refining hazardous wastes (K048-K052). Alternate treatment standards are promulgated for lab packs.

A three-month national capacity variance from the effective date is granted for all Third Third wastes unless a longer national capacity variance is specified. This variance was granted due to the time required by the regulated community to make adjustments necessary to comply with the new rule. Therefore, this rule's land disposal prohibitions will be effective on August 8, 1990, rather than May 8, 1990. Between May 8, 1990 and August 8, 1990 wastes not meeting the treatment standards must meet the 40 CFR 268.5(h)(2) minimum technology standards if disposed in landfills or surface impoundments. The California list prohibitions must be complied with, where applicable. The 40 CFR 268.7(a)(3)&(b)(6) recordkeeping requirements apply to all Third Third wastes during the three-month national capacity variance.

A six-month national capacity variance is granted for K048-K052 nonwastewaters from the petroleum refining industry. Thus, the effective date for these wastes is November 8, 1990. A two-year national capacity variance is granted for mixed radioactive/hazardous wastes, naturally occurring radioactive materials that are mixed with RCRA hazardous wastes; soil and debris contaminated with Third Third wastes for which the treatment standard is based on incineration, mercury retorting, vitrification, or wet-air oxidation; and inorganic debris as defined in §268.2(a)(7) (which also applies to chromium refractory bricks carrying the EPA Hazardous Waste Nos. K048-K052). Tables 1 and 2 on p. 22533 of the Federal Register for this rule provides a summary of two-year national capacity variances for surface-disposed and deep well injected wastes.

For further guidance regarding this rule, see the Environmental Fact Sheet for the Third Third Land Disposal Restrictions (EPA/530-SW-90-046) which is included in this SPA with the checklist developed for this rule.

State Authorization: This is a HSWA rule and will be included in HSWA Cluster II, except for one clarifying amendment to 40 CFR 261.33(c), which is in non-HSWA Cluster VI. The State modification deadline is July 1, 1991, for all provisions, both HSWA and non-HSWA. All changes, except for the 261.33(c) amendment, go into effect immediately. The non-HSWA change to 261.33(c) will not be effective in an authorized State until the State revises its program. Interim authorization is available only for the HSWA provisions. The State revision application must include a revised program description, an AG Statement

STATE PROGRAM ADVISORY #9 (cont'd)

SPA 9

addendum, an addendum to the MOA (if appropriate), Revision Checklist 78, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 78 and its associated FR notice may be found in Attachment A.

9. Organic Air Emission Standards for Process Vents and Equipment Leaks

Date: June 21, 1990

Reference: 55 FR 25454-25519

Effective: December 21, 1990

Summary: This rule is the first part of a multiphased regulatory effort to control air emissions at new and existing hazardous waste treatment, storage or disposal facilities (TSDFs). The rule establishes final standards limiting organic emissions from 1) process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous wastes with 10 parts per million by weight (ppmw) or greater total organics concentration, and 2) leaks from equipment that contains or contacts hazardous waste streams with 10 percent by weight or greater total organics. These standards were promulgated under RCRA §3004(n) which requires EPA to promulgate standards for the monitoring and control of air emissions from hazardous waste TSDFs as necessary to protect human health and the environment. EPA plans to promulgate additional standards under §3004(n) in two phases.

State Authorization: This is a HSWA rule and will be included in HSWA Cluster II. The State modification deadline is July 1, 1991. Both interim and final authorization are available; interim authorization expires January 1, 1993. The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 79, and associated State regulations.

SAM Update: Updates to Tables G-1 and G-2 of Appendix G, the Model Revision Attorney General's Statement of Appendix E and the Checklist Linkage Table of Appendix H are necessary to reflect the addition of this checklist. These revisions are addressed in Section B of this SPA. A copy of Revision Checklist 79 and its associated FR notice may be found in Attachment A.

B. CONSOLIDATED LAND DISPOSAL RESTRICTIONS CHECKLIST

To aid States in adopting the Land Disposal Restrictions, a checklist was developed that consolidates all of the Land Disposal Restriction rules, and their corrections, through June 30, 1990 into one checklist. States can use this checklist to apply for all of the Land Disposal Restriction rules at the same time. Otherwise, seven separate checklists (34, 39, 50, 62, 63, 66 and 78) must be submitted to pick up all of these restrictions and each successive checklist makes substantial changes to the other. States which have not yet adopted any of the Land Disposal Restrictions should bear in mind that the restrictions on

solvents and dioxins (Revision Checklist 34) are in HSWA Cluster I and should have been adopted by July 1, 1989 (July 1, 1990 if a statutory change is necessary). The remainder of the Land Disposal Restrictions are in HSWA Cluster II and are due July 1, 1991 (July 1, 1992 if a statutory change is necessary). States that have already been authorized for only the initial Land Disposal Restrictions (51 FR 40572; November 7, 1986; Revision Checklist 34) may also want to utilize this consolidated checklist rather than use six separate checklists to apply for the remaining requirements, all of which must be adopted by July 1, 1991 (July 1, 1992 if a statutory change is required). This consolidated checklist is included in Attachment B. An update to this checklist will be included in SPA 11.

C. REVISIONS TO SAM

The addition of nine new checklists necessitated revisions to Tables G-1 and G-2 of Appendix G, to the Model Revision Attorney General's Statement in Appendix D, and to the Checklist Linkage Table in Appendix H. These revised tables and model are included in Attachment C and should replace these parts in the SAM Manual. Specific revisions are detailed below.

- The revised Tables G-1 and G-2 (pp. 4-24) should replace pages 4 through 23 of SAM Appendix G. Table G-1 was revised by: 1) adding Revision Checklists 71, 72, 73, 76 and 78 (only the amendment to 261.33(c)) to non-HSWA Cluster VI and 2) adding Checklists 74, 75, 77, 78, and 79 to HSWA Cluster II.
- The Revised Attorney General's Statement (pp. 9-47) should replace pages 9 through 41 of SAM Appendix E. Section I K and XVII B(1) were revised and the following sections were added: I A(14), I A(15), I A(16), I L, I M, I N, I O, VII E, XV L, and XXI F.
- The Revised Checklist Linkage Table should replace pages 3 through 6 of SAM Appendix H.

Also, included in Attachment C are new Revision Checklists 17 H, 19, 53, and 54, and the Land Disposal Restriction Checklists (34, 39, 50, 62, 63 and 66). The new Revision Checklist 17 H differs from the previous Revision Checklist 17 H in that it includes a beginning note indicating the relationship of this checklist to Revision Checklist 77. Also several errors on page two of this checklist were corrected. The new Revision Checklist 19 differs from the previous Revision Checklist 19 in that the reference to the November 19, 1986 (51 FR 41900) Federal Register notice was removed from the title. This notice did not affect the RCRA regulations; instead, it was a background notice addressing the issues of listing used oil as hazardous. This was not necessary to list it on the title although it is discussed in the note at the top of the checklist.

Revision Checklist 53 has been revised reflecting the recent judicial remanding of five (K064, K065, K066, K090, and K091) of the "Bevill" waste listings addressed by this checklist. Specifically, the revisions to 261.4(b)(7) were added to the checklist and all revisions regarding the listing of the five remanded wastes were removed from the checklist. In addition, the Model Revision Attorney General's Statement included in this SPA was revised. Specifically, the old entry for Revision Checklist 53 at I I was moved to

STATE PROGRAM ADVISORY #9 (cont'd)

SPA 9

I A(10) and an entry regarding the removal of the six Beville wastes from the mining exclusion at 40 CFR 261.4(b)(7) was placed at I I.

Revision Checklist 54 has been revised to include the deletion from Federal code of subparagraphs 270.41(a)(3)(i)-(iii). The deletion of these subparagraphs isn't apparent in the Federal Register addressed by Revision Checklist 54, but they have been removed and the July 1, 1990 CFR correctly reflects their deletion. Several typographical errors were also corrected.

The Land Disposal Restriction (LDR) Checklists (34, 39, 50, 62, 63, and 66) have been revised for the following reasons:

- to make the optional designations consistent among the seven (includes Revision Checklist 78) LDR checklists;
- to add the presently non-delegable portions (268.5, 268.6, 268.42(b) and 268.44) of Part 268 to the checklists in an effort to alleviate some of the confusion these sections have caused States. Specific instructions regarding placement of these sections within a State's code precede each of these sections on the checklists; and
- to add information to the notes at the top of the checklists, tying each checklist to the other LDR checklists.

Lastly, revised instructions for SAM Appendix G are also included in Attachment C. these instructions were revised to reflect the following formatting changes to Table G-1:

- Parenthesized checklist numbers were added to entries which were corrections/amendments to a major final rule and were included on the checklist for that major final rule (e.g., the two technical corrections which are included on Revision Checklist 13 developed for the January 1, 1985 final rule addressing the definition of solid waste). Previously, these entries were unnumbered and bracketed. This change was made to help alleviate some of the confusion which has occurred over these entries since requests for StATS data have been sent to the Regions.
- Corrections/amendments which are part of the checklist for a major final rule have been moved into the cluster of the checklist (i.e., final rule) on which they were included. For example, Revision Checklist 26 was developed for the final rule promulgated on May 28, 1986 (51 FR 19320). This checklist also includes two subsequent technical corrections (51 FR 33612, September 22, 1986 and 52 FR 28697, August 3, 1987) to the initial final rule. The checklist itself is in non-HSWA Cluster II while the two corrections which it also includes are in non-HSWA Clusters III and IV, due to where the corrections fall chronologically. Under the revised format, Revision Checklist 26 plus the two corrections included in it, would all be placed in non-HSWA Cluster II. This change was made because the due date for these corrections is the due date of the checklist they are part of, rather than the due date of the cluster in which they chronologically fall.

D. REVISED CONSOLIDATED CHECKLISTS AND MODEL CONSOLIDATED ATTORNEY GENERAL'S STATEMENT

The consolidated checklists and corresponding Model Consolidated Attorney General's Statement originally introduced in the State Authorization Manual have been updated through June 30, 1990. These updated materials may be found in Attachment D. These consolidated checklists should be used by States that have not received authorization for a hazardous waste program. For further guidance regarding these checklists, see Appendix K of the SAM Manual. Guidance for using the Model Consolidated Attorney General's Statement may be found in SAM Appendix D.

ATTACHMENT A

**New Revision Checklists and
Corresponding Federal Register Articles**

RCRA REVISION CHECKLIST 71

Mining Waste Exclusion II
 55 FR 2322-2354
 January 23, 1990
 (Non-HSWA Cluster VI)

Note: This is the second revision to the mining waste exclusion. The first occurred at 54 FR 36592 (September 1, 1989) and is addressed by Revision Checklist 65.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART B - DEFINITIONS

DEFINITIONS

1 revise "designated facility"	260.10				
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PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

EXCLUSIONS

"§261.4(b)(7)" replaces "this paragraph" twice; "roasting, autoclaving, and/or chlorination" replaces "roasting"; insert "(and/or autoclaving and/or chlorination)" after "roasting" within existing parenthetical clause; semi-colons replace a number of commas; significant revisions to last sentence which introduces list of wastes	261.4(b)(7)				
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RCRA REVISION CHECKLIST 71: Mining Waste Exclusion II (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
	261.4(b)(7)(i)				
	261.4(b)(7)(ii)				
	261.4(b)(7)(iii)				
	261.4(b)(7)(iv)				
	261.4(b)(7)(v)				
	261.4(b)(7)(vi)				
	261.4(b)(7)(vii)				
	261.4(b)(7)(viii)				
	261.4(b)(7)(ix)				
	261.4(b)(7)(x)				
	261.4(b)(7)(xi)				
	261.4(b)(7)(xii)				
	261.4(b)(7)(xiii)				
	261.4(b)(7)(xiv)				
	261.4(b)(7)(xv)				
revisions to list of excluded wastes; (i)(A)-(E) and (ii)(A)-(T) are replaced by (i)-(xx), with deletion of five conditionally retained wastes and some revisions in wording for retained wastes	261.4(b)(7)(xvi)				
	261.4(b)(7)(xvii)				
	261.4(b)(7)(xviii)				
	261.4(b)(7)(xix)				
	261.4(b)(7)(xx)				

RCRA REVISION CHECKLIST 71: Mining Waste Exclusion II (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART B - THE MANIFEST

USE OF THE MANIFEST

add new paragraph stating requirements when shipping hazardous waste to a designated facility in an authorized State which has not yet obtained authorization to regulate that particular waste as hazardous	262.23(e)				
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¹ Note that this definition in the Federal Register (55 FR 2353, January 23, 1990) and in the July 1, 1990 CFR contains a typographical error. The reference to 260.20 should be 262.20.

Environmental Protection Agency

**Tuesday
January 23, 1990**

OSWER DIR. No. 9541.00-14

Part III

**Environmental
Protection Agency**

**40 CFR Parts 260, 261 and 262
Mining Waste Exclusion; Section 3010
Notification for Mineral Processing
Facilities; Designated Facility Definition;
Standards Applicable to Generators of
Hazardous Waste; Final Rule**

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261 and 262

[SWH-FRL-3699-3; EPA/OSW-FR-90-013]

Mining Waste Exclusion; Section 3010 Notification for Mineral Processing Facilities; Designated Facility Definition; Standards Applicable to Generators of Hazardous Waste

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: Today's final rule removes five of 20 conditionally retained mineral processing wastes from the exemption from hazardous waste regulations provided by section 3001(b)(3)(A)(ii) of the Resource Conservation and Recovery Act (RCRA), often referred to as the Bevill exclusion. The five wastes removed from the Bevill exclusion by today's final rule are: Furnace off-gas solids from elemental phosphorus production, process wastewater from primary lead processing, air pollution control dust/sludge from lightweight aggregate production, sulfate process waste acids from titanium dioxide production, and sulfate process waste solids from titanium dioxide production. Wastes removed from the exclusion are subject to hazardous waste regulations if they are found to exhibit a hazardous characteristic or are otherwise identified or listed as hazardous.

Three wastes previously proposed on September 25, 1989 (54 FR 39298), for removal from the Bevill exclusion are retained under the exclusion by this final rule. Those three wastes are: (1) Treated residue from roasting/leaching of chrome ore; (2) process wastewater from coal gasification; and (3) process wastewater from hydrofluoric acid production. The Bevill exclusion also is retained for 12 of the original 13 other conditionally retained wastes, which will be addressed, along with 5 other wastes in a Report to Congress and subsequent Regulatory Determination by January 31, 1991.

Today's rule makes technical corrections to the definition of "beneficiation" that was promulgated on September 1, 1989 (54 FR 36592) and also waives the RCRA Section 3010 notification deadline for mineral processing facilities that are located in authorized states and that generate wastes removed from the exclusion in the September 1, 1989 final rule. Because of confusion expressed by the regulated community in response to statements made in the preamble of the September 1 rule, today's rule also extends the

RCRA Section 3010 notification deadline for mineral processing facilities that are located in unauthorized states and that generate wastes removed from the exclusion by the September 1, 1989 final rule. Notification will now be required in unauthorized states by April 23, 1990.

Today's final rule also amends the RCRA Subtitle C definition of "designated facility" and the standards applicable to generators of hazardous waste to clarify the requirements for completing hazardous waste shipment manifests for transporting wastes from one state where they are regulated as hazardous to another in which they are not regulated as hazardous.

DATES: Effective Date: July 23, 1990. Not later than April 23, 1990, all persons in unauthorized states who generate, transport, treat, store, or dispose of wastes removed from temporary exclusion by this rule or the September 1, 1989 final rule and which are characteristically hazardous under 40 CFR part 261, subpart C, must notify EPA of these activities pursuant to section 3010 of RCRA.

See sections V and VI of the preamble below for additional dates and details.

FOR FURTHER INFORMATION, CONTACT: RCRA/Superfund Hotline at (800) 424-9346 or (202) 382-3000, or for technical information contact Dan Derkics or Bob Hall, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, (202) 382-3608, or (202) 475-8814, respectively.

SUPPLEMENTARY INFORMATION:

Table of Contents

- I. Introduction
 - A. Context
 - B. Overview of Today's Rule
 - C. Future Activities
- II. Analysis of and Response to Public Comments on Bevill Status of 20 Mineral Processing Wastes Proposed on September 25, 1989
 - A. General Comments on EPA's Application of the Final Bevill Criteria
 - B. Comments on the 13 Waste Streams Proposed for Retention
 - C. Comments on the Seven Wastes Proposed for Removal
 - D. Relationship of the Proposed Rule to Subtitle C of RCRA
 - E. Costs and Impacts of the Proposed Rule
 - F. Requests for Clarifications/Technical Corrections on the September 1, 1989, Final Rule
 - G. Concerns with Administrative Procedure
- III. Revised Application of the Final Criteria for Defining Bevill Mineral Processing Wastes
 - A. Clarification of Waste Stream Definitions
 - B. Compliance with the High Volume Criterion
 - C. Compliance with the Low Hazard Criterion

- D. Bevill Status of Conditionally Retained Mineral Processing Wastes
- IV. Analysis of and Response to Comments on Clarification to the Definition of "Designated Facility" and Modification of the Standards Applicable to Generators of Hazardous Waste
 - A. General Comments on the Proposed Definition
 - B. Relationship Between Today's Clarification and Non-RCRA State Hazardous Wastes
 - C. Who Can Qualify as a designated Facility?
 - D. Which Standards Apply to Interstate Shipments
 - E. Other Comments
 - F. Manifesting Requirements
- V. Regulatory Implementation and Effective Dates of the Final Rule
 - A. Section 3010 Notification
 - B. Compliance Dates for Today's Rule
- VI. Effect on State Authorizations
- VII. Economic Impact Screening Analysis Pursuant to Executive Order 12291
 - A. Approach
 - B. Aggregate and Sector Compliance Costs
 - C. Economic Impacts
- VIII. Regulatory Flexibility Analysis
- IX. List of Subjects in 40 CFR 260, 261 and 262

I. Introduction

A. Context

Section 3001(b)(3)(A)(ii) of the Resource Conservation and Recovery Act (RCRA) temporarily excludes "solid waste from the extraction, beneficiation, and processing of ores and minerals" from regulation as hazardous waste under Subtitle C of RCRA, pending completion of certain studies by EPA. In 1980, EPA temporarily interpreted this exclusion, often referred to as the Bevill exclusion, to encompass "solid waste from the exploration, mining, milling, smelting and refining of ores and minerals" (45 FR 76619, November 19, 1980).

In response to the decision of the District of Columbia Circuit Court of Appeals in *Environmental Defense Fund v. EPA*, 852 F.2d 1316, (D.C. Cir. 1988), cert. denied, 109 S.Ct. 1120 (1989), EPA proposed criteria by which mineral processing wastes would be evaluated for continued exclusion from hazardous waste regulation until the required studies and subsequent regulatory determination was made. On September 1, 1989 (see 54 FR 36592), EPA provided the final Bevill exclusion criteria. Twenty mineral processing wastes were conditionally retained within the scope of the Bevill exclusion pending the analysis of newly collected data. The Bevill exemption was retained for the following five mineral processing wastes, which will be studied in a Report to Congress.

1. Slag from primary copper processing.

2. Slag from primary lead processing.
3. Red and brown muds from bauxite refining.
4. Phosphogypsum from phosphoric acid production.
5. Slag from elemental phosphorus production.

All of the other mineral processing wastes that were permanently removed from the Bevill exclusion by the September 1, 1989 rule are subject to RCRA Subtitle C regulation if they are solid wastes and exhibit one or more of the characteristics of hazardous waste as defined in 40 CFR part 261 or are otherwise listed as hazardous waste.

On September 25, 1989 (54 FR 39298), EPA reevaluated the status of the 20 conditionally retained wastes. Applying the high volume and low hazard criteria contained in the September 1, 1989 final rule, the Agency proposed to permanently remove seven mineral processing wastes from the Bevill exclusion and retain 13 other mineral processing wastes within the exclusion for study in a Report to Congress. The seven mineral processing wastes proposed for removal from the Bevill exclusion were:

1. Roast/leach ore residue from primary chromite production;
2. Process wastewater from coal gasification;
3. Furnace off-gas solids from elemental phosphorus production;
4. Process wastewater from hydrofluoric acid production;
5. Process wastewater from primary lead processing;
6. Sulfate process waste acids from titanium dioxide production; and
7. Sulfate process waste solids from titanium dioxide production.

The 13 mineral processing wastes proposed for temporary retention in the Bevill exclusion were:

1. Gasifier ash from coal gasification;
2. Calcium sulfate wastewater treatment plant sludge from primary copper processing;
3. Slag tailings from primary copper processing;
4. Fluorogypsum from hydrofluoric acid production;
5. Air pollution control dust/sludge from iron blast furnaces;
6. Iron blast furnace slag;
7. Air pollution control dust/sludge from lightweight aggregate production;
8. Process wastewater from primary magnesium production by the anhydrous process;
9. Process wastewater from phosphoric acid production;
10. Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;
11. Basic oxygen furnace and open hearth furnace slag from carbon steel production;
12. Chloride process waste solids from titanium tetrachloride production; and
13. Slag from primary zinc processing.

The September 25, 1989 notice also proposed to modify the RCRA subtitle C definition of "designated facility" for purposes of clarifying the requirements for completing hazardous waste manifests for wastes transported from one State where they are regulated as hazardous to another in which they are not regulated as hazardous. Under the proposed modification, if a waste is sent to an authorized State where the waste is not regulated as hazardous, then the designated facility must be a facility allowed by the State to accept the waste. The Agency solicited public comments on the appropriateness of these modifications as well as on the data used to make the proposed Bevill exclusion decisions.

B. Overview of Today's Rule

Today's final rule establishes the status of 20 mineral processing wastes which were proposed either for removal from or retention in the Bevill exclusion in the September 25, 1989 notice of proposed rulemaking (NPRM). In addition, today's rule contains technical corrections to the September 1, 1989 final rule. Furthermore, today's final rule also promulgates a clarification to the definition of "designated facility" that the Agency proposed on September 25, 1989.

This final rule completes the rulemaking regarding the Bevill status of mineral processing wastes until the completion of the required report to Congress and Regulatory Determination. In establishing the current status for these 20 mineral processing wastes, the Agency has considered information presented in public comment on the September 25 proposal together with additional analysis of previous EPA industry survey and field data and, where appropriate, has modified the decisions.

As in the September 25 proposal, the Agency evaluated the 20 mineral processing wastes by applying the high volume and low hazard criteria contained in the September 1, 1989 final rule, using a three-step process. First, the Agency applied the high volume criteria to the available waste generation data. For each waste, the Agency obtained facility-specific annual waste generation rates for the period 1983-1988 and calculated the highest average annual facility-level generation rate. Mineral processing wastes generated above the volume criteria thresholds (an average rate of 45,000 metric tons per facility for non-liquid wastes, and 1,000,000 metric tons for liquid wastes) passed the high volume criterion.

In the second step, the Agency evaluated each of the 20 wastes with respect to the low hazard criterion using the relevant waste characteristics. EPA considered a waste to pose a low hazard only if the waste passed both a toxicity test (Method 1312) and a pH test.

The third step involved consolidating the results from the first two steps to determine the appropriate Bevill status of the 20 conditionally retained mineral processing wastes. Applying these criteria, the Agency is today removing the Bevill exclusion for the following five mineral processing wastes:

1. Furnace off-gas solids from elemental phosphorus production.
2. Process wastewater from primary lead processing.
3. Air pollution control dust/sludge from lightweight aggregate production.
4. Sulfate process waste acids from titanium dioxide production.
5. Sulfate process waste solids from titanium dioxide production.

The following 15 mineral processing wastes are to be retained within the exclusion (in addition to the five already retained in the September 1 rule), pending preparation of a Report to Congress and the subsequent Regulatory Determination:

1. Treated residue from roasting/leaching of chrome ore;
2. Gasifier ash from coal gasification;
3. Process wastewater from coal gasification;
4. Calcium sulfate wastewater treatment plant sludge from primary copper processing;
5. Slag tailings from primary copper processing;
6. Fluorogypsum from hydrofluoric acid production;
7. Process wastewater from hydrofluoric acid production;
8. Air pollution control dust/sludge from iron blast furnaces;
9. Iron blast furnace slag;
10. Process wastewater from primary magnesium production by the anhydrous process;
11. Process wastewater from phosphoric acid production;
12. Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;
13. Basic oxygen furnace and open hearth furnace slag from carbon steel production;
14. Chloride process waste solids from titanium tetrachloride production; and
15. Slag from primary zinc processing.

Today's rule also contains technical corrections to the September 1, 1989 final rule. The Agency's review of the final rule, as well as public comments, revealed slight differences between portions of the regulatory language and the corresponding discussion in the preamble. As a result, today's rule includes minor editorial changes to the

language of September 1 final rule. These changes are fully described in Section II.

In addition, EPA is promulgating a clarification to the definition of "Designated Facility" as defined in 40 CFR 260.10. The Agency is amending this definition for purposes of clarifying the requirements for completing hazardous waste manifests for wastes transported from one State where they are regulated as hazardous to another in which they are not regulated as hazardous. Today's clarification allows such generators to ship the waste to a facility in an authorized State in which the waste is not yet regulated as hazardous, as long as the facility receiving the wastes is allowed by the State to receive the waste. This rule also clarifies that it is the responsibility of the generator to assure that any out-of-state transporter and designated facility sign the manifest form that accompanies the waste shipment.

C. Future Activities

This rule establishes the boundaries of the temporary exclusion from hazardous waste regulations for mineral processing wastes provided by RCRA section 3001(b)(3)(A)(ii). All 20 mineral processing wastes for which the Bevill exclusion has been retained will be subject to detailed study by EPA.¹ The findings of these studies will be contained in a Report to Congress that will be submitted by July 31, 1990.

Six months after submission of this report, the Agency will publish a Regulatory Determination stating whether or not any of the studied wastes will be regulated under Subtitle C of RCRA as hazardous wastes, or that such regulation is unwarranted.

II. Analysis of and Response to Public Comments on Bevill Status of 20 Mineral Processing Wastes Proposed on September 25, 1989

This section summarizes and discusses the comments received on the September 25, 1989 proposal. In general, this discussion is limited to the issues germane to the September 25th proposal. Comments on other issues are not discussed here, except in a few instances where the Agency believes it is important to restate its position to avoid confusion or misunderstanding in the regulated community. The Agency did review all of the comments received, however, and comments not discussed

here are summarized in a background document in the docket.

A. General Comments on EPA's Application of the Final Bevill Criteria

1. Sources of Volume and Hazard Data

a. Volume Data. One commenter argued that the volume data supporting the proposed determinations of whether proposed waste streams are high volume lack adequate verification. Specifically, the commenter contended that tremendous discrepancies are evident between the data provided by commenters and the data reported from the 1989 National Survey of Solid Wastes from Mineral Processing Facilities for the following four waste streams: Coal gas process wastewater, elemental phosphorous furnace off-gas solids, lead process wastewater, and titanium dioxide sulfate process waste solids.

EPA agrees that some of the data reported in the comments and the data from the surveys that were used in developing waste volume estimates for the proposal are not in close agreement. As a result, in developing today's rule, the Agency has relied almost exclusively on data collected in the 1989 National Survey of Solid Wastes from Mineral Processing Facilities, which was conducted under RCRA Section 3007 authority, under the assumption that the various respondents realize that submission of false data is a punishable offense. The Agency believes that these are the most recent and accurate data available.

Additional analysis of responses to the surveys, carried out in response to these comments, has indicated some variability in the way in which respondents interpreted the survey instructions. In developing the proposed rule, EPA relied primarily on the responses to survey question 2.11 ("How much of the special waste did this processing unit generate in 1988?") to derive the average facility waste volumes. Additional review of the survey responses has indicated that in some instances the volume data that the Agency expected to be reported in response to question 2.11 were in fact reported in other sections of the questionnaire that requested information related to waste treatment plants, surface impoundments and other waste management units (i.e., sections 4 through 6.)²

¹ This occurs most often for the five wastes that are covered by this rulemaking for which data were not specifically requested in the survey. Apparently, a number of facility operators either neglected to read, misunderstood, or ignored the instruction to provide information on way waste that they

As a consequence, EPA has been careful to select the response to the appropriate survey question (which sometimes is not question 2.11) in developing today's final rule. For example, the appropriate waste volume data were sometimes provided in response to question 4.18 ("What was the quantity of sludge/solid outflows from this wastewater treatment plant in 1988?"), question 5.8 ("Approximately how much of the total amount of accumulated sludge/solids in this surface impoundment on December 31, 1988 was added during 1988?"), or question 6.4 ("What were the inflows to this waste management unit and what was the quantity of each inflow in 1988?"). In those cases where responses to questions contained in sections 4 through 6 of the survey have been selected for use by the Agency, the responses are in much better agreement with the data provided in comments. In a number of cases, as discussed more fully in section III, below, estimated waste generation rates have been revised, and in fact, in a few instances, the Agency's evaluation of whether particular waste streams comply with the high volume criterion has been reversed. Documentation addressing the Agency's calculation of waste volumes can be found in the docket supporting this final rule.

The commenter also criticized the Agency for liberally granting Confidential Business Information (CBI) designations to responses submitted by industry respondents to the National Survey. These designations, they claimed, have impeded independent verification of the volume data, noting that for residue from roasting/leaching of chrome ore and titanium dioxide sulfate process waste acids, all of the facilities generating these waste streams designated their relevant survey data as CBI. The commenter stated that if the public is unable to scrutinize these data because of their confidentiality, then the Agency should make a professional verification of the information provided.

Under the provisions of section 3007 of RCRA, facilities providing information to EPA can designate information, in whole or in part, as CBI. EPA has not automatically granted claims for CBI status. Rather, EPA reviewed the CBI claims made for data submitted by mineral processing facilities in support of this rulemaking and, when claims for CBI status appeared excessive, requested, often successfully, that the CBI claims be

considered eligible for Bevill status, irrespective of whether it was on EPA's preliminary list.

² These include the five wastes for which the temporary exclusion was retained in the September 1, 1989 final rule and the 15 wastes for which the exclusion is retained in today's rule.

reduced or eliminated. In addition, EPA has included aggregated CBI data in the publicly available documentation supporting the development of today's rule to the extent that this could be done without revealing company-specific CBI information.

As discussed above, facilities that submit either CBI or non-CBI data requested by EPA under RCRA 3007 authority are subject to enforcement action if they submit false data. As a result, the Agency believes that data collected under Section 3007 authority can be relied upon without additional verification, regardless of whether it is CBI or not. In addition, as a practical matter, the schedule required by the Appeals Court for this rulemaking did not provide the time needed to conduct such verification.

One commenter stated that for some of the wastes of interest, EPA volume determinations are based on a fraction of those facilities generating the waste. As a result, the commenter contends, EPA lacks a sufficient basis for determining whether proposed wastes meet the high volume criterion. In instances where EPA lacks data on more than 25 percent of the facilities generating the waste, the commenter believes that EPA should not make a volume determination without determining whether the facilities providing the volume data are representative of the industry; the Agency should also attempt to obtain data on the remaining facilities. The commenter maintained that in the absence of survey data, EPA should not rely completely upon data provided in public comments.

EPA responds that, as discussed above and in more detail in Section III of this preamble, further analysis of the survey data has shown that the survey responses do in fact provide adequate waste volume data for all but one of the 20 mineral processing wastes covered by today's rulemaking. With the exception of this one waste, waste volume data are available in the survey for far more than 25 percent of the facilities generating the waste. For the one waste with limited data available in the survey, basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production, data provided by the American Iron and Steel Institute (AISI) were used for the volume determination. These data were verified through comparison with the survey data that were provided for several of the facilities for which AISI also provided volume data.

b. Hazard Data. Several commenters argued that the Agency used too few

samples, especially when results were inconsistent, or neglected to sample inactive facilities for determining the hazard of waste streams. As a result, the commenters argued, the samples were not representative of the entire industry. Other commenters contended that many inconsistencies in the waste sampling data were overlooked in making proposed exclusion decisions.

EPA responds that, as clearly stated in the September 25, 1989 NPRM, the low hazard criterion was established in the September 1, 1989 final rule and is not subject to public comment at this time. For further discussion of the development and application of the low hazard criterion, refer to 54 FR 36592. In applying the final Bevill low hazard criterion, EPA has not ignored any apparent inconsistencies or widely varying concentrations. The low hazard criterion is applied using the lower 80 percent confidence interval that, as a practical matter, allows for one or more samples to exhibit contaminant concentrations above relevant standards, without disqualifying the waste for Bevill status. Inactive facilities were not sampled because they are affected by today's rulemaking only if in the future they resume operation or actively manage historical accumulations of wastes for which the Subtitle C exemption is being removed by today's rule. The Agency believes that it would be inappropriate and impractical to consider these speculative future activities in developing today's rule. (For further discussion see 54 FR 36595-36597.)

Another commenter disputed EPA's use of data submitted by waste generators for the low hazard determinations, stating that the use of these data contradicts the criteria set in the September 1, 1989 rule.

As explained in the preamble to the September 1, 1989 final rule, EPA established that low hazard determinations are to be based on EPA Method 1312 data unless

i. The waste is generated at five or more facilities; and

ii. Substantial additional relevant data are available and the preponderance of these additional data indicate that the waste should be considered low hazard, where:

a. Relevant data are defined as data that result from analysis of waste extracts obtained by EPA Methods 1310, 1311, and 1312, ASTM Test Method D3987-81, or comparable procedures that Agency has reason to believe produce reliable and representative data; and

b. To be considered substantial, the additional data must characterize the waste at 3 plants (other than those two plants where Method 1312 results exceed 100 times the MCLs) or at least half of the facilities that

generate the waste (other than those two plants where Method 1312 results exceed 100 times the MCLs), whichever number of plants is larger. (54 FR 36630)

The Agency wishes to point out that there is no explicit or implicit assumption in this low hazard criterion about the source of the data that the Agency is to use in making low hazard determinations. Accordingly, EPA has used available Method 1312 data regardless of source (e.g., EPA, industry) in making low hazard determinations in today's rule (and, indeed, the September 25, 1989 proposal).

B. Comments on the 13 Waste Streams Proposed for Retention

This section discusses comments received on each of the 13 mineral processing wastes for which EPA proposed to retain the Bevill exemption. The comments received on each of the wastes generally are presented under one of three subheadings: Processing Criterion/Waste Definition, Volume, or Hazard. These subheadings appear only when they are relevant to comments identified for the waste being discussed, so for many of the 13 wastes, one or more of the subheadings are not included.

1. Gasifier Ash From Coal Gasification

One commenter supported EPA's proposed retention of gasifier ash from coal gasification within the Bevill exclusion.

2. Calcium Sulfate Wastewater Treatment Plant Sludge From Primary Copper Processing

One commenter agreed with EPA's proposed determination that calcium sulfate wastewater treatment plant sludges from primary copper processing are high volume, low hazard materials and, thus, qualify for the Bevill exclusion and further study.

a. Processing Criterion/Waste Definition. One commenter asserted that no rational basis exists for distinguishing between calcium sulfate and sodium hydroxide sludges, arguing that both are generated in identical treatment plants, and both are reprocessed in the primary copper processing operation to recover additional copper. The commenter indicated that the only difference between the two sludges is the type of reagent used (lime or sodium hydroxide) to neutralize acidic aqueous streams that enter the treatment plants. The commenter reasoned that the only explanation for this disaggregation is the amount of sludge resulting from use of the different neutralizing reagents.

The Agency has considered the comment and finds these arguments unconvincing. EPA believes that the type of reagent used is an important factor in determining the chemical nature and quantity of the sludge generated. As explained in the preamble to the April, 1989 proposed rule (54 FR 15316), EPA believes that there are significant differences between these materials, and accordingly, has retained this distinction in today's final rule.

b. Volume. Three commenters addressed the volume data for this waste. One commenter agreed with EPA's determination that calcium sulfate wastewater treatment plant sludge meets the high volume criterion. Another commenter contended that all wastewater treatment plant sludge from primary copper processing should be studied under the Bevill Amendment. If the generation rates for calcium sulfate and sodium hydroxide sludges are added, they noted, the resulting average is above the 45,000 metric ton per year cutoff. The third commenter claimed that public comment data submitted by waste generators and survey data for those same wastes are not consistent. The third commenter noted that, in public comments, industry submitted an average annual generation rate for calcium sulfate wastewater treatment plant sludge from primary copper processing of 75,750 MT/yr (comments of Kennecott Utah Copper on October 20, 1988 NPRM), while according to EPA's survey data, the average generation rate for this waste stream was 1,179,341 MT/yr. Because these data are not in agreement, the third commenter concluded that all of the volume data are suspect, especially when EPA had previously estimated an annual generation rate of 38,033 MT/yr, a volume that would not have supported a high volume determination.

The Agency agrees that the volume data cited by the commenter appear to be inconsistent. The Agency has reviewed the survey data and found that these apparent inconsistencies arise from the fact that appropriate waste volume data sometimes were reported in sections 3 through 6 of the questionnaire, rather than section 2, which was used to develop average volume data for the proposed rule. As a result, these differences have since been resolved and are explained in Section III, below, and a background document in the docket, which present the Agency's revised waste generation estimates. Finally, EPA's previous volume estimate of approximately 38,000 MT/yr average per facility was based on an aggregation of calcium sulfate and

sodium hydroxide sludge, which the Agency has concluded is inappropriate.³

c. Hazard. Two commenters addressed the hazard level of calcium sulfate wastewater treatment plant sludge from primary copper processing. One agreed with EPA's proposed determination that the waste meets EPA's low hazard criterion. However, another commenter asserted that EPA's sampling data demonstrated that calcium sulfate wastewater treatment sludge from primary copper processing exhibits the hazardous waste characteristic of EP-toxicity for arsenic, cadmium, and selenium, and questioned why it was not proposed for removal from the Bevill exclusion on that basis alone.

EPA finalized the low hazard criterion in the September 1, 1989 rule, and is not entertaining comments on it. The Agency's rationale for the low hazard criterion is outlined in 54 FR 36592. As discussed in the September 25, 1989 proposal, the waste does not exhibit levels of toxic constituents above those established by the September 1, 1989 final rule.

3. Slag Tailings From Primary Copper Processing

Two commenters supported EPA's proposed retention of slag tailings from primary copper processing for further study, asserting that EPA properly determined the waste to be high volume and low hazard.

a. Processing Criterion/Waste Definition. One commenter stated that at its facility, slag tailings are produced when the ore input to the mill is supplemented with slag from the facility's primary copper smelting operations. Because the slag tailings cannot be differentiated from the ore tailings, the commenter argues that the Bevill exemption, as either a processing waste or a beneficiation waste, should be retained for the slag tailings.

While EPA plans to study copper slag tailings in a report to Congress, EPA disagrees with the commenter's contention that the fact that the waste is generated in combination with a beneficiation waste is relevant to the decision that inclusion in the report to Congress is appropriate. The Agency has decided to include this waste in the report to Congress because it is a

³ Available data indicate that sludge resulting from treatment of wastewaters from primary copper processing using sodium hydroxide is generated in much smaller volumes than calcium sulfate sludges resulting from treatment with lime. As a result, an average annual sludge volume that includes both types of sludges is significantly lower than one that is based only on calcium sulfate sludge.

mineral processing waste that is both high volume and low hazard according to the criteria previously established. The Agency will, however, examine the current practices that involve co-management of a beneficiation waste and a mineral processing waste in the report to Congress.

b. Volume. Three commenters concurred that slag tailings from primary copper processing meet EPA's high volume criterion. One commenter submitted complete volume data for this waste stream in the Survey, stating that it generates more than a million metric tons per year of the waste stream. Another commenter claimed that about 3,700,000 short tons of tailings, of which approximately 22,000 short tons were slag tailings, were generated by its facility.

4. Air Pollution Control Dust/Sludge From Iron Blast Furnaces

One commenter asserted that the Agency's proposal for retention of iron and steel industry wastes within the Bevill exclusion is fully supported by the data. These wastes are mineral processing wastes, and they meet the criteria as high volume, low hazard wastes.

5. Iron Blast Furnace Slag

One commenter asserted that the Agency's proposal for retention of iron and steel industry wastes within the Bevill exclusion is fully supported by the data. These wastes are mineral processing wastes, and they meet the criteria as high volume, low hazard wastes.

6. Basic Oxygen Furnace and Open Hearth Furnace Air Pollution Control Dust/Sludge From Carbon Steel Production

One commenter asserted that the Agency's proposal for temporary retention of iron and steel industry wastes within the Bevill exclusion is fully supported by the data. These wastes are mineral processing wastes, and they meet the criteria as high volume, low hazard wastes.

One commenter argued, however, that EPA's volume data is incomplete, because for some wastes, the volume determinations are based on only a fraction of the facilities generating the waste. In the case of basic oxygen and open hearth furnace APC dust/sludge from carbon steel production, the commenter maintained that EPA based its volume determination on data from only four of 27 facilities. The commenter argued that the Agency made no effort to determine if these few facilities were

representative of the industry in general, or if the facilities were unusually large or small and would skew the data.

In response to this comment, EPA has carefully reviewed all data available from the industry survey and from other sources. The Agency's revised waste generation estimate (presented in Section III, below), is based upon data obtained from the vast majority of active carbon steel facilities. These data show that this is a high volume waste.

7. Basic Oxygen Furnace and Open Hearth Furnace Slag From Carbon Steel Production

One commenter asserted that the Agency's proposal for temporary retention of iron and steel industry wastes within the Bevill exclusion is fully supported by the data. These wastes are mineral processing wastes, and they meet the criteria as high volume, low hazard wastes.

8. Fluorogypsum From Hydrofluoric Acid Production

a. Volume. One commenter agreed with EPA's proposed determination that fluorogypsum from hydrofluoric acid production meets the high volume criterion.

b. Hazard. One commenter agreed with EPA's proposed determination that fluorogypsum meets the low hazard criterion.

9. Air Pollution Control Dust/Sludge From Lightweight Aggregate Production

a. Volume. One commenter argued that EPA's volume data are incomplete, because for this waste, the volume determination was based on only a fraction of the facilities generating the waste. The commenter maintained that EPA based its volume determination for lightweight aggregate APC dust/sludge on data from only six of the 28 facilities it believes to generate the waste. The commenter argued that the Agency made no effort to determine if these few facilities were representative of the industry.

In response to this comment, EPA has carefully reviewed all data available from the industry survey and from other sources. The Agency's revised waste generation estimate (presented in Section III, below), is based upon data obtained from the majority of active lightweight aggregate production facilities. These data show that this is not a high volume waste.

10. Process Wastewater From Primary Magnesium Production by the Anhydrous Method

a. Hazard. One commenter questioned EPA's decision not to propose for

removal from the Bevill exclusion process wastewater from primary magnesium processing by the anhydrous method even though EPA's sampling demonstrated that the waste exhibits the hazardous waste characteristic of corrosivity (pH level of 1.22). EPA should, they contended, further consider this data in preparing its Report to Congress.

The Agency generally agrees with the commenter that relevant hazard data should be considered in the study of the waste stream when preparing the Report to Congress. However, EPA finalized the low hazard criterion in the September 1, 1989 rule, and is not currently entertaining comments on it. The Agency's rationale for the low hazard criterion is outlined in 54 FR 36592. As discussed in the 9/25/89 proposal, the waste does not exhibit a pH below the Bevill hazard criterion value of 1.

11. Process Wastewater From Phosphoric Acid Production

Four commenters stated that EPA correctly proposed that process wastewater from phosphoric acid production be retained within the scope of the Bevill Amendment and that EPA should retain this waste within the Bevill exclusion in the final rule.

a. Processing Criterion/Waste Definition. One commenter argued that process water recirculated in the phosphate complex, including the gypsum stacking system, is not discarded. Process water's nutrient value, which is extracted for fertilizer products, and its utilization as a coolant and transport medium, are not activities that should cause it to be classified as a solid waste as defined by the Resource Conservation and Recovery Act.

EPA responds that the definition of solid waste is an issue that is not open for comment in connection with today's rulemaking. EPA wishes to point out, however, that the issue of when cooling water is a solid waste has been discussed in previous rulemakings. Specifically, in the preamble to the January 4, 1985 (50 FR 614) final rule that established the current definition of solid waste, the Agency indicated that cooling water managed entirely in a closed-loop system was not considered to be reclaimed and, thus, would be eligible for the closed-loop exclusion. The Agency also indicated, however, that secondary materials managed in impoundments would not be eligible for the closed-loop exclusion. In addition, the surface impoundments collecting cooling water off of gypsum stacks are waste treatment units, further indication that the contents are solid wastes.

(i) Comments on phosphogypsum transport water. One commenter supported EPA's inclusion of the water used to transport phosphogypsum within the definition of process wastewater from phosphoric acid production.

(ii) Comments on stack runoff. Three commenters argued that "stack runoff" should be included in the definition of process wastewater from phosphoric acid production. One commenter maintained that stack runoff is comprised of "phosphogypsum transport" water, which is specifically included in the definition of process wastewater from phosphoric acid production. The commenter further stated that the definition of process wastewater from phosphoric acid production, which includes "several points in the wet process," is intended to include all process wastewater generated at all points within that process. A second commenter reasoned that, just as process wastewater managed in a pond that receives precipitation continues to be process wastewater, gypsum transport water that is temporarily trapped within a gypsum stack and receives precipitation continues to be gypsum transport water. The commenter also indicated that because runoff from dry stacks is not hazardous, and as runoff from wet stacks contains transport water which has been retained, stack runoff should also be retained within the Bevill Amendment.

One commenter noted that comments from previous rulemakings and other documents may have led to the incorrect impression that phosphogypsum stack runoff standing alone exhibits characteristics of hazardous waste. The commenter also indicated that they believe the Agency has resolved this issue satisfactorily, however, by including water used for phosphogypsum transport in the description of phosphoric acid process wastewater included in the proposed rule. The commenter further concluded that because only the phosphogypsum transport water entrained in precipitation runoff from phosphogypsum stacks ever exhibits characteristics of hazardous waste, EPA's proposal to include phosphogypsum transport water within the scope of the Bevill Amendment resolves the issue of the status of precipitation runoff.

(iii) Comments on uranium recovery wastewater. Commenters noted that the uranium recovery step of phosphoric acid production follows the reaction of phosphate rock and sulfuric acid and precedes the concentration and

purification steps required to produce commercial grade, also known as merchant grade, phosphoric acid. Two commenters argued that the process wastewater generated from the uranium recovery step of phosphoric acid production must be considered a component of "process wastewater from phosphoric acid production" and, thus, proposed it for retention within the Bevill Amendment.

(iv) Comments on process wastewater from animal feed production. Two commenters maintained that process wastewater from animal feed production should be included in the definition of process wastewater from phosphoric acid production and thus retained in the Bevill exclusion. One commenter claimed animal feed process wastewater, standing alone, meets the Agency's high volume and low hazard criteria. This commenter further argued that the production of animal feed constitutes mineral processing, citing the following reasons: (1) Three key animal feed ingredients (dicalcium phosphate, mono- and dicalcium phosphate, and defluorinated phosphate rock) are produced from beneficiation of either phosphate rock or limestone; (2) processing removes and/or enhances the characteristics of either beneficiated phosphate rock or limestone; (3) none of the materials used is a scrap material; (4) the processes produce final mineral products; and (5) no combination with non-mineral products is involved. Therefore, the commenter argued, process wastewater from such production should be retained within the scope of the Bevill Amendment.

The commenter also addressed several aspects of the production process. The commenter argued that the defluorination step in animal feed production should not prevent process wastewater from animal feed production from remaining within the Bevill exclusion. The production of defluorinated phosphoric acid involves essentially the same process as the production of undefluorinated commercial grade phosphoric acid. Defluorination is only an additional step in acid production in which fluorides are removed from the acid by heat and the addition of a silicon mineral to facilitate removal of fluorine. No meaningful distinction can or should be made regarding defluorinated phosphoric acid simply because defluorination occurs before or after concentration to commercial grade strength.

The commenter further argued that the production of monoammonium phosphate, an animal feed product, constitutes mineral processing, even

though the process makes use of ammonia, a non-mineral ingredient. The commenter indicated that ammonia is added to defluorinated commercial grade phosphoric acid in a granulation process, involving approximately 7,000 gallons per minute of phosphoric acid production process water for particulate scrubbing. The commenter maintained that this amount of water is "infinitesimal" compared to the mineral processing process wastewater generated on a daily basis, and thus this small granulation process should be considered co-management and monoammonium phosphate process wastewater should be included within the Bevill exclusion of phosphoric acid process wastewater.

The commenter maintained that, if EPA determined that returning to its source the 7,000 gallons per minute of phosphoric acid process wastewater used during feed grade monoammonium production would result in the removal of the entire phosphoric acid process wastewater system from the Bevill Amendment, the production of feed grade monoammonium phosphate would be ceased and the product removed from the market.

(v) Comments on superphosphate wastewater. One commenter contended that process wastewater from superphosphate production should be retained within the scope of the Bevill Amendment. The commenter argued that data submitted by industry in the mineral processing survey demonstrates that this waste from superphosphate production meets the high volume and low hazard criteria. In addition, the commenter claimed that superphosphate production meets the relevant aspects of the EPA mineral processing definition, stating that the production of superphosphate rock involves the direct reaction of phosphate rock with dilute, not merchant grade, phosphoric acid.

(vi) Comments on ammoniated fertilizer wastewater. Two commenters argued that process wastewater generated in the production of ammoniated phosphate fertilizers (APF) should be retained within the scope of the Bevill Amendment. The inclusion of phosphoric acid process wastewater within the scope of the Bevill Amendment should, they contended, resolve the issue of whether APF process wastewater is included. The influent water to the ammoniated phosphate fertilizer process is the process wastewater from phosphoric acid production, which remains under the Bevill exclusion. The commenter claimed that if APF process wastewater exhibits hazardous characteristics, it is

solely because process wastewater from phosphoric acid production is used in APF production. The commenter further argued that the entire APF production process should not be removed from the Bevill exclusion, when the cause of the hazardous characteristic is phosphoric acid wastewater, which is covered under the Bevill exclusion.

(vii) Comments on sulfuric acid wastewater. One commenter contended that captive sulfuric acid production involves mineral processing and is absolutely essential to the production of phosphoric acid by the wet process. The commenter urged EPA to either clarify that sulfuric acid wastewater produced as a result of sulfuric acid production is part of phosphoric acid process wastewater or revise its interpretation of the mixture rule so that such process wastewater can continue to be managed in the sound and cost-effective manner practiced today.

(viii) Response to Comments. In the proposal, EPA noted that process wastewaters are generated at several points in the wet process, included phosphogypsum transport, phosphoric acid concentration, and phosphoric acid temperature control and cooling. (See 54 FR 39303.) As stated previously, the Agency did not intend to imply that these were the only sources of process wastewater from phosphoric acid operations.

The Agency has carefully considered the comments and, based on the information available, agrees, for the reasons described in the comments, that phosphogypsum stack runoff, process wastewater generated from the uranium recovery step of phosphoric acid production, process wastewater from animal feed production (including defluorination but excluding ammoniated animal feed production), and process wastewater from superphosphate production are also the result of mineral processing operations and should be considered part of process wastewater from phosphoric acid production.

As discussed on September 1 (see 54 FR 36621), the Agency does not consider the production of ammoniated phosphate fertilizer from phosphoric acid and ammonia to be a mineral processing operation. For the same reasons, the Agency does not consider the production of ammoniated animal feed from phosphoric acid to be a mineral processing operation. As also discussed on September 1 (see 54 FR 36623), the Agency does not consider wastes from sulfuric acid production to be part phosphoric acid process wastewater.

b. Volume. A commenter stated that the data collected by the Agency at its facility and similar facilities indicate that the process wastewater meets EPA's high volume criterion.

c. Hazard. Two commenters addressed the hazard level of this waste. One supported EPA's proposed determination that process wastewater from phosphoric acid production meets the low hazard criterion. However, one commenter questioned why the waste stream was not proposed for removal from the Bevill exclusion because EPA's sampling data showed that process wastewater from phosphoric acid production exhibits the hazardous waste characteristic of corrosivity (pH values of 2.0, 2.1, 1.8, and 1.5). EPA should, they maintained, further consider this data in preparing its Report to Congress.

The Agency generally agrees with the commenter that relevant hazard data should be considered in the study of the waste stream when preparing the Report to Congress. However, EPA finalized the low hazard criterion in the September 1, 1989 rule, and is not entertaining comments on it. The Agency's rationale for the low hazard criterion is outlined in 54 FR 36592. The waste passes the pH criterion described in that rule.

12. Chloride Process Waste Solids From Titanium Tetrachloride Production

One commenter agreed with EPA's proposal to retain chloride process waste solids from titanium tetrachloride production within the Bevill exclusion.

a. Processing Criterion/Waste Definition. One commenter claimed that EPA, in its description of the "chloride process waste solids from titanium tetrachloride production" in the proposal, described only the "chloride" process for manufacturing titanium dioxide and *not* the "chloride-ilmenite" process. The Agency stated that "the chloride process involves fluidized roasting and chlorination of rutile, synthetic rutile, slag or beneficiated ilmenites." This statement, according to the commenter, essentially describes the "chloride" process that uses "high-grade" ores or beneficiated ores as feedstocks; the chloride-ilmenite process, in contrast, uses "low-grade" ores as the principal feedstock for its process.

In addition, the commenter contended, the Agency incorrectly stated that the product formed is "titanium tetrachloride." This may be true of the "chloride" process that uses "high-grade" ores or previously beneficiated material, but is only partially true of the chloride-ilmenite process. In the "chloride-ilmenite" process, the commenter continued, gaseous iron

chlorides are generated first and are subsequently condensed into iron chloride "waste acids". This is the "beneficiation" process. After this, the titanium in the ores is converted at a much slower rate into titanium tetrachloride. Both of these processes, however, occur in a continuous, "one-step" operation. The titanium tetrachloride generated by the chloride-ilmenite process is then used as the feedstock for the ultimate production of titanium dioxide. The commenter expressed concern that EPA appears to incorrectly consider the "chloride-ilmenite" process to be covered within the "chloride process," for which the "mining waste exclusion" was eliminated for "chloride processing waste acids" in the September 1, 1989 final rule. The commenter objected to this conclusion because the chloride-ilmenite process should not be "lumped" with a process that is clearly and substantially different, noting that the distinction between the two processes has been recognized since at least 1970. The commenter claimed that its titanium dioxide plants could be materially and adversely affected by EPA's determinations regarding whether or not "chloride-ilmenite" plants are considered "beneficiation" versus "processing" facilities. The commenter also claimed its "chloride-ilmenite" process is not covered by either of the Agency's rulemakings (Sept. 1 and Sept. 25, 1989), and thus would be covered by an upcoming "special study" for beneficiation wastes. The commenter urged EPA to make a determination that the "chloride-ilmenite" process is one of beneficiation of low grade ilmenite ore and "chlorination" and should be made subject to the upcoming RCRA 8002(p) special studies to determine the appropriate waste management requirements.

In response to these comments, EPA reviewed the court opinions and related EPA effluent limitation guidelines cited by the commenter for precedents for considering the chloride-ilmenite process to be significantly different from the conventional chloride process. The Agency also referred to written comments submitted by the same commenter in response to previous proposed rulemakings addressing the scope of the Mining Waste Exclusion. Based upon this review, EPA agrees with the commenter that the chloride-ilmenite process is different than the conventional chloride process in that ilmenite ore used as the feed stock to the process contains much larger quantities of iron, which must be removed, than the feed stocks used by other chloride processes. In addition,

EPA agrees that, in part, the chloride-ilmenite process involves beneficiation of ores or minerals. Nevertheless, the Agency continues to believe that it is reasonable to consider the chloride-ilmenite process to be a part of the general "chloride process" category for purposes of this rulemaking because the process destroys the identity of the mineral, produces titanium tetrachloride gas (a saleable mineral product), and generates wastes which are functionally identical to, although larger in volume than, the wastes generated by other chloride process facilities. Moreover, because the "beneficiation" wastes and the "processing" wastes generated by the chloride-ilmenite process are inseparable, according to EPA effluent guidelines development documents and as argued by the commenter, the Agency concludes that the "chloride-ilmenite" process must be considered a mineral processing operation for purposes of this rulemaking.

The Agency also notes that the commenter's contention that the "chloride-ilmenite" process is not covered by the description of the chloride process provided in the September 1, 1989 final or the September 25, 1989 proposal is incorrect. While the description of the chloride process provided in these rules does not describe the "chloride-ilmenite" process in detail due to Confidential Business Information claims made by the commenter, the Agency has clearly considered this process to be one of the several chloride processes covered by these previous rulemakings and, therefore, this rulemaking as well. This fact is clearly demonstrated by the inclusion of the commenter's facilities in the background documentation for these rulemakings. Accordingly, all solid wastes generated by this process are subject to EPA's reinterpretation of the Mining Waste Exclusion, including this rulemaking.

b. Volume. One commenter agreed with EPA's determination that chloride process waste solids satisfy the high-volume criterion. Another commenter submitted volume data, claiming that the waste streams from the "chloride-ilmenite" process are generated at over 1,400,000 and 600,000 tons annually in two facilities.

c. Hazard. One commenter agreed with EPA's determination that chloride process waste solids satisfy the low-hazard criterion.

13. Slag From Primary Zinc Processing

One commenter asserted that EPA properly applied the high volume/low

hazard criteria to slag from primary zinc processing in the September 25 proposal.

a. Hazard. One commenter questioned EPA's decision not to propose to remove slag from primary zinc processing from the Bevill exclusion because the sampling data demonstrated that the waste exhibits the hazardous waste characteristic of EP-toxicity for lead. They stated that EPA should further consider these data in preparing its Report to Congress.

The Agency generally agrees with the commenter that all relevant hazard data should be considered in the study of the waste stream when preparing the Report to Congress. However, EPA finalized the low hazard criterion in the September 1, 1989 rule, and is not currently entertaining comments on it. The Agency's rationale for the low hazard criterion is outlined in 54 FR 36592. As discussed in the September 25, 1989, proposal, the waste passes the toxicity criterion described in that rule.

C. Comments on the Seven Wastes Proposed for Removal

This section discusses comments received on each of the seven mineral processing wastes for which EPA proposed to remove from the Bevill exemption. The comments received on each of the wastes generally are presented under one of three subheadings: Processing Criterion/Waste Definition, Volume, or Hazard. These subheadings appear only when they are relevant to comments identified for the waste being discussed, so for many of the seven wastes, one or more of the subheadings are not included.

1. Roast/Leach Ore Residue From Primary Chromite Processing

a. Processing Criterion/Waste Definition. Two commenters remarked on the designation of the waste stream. One commenter contended that the original designation of roast/leach ore residue from primary processing of chrome ore referred to the ore residue solids in the form currently being disposed (after treatment), not the form in which the waste is generated. The commenter stated that it is the waste as disposed that has the potential to enter the environment, and that this waste is low hazard and high volume and should be retained. Another commenter argued that because the ore used in production of chromium chemicals contains not only chrome but also other compounds (e.g., magnesium silicate), the term "chrome ore" or "chromium ore" would be more appropriate for use by the Agency.

EPA agrees with both of these comments. In today's final rule, the

Agency bases its evaluation of this waste's compliance with the Bevill criteria on treated residue from roasting/leaching of chrome ore.

b. Hazard. Three commenters addressed the apparent failure of this waste stream to meet the low hazard criterion. One commenter agreed with EPA's proposed determination, and provided data that indicated that treated waste from chromite ore processing is occasionally EP toxic, based on data it received from American Chrome and Chemical.

One commenter acknowledged that residue from the roasting/leaching of chrome ore is hazardous at the point of generation. The commenter asserts, however, that through treatment at the wastewater treatment plant in compliance with the facility's NPDES permit, the waste stream ceases to exhibit the hazardous waste characteristic for chromium; both the liquid and non-liquid fractions of the stream are rendered non-hazardous. The commenter states that this treatment practice has been demonstrated to, and accepted by, the State of North Carolina.

Another commenter maintained that, in making its hazard determination for this waste, EPA relied on samples taken from an inappropriate stage of the waste management process. The commenter claimed that the materials from the post-treatment stage, and in particular the solids, are non-hazardous and qualify for the exclusion. In addition, they contended, this treatment does not affect the volume of the waste.

The Agency has reviewed the available data and agrees with the commenters that these data indicate that the treated residue from roasting/leaching of chrome ore is low hazard. The Agency notes, however, that waste management activities associated with the untreated wastes, including the treatment operation itself, are not exempted from Subtitle C requirements by the Bevill amendment because prior to treatment the waste is not low hazard (although any tanks involved in the treatment process may qualify for the wastewater treatment until exemption under 40 CFR 264.1(g)(6)).

2. Process Wastewater From Coal Gasification

a. Processing Criterion/Waste Definition. One commenter described the production process for coal gasification. The production of coal gas (and thus process wastewater) involves, first, the controlled combustion of lignite. This produces a raw gas stream sent first to the Raw Gas Cooling and Shift Conversion units and then to the

Rectisol unit. The Rectisol unit removes acid gases CO₂, H₂S, CS₂, and COS) and produces synthetic fuel gases. These gases undergo methanation and gas compression and then are delivered to a pipeline as synthetic natural gas. A coproduct, naphtha, is also produced. "Gas liquor" is also produced by the cooling and refining of the raw gas stream.

The commenter added that the Gasification, the Raw Gas Cooling Shift Conversion, and the Rectisol units all produce gas liquor streams which are routed to the Gas Liquor Separation unit. During the gas liquor separating process, another coproduct, tar oil, is recovered. Afterwards, the gas liquor is sent to the Phenosolvan unit where crude phenol is recovered. Ammonia is then recovered in the Phosam unit, which discharges a "stripped gas liquor." The stripped gas liquor is sent to the Cooling Tower for use as a make-up water. Other liquids used as make-up water include: small quantities of filtered Dissolved Air Flotation water from the oily water sewer system, softened water from the potable water treatment plant, a small stream from the Rectisol unit, and small volumes of distillate water from the Multiple Effect Evaporators. The commenter also notes that: (1) Stripped gas liquor comprises over 70 percent of the make-up water in the Cooling Tower; (2) the Cooling Tower is operated with a blowdown rate of approximately 350 to 500 gallons per minute or 650,000 to 995,056 metric tons per year; and (3) the Cooling Tower blowdown is directed to the Multiple Effect Evaporators.

The commenter argued that because the stripped gas liquor is continuously used, and is not discharged by the facility, it cannot logically be regarded as a "waste." The commenter added, however, that if EPA does consider stripped gas liquor to be a waste, then it is the "process wastewater" generated by the facility.

EPA has reviewed the information provided in these comments and the National Survey response provided by the commenter and concluded that the available information indicates that stripped gas liquor is a solid waste that does not appear to be eligible for the closed-loop exemption because it sometimes is stored in an impounded prior to use. (See above discussion regarding phosphoric acid process wastewater and January 4, 1985 notice (50 FR 614.)) However, EPA also concludes that stripped gas liquor is the principal aqueous waste generated by the gasification process and thus is

process wastewater and remains a Beville waste.

b. Volume. Two commenters urged EPA to reconsider its proposed determination that process wastewater from coal gasification fails the high volume criterion. They contended that the data cited by EPA in the September 25, 1989 Federal Register were not accurate. Both commenters stated that process wastewaters are actually generated at a rate that far exceeds one million metric tons per year. One commenter claimed that rather than being generated at a rate of 598,030 metric tons per year, this waste is produced at a rate of approximately 5,000,000 metric tons per year. The commenter believed that this error was based on the Agency's misunderstanding of the gasification process and on its own response to the mineral processing waste questionnaire. The commenter identified the process wastewater as "cooling water" because, as discussed above, they do not consider it a waste. The commenter submitted the following volume data:

1986—4,910,000 metric tons;
1987—5,020,000 metric tons;
1988—4,830,000 metric tons; and
1989—5,050,000 metric tons.

The volume reported for 1989 is through October and projected through the end of the year.

EPA has carefully reviewed the comments and survey information and agrees that: (1) The facility mischaracterized the point of generation when it initially completed the 1989 National Survey, which EPA used in developing the proposal; and (2) process wastewater from coal gasification meets the high volume criterion because it is clearly generated in quantities above the applicable criterion value of 1,000,000 mt/yr average per facility established by the September 1 final rule.

c. Hazard. A commenter supported EPA's proposed determination that coal gasification process wastewater meets the low hazard criterion.

3. Furnace Off-Gas Solids From Elemental Phosphorus Production

One commenter supported EPA's decision to remove furnace off-gas solids from elemental phosphorus production from the Beville exclusion.

a. Processing Criterion/Waste Definition. One commenter raised several issues about the definition of this waste stream. The commenter supported EPA's proposed determination that furnace off-gas solids are "solids," even though one facility generates the waste in the form of a slurry. The commenter notes that

furnace off-gas solids from elemental phosphorous production are generated either as a solid waste stream or as a slurry and contends that the term "elemental phosphorus off-gas solids" was specifically defined to include, among other things, "precipitator slurry." EPA's assertion that the commenter aggregated off-gas solids with scrubber blowdown is, the commenter claimed, incorrect. The commenter also claimed that further examination shows that the material stream is more properly classified as "phosphy water" and that one result of reclassification is that 1.5 million tons of furnace off-gas solids should be reclassified as "phosphy water." The commenter maintained that the regulatory status of "phosphy water" for the September 1, 1989 Final Rule was based upon data that understated the generation rate of this process stream by approximately one-half. The commenter further maintained that all furnace off-gas solids waste streams need to be similarly classified to prevent this rulemaking from having inequitable competitive effects between companies.

EPA agrees that the waste stream in question should be defined uniformly across all facilities that generate it. Because the waste stream is generated (and managed) as a solid at the majority of facilities where it is generated, EPA's position is that the waste of interest is a solid. As a result, at the two facilities at which the off-gas solids are collected in a liquid, the high volume and low hazard criteria have been applied to the solids entrained within these liquid wastes, as determined by the settled solids reported by the facilities in their responses to the National Survey. The liquid portions of the wastes, as generated, clearly fail the applicable high volume criterion (average annual generation rate of more than one million metric tons per year).

b. Volume. A commenter stated that the waste stream encompassing furnace off-gas solids from elemental phosphorous production is generated as a liquid at one facility. The commenter concurred that the stream does not meet the high volume criterion. Another commenter argued that because of the relatively low volume of the furnace off-gas solids (4,885 mt/yr), the treatment of these solids as hazardous wastes is reasonable and practicable.

However, one commenter argued that the volume determination must be made using data from all facilities that generate furnace off-gas solids. EPA's proposed determination that the average rate of generation per facility is 4,885 metric tons per year was, they contended, based on incomplete

information because data from facilities that submitted data as Confidential Business Information were not included. The commenter further contended that when all five facilities' furnace off-gas solids material streams are considered, the per plant facility average for the "furnace off-gas solids" is 44,012 metric tons per year, and that this average is well within any statistical margin for error and thus, furnace off-gas solids should be deemed a "high volume" waste.

As stated above, "furnace off-gas solids" generated at two facilities that reported using wet collection systems are defined as the solids removed from the scrubber waters. Furnace off-gas solids generated by three other facilities are in fact solids as generated. Revised (and final) waste generation determinations have been prepared on this basis and are presented in Section III, below. These data show that furnace off-gas solids is not a high volume waste.

c. Hazard. Two commenters addressed the hazard level of furnace off-gas solids from elemental phosphorus production. One commenter stated that the analytical information it provided in the 1989 National Survey demonstrated that the waste stream is not a hazardous waste under the RCRA characteristic of corrosivity. The other commenter contended that samples of the slurry of furnace off-gas solids were found to contain cadmium in concentrations as great as 249 percent of the regulatory level of 100 times the MCL.

Review of EPA's sampling data indicated that this waste passes the low hazard criterion, as discussed in Section III below.

4. Process Wastewater From Hydrofluoric Acid Production

a. Processing Criterion/Waste Definition. Two commenters described the hydrofluoric acid production process. The hydrofluoric acid production process extracts mineral values by reaction of mineral rock with sulfuric acid, creates a calcium sulfate co-product, fluorogypsum, which is slurried to disposal, and circulates process wastewater through a pond system prior to reuse in the processing facility. One commenter noted that additional process wastewater is generated by cleaning the hydrofluoric acid gas.

One commenter argued that EPA's determination to list separately fluorogypsum and process wastewater from hydrofluoric acid production is impractical. The similarities between

the two waste streams are such that at the Calvert City, Kentucky hydrofluoric acid plant, the two are co-mingled at the point of generation. The commenter claimed that the proposed regulation would impose different regulatory requirements on two similar wastes (because fluorogypsum would remain excluded, but process wastewater would not), which from a practical perspective, is unreasonable since the requirements applicable to one will affect the management of the other. EPA should allow process wastewater from hydrofluoric acid production to retain its status under the Bevill exclusion, and should not evaluate fluorogypsum and process wastewater separately, because the two streams are essentially identical.

EPA disagrees. The two waste streams are identifiably distinct (one is a solid and the other a liquid) and are generated by different parts of the production process. The fact that they are currently co-managed does not imply that they should or must be co-managed.

b. Volume. Two commenters disagreed with EPA's proposed determination that process wastewater from hydrofluoric acid production failed to meet the high volume criterion. One commenter questioned the basis for EPA's decision, given the lack of data. The commenter argued that the waste was not included in the 1989 National Survey of Solid Wastes from Mineral Processing Facilities. Therefore, in the September 25, 1989 NPRM, the average rate of generation of process wastewater from hydrofluoric acid was listed as "n/a". Yet EPA determined that this liquid waste stream was not generated in quantities over 1,000,000 metric tons per year through calculations or interpretations of survey results, which were not provided in the background documents. The second commenter argued that EPA may have overlooked or misunderstood the Survey data. In fact, they stated, process wastewater from hydrofluoric acid production is generated at an average rate per facility far in excess of 1 million metric tons per year. The commenter resubmitted its Survey, which includes a process flow diagram of the hydrofluoric acid process. Information is also provided on the volume of process wastewater generated and managed in sections 5 and 6 of the Survey.

One commenter supported EPA's application of the high volume criterion to the reported process wastewater inflows to surface impoundments. The commenter maintained that the flow rate to surface impoundments can be

used to estimate process wastewater flow rates. According to the commenter, data available through plant NPDES records, the commenter claimed, indicate that the flow rate does exceed the 1,000,000 metric tons per year Bevill criterion. Specifically, the most recent water balance, submitted as part of the NPDES renewal application, indicated that the inflow to surface impoundments from the hydrofluoric acid production process was 2,079,400 gallons per day, which is equivalent to 2,900,000 metric tons per year, according to the commenter.

The Agency has carefully reviewed these comments and the revised survey submitted by the commenter and agrees that process wastewater from hydrofluoric acid production satisfies the high volume criterion, as discussed below in section III.

c. Hazard. Two commenters addressed the hazard level of process wastewater from hydrofluoric acid production. One commenter agreed with EPA's proposed determination that the waste is low hazard. Another commenter claimed, however, that EPA's sampling data demonstrated that process wastewater from hydrofluoric acid production exhibits the hazardous waste characteristic of corrosivity (pH values of 1.4 and 1.86), and questioned EPA's failure to remove the waste from the Bevill exclusion. The commenter also urged EPA to consider this data in preparing its Report to Congress.

The Agency generally agrees with the commenter that all relevant hazard data should be considered in the study of the waste stream when preparing the Report to Congress. However, EPA finalized the low hazard criterion in the September 1, 1989 rule and is not currently entertaining comments on it. The Agency's rationale for the low hazard criterion is outlined in 54 FR 36592. EPA's sampling data indicate that this waste does not exhibit a pH of less than 1, and therefore, complies with the low hazard criterion.

5. Process Wastewater From Primary Lead Processing

a. Processing Criterion/Waste Definition. One commenter claimed that EPA must study all process wastewaters from primary lead production, contending that once EPA completes its study, it will realize that these are not wastes, because process wastewaters from primary lead production are reused within the primary lead production circuit. RCRA hazardous waste requirements, therefore, are not appropriate.

In response to this comment, EPA notes that the extent to which this waste

stream is managed through "closed loop" recycling, and hence, is not subject to RCRA requirements, would be addressed in the Report to Congress, if this material were found to meet the Bevill special waste criteria. The waste does not meet these criteria, however, and thus will not be included in the Report to Congress. Nevertheless, if the waste is managed in such a way that it does not meet the definition of a solid waste, then RCRA hazardous waste requirements would not apply.

One commenter urged EPA to clarify its definition of process wastewater from primary lead production so that all waters that are collected from processing operations are specifically included in that definition. The commenter states that the only reason for EPA's including contact cooling water in the definition of process wastewater and not including acid plant blowdown is the arbitrary elimination of one relatively large volume process water stream from the volume amount. In addition, defining this waste as "waters that are uniquely associated with processing operations that have accumulated contaminants to the point that they must be removed from the mineral production system" is confusing. Do the waters need to be removed from the system, or do the contaminants need to be removed from the waters?

EPA responds that the reasons for distinguishing between different aqueous waste streams generated in the mineral processing industry have been discussed at length in previous rulemaking notices (54 FR 15318, April 17, 1989; and 54 FR 36592, September 1, 1989.) Briefly, EPA believes the distinctions it has made are appropriate based on the available information concerning the waste characteristics and points of generation in the process. As explained in the preamble to the September 1, 1989 final rule, EPA has considered acid plant blowdown and other wastewaters from primary lead processing to be two distinct wastes because these wastes have substantially different characteristics. EPA believes that the definition of wastewater clearly indicates that it is the wastewater that needs to be removed from the system because it is the wastewater and not the contaminants to which the definition refers.

b. Volume. One commenter stated that the volume EPA used as a basis for proposing to eliminate process wastewater from primary lead production was less than the actual amount generated at its plants. The commenter argued that this incorrect determination was a result of artificial

limitations on the actual amount of water that could be reported as "process wastewater" in the National Survey of Solid Wastes from Mineral Processing Facilities, where EPA only solicited information on processing units associated with the generation of process waters. According to the commenter, EPA inappropriately reduced the number of streams counted toward the volume cutoff by focusing on only a few process water streams. The commenter maintained that its internal data indicate that the volumes of process wastewater from primary lead production generated by its plants exceed the 1,000,000 metric ton threshold. Another commenter was dismayed by EPA's conclusion that process wastewater from primary lead processing was low volume, because there is no way to verify the numerical data used to arrive at the average of 785,562 metric tons per year.

EPA responds that the National Survey requested data on the quantity of wastewater generated by all mineral processing operations at each facility surveyed, and that the responses provided indicate that process wastewater is not a large volume waste. EPA is limited in the amount of information it can present on the waste generation calculations used to develop the September 25 proposal because one of the commenters has requested Confidential Business Information status for their information.

c. Hazard. One commenter objected to EPA's on-site sampling methods. If, in the survey, the Agency requests information on process wastewaters, other waste streams, such as process water from sintering, should not be sampled for the hazard determination.

Because of the scheduling constraints imposed by the Court of Appeals, EPA's waste sampling effort had to be conducted before the final contours of the beneficiation/processing boundary had been established. Thus, EPA sampled wastes that are, in hindsight, outside the scope of the current rulemaking. The analytical results for wastes that are outside the scope of this rulemaking (i.e., process water from sintering) have not been used in evaluating compliance with the low hazard criterion. Instead, EPA has used results from samples of wastes that are the subject of this rulemaking (i.e., slag granulation water) in determining that this is not a low hazard waste.

6. Sulfate Process Waste Acids From Titanium Dioxide Production

a. Hazard. One commenter stated that sulfate process waste acids from its facility meet EPA's low hazard criterion

and should therefore be retained in the Bevill exclusion. The commenter disputed the selenium concentrations published in the proposed rule, stating that if EPA asserts that the sample exceeding the criterion comes from the commenter's facility, then the Agency is mistaken. The commenter notes that the sulfate process waste acid sample was essentially analyzed three times: once as is, once using the SPLP, and once for EP toxicity. In the leaching procedures (SPLP and EP Toxicity) the sample is filtered and the filtrate analyzed. The solids (if any) are leached and the leachate is analyzed. Since there were no solids, the three analyses should have agreed. In actuality, the concentration for selenium was below the detectable limit for two of the samples, while selenium showed up on the SPLP sample at a level of 6.3 mg/l. The commenter retained a portion of the sample that was collected for EPA and had it analyzed for EP Toxicity. Selenium concentrations were below detectable limits. The commenter also claimed to have made facility improvements which have caused sulfate process waste acids to become less acidic. The overall average pH from 1984 through 1988 was 1.02.

EPA agrees that the reported SPLP selenium concentration that is questioned by the commenter does appear to be anomalous, but believes that the other data, including the pH data, collected during EPA's sampling visits are accurate and provide a sufficient basis for applying the low hazard criterion to this waste stream. The average pH data provided by the commenter are not relevant to this rulemaking because average pH values do not have meaning and are not consistent with the data requirements specified in the low hazard criterion for the pH test.

7. Sulfate Process Waste Solids From Titanium Dioxide Production

a. Volume. Two commenters urged EPA to reconsider its preliminary conclusion that sulfate process waste solids fail to meet the high volume criterion. One commenter indicated that sulfate process waste solids are generated, in the form of a slurry, at a rate of 86,800 short tons (78,728 metric tons) per year as indicated in the November 21, 1988 comments and the response to EPA's National Survey of Solid Wastes from Mineral Processing. Another industry commenter claimed that EPA miscalculated the volume of sulfate process waste solids generated annually. The commenter stated that a total of 49,900 metric tons are handled. The values used for suspended solids

were from the commenter's quarterly samples, which have been taken since 1984. According to the commenter, these volumes confirm those given in comments provided in response to the October 10, 1988 proposal of 85,000 tons/year, which included chloride wastes. The commenter further indicated that these wastes, together with the treatment residuals, will bring the total solids handled to well over 500,000 tons per year.

It is EPA's position that the waste of interest is the dewatered waste solids taken from the drum filter at one facility, rather than the slurry from the clarifier, as suggested by the commenter, because the available information indicates that the primary purpose of the dewatering operation performed by the drum filter is to return product solution to the production process and, thus, it resembles a processing operation more closely than it does a waste treatment operation. Accordingly, EPA has used the reported quantity of drum filter cake rather than the quantity of slurry sent to the drum filter in evaluating the compliance of this waste stream with the high volume criteria. After further analysis, the Agency has concluded that the revised waste generation rates reported by the second commenter are reasonable, though the underlying data are not readily apparent in the commenter's response to the National Survey. Revised (and final) waste generation estimates, which indicate that this is not a high volume waste, are presented in section III, below.

D. Relationship of the Proposed Rule to Subtitle C of RCRA

1. The Mixture Rule

a. General comments. In their comments on the September 25 proposal, a number of commenters objected to the Agency's interpretation of the mixture rule in the September 1, 1989 final rule and questioned what the impact of the mixture rule would be upon the Bevill determinations contained in the September 25 proposal. Commenters requested that EPA reconsider its interpretation of the mixture rule as it applies to Bevill excluded wastes that are mixed with relatively small volumes of non-excluded wastes. Commenters noted that a mixture of a Bevill excluded waste and a characteristically hazardous waste would be considered a non-excluded hazardous waste. Particularly in the phosphate industry, commenters objected to this classification, arguing that if the non-excluded waste in a mixture shares the

same hazardous characteristic as the Bevill excluded waste, the Bevill status of the resulting mixture should not be withdrawn.

Commenters also requested that the Agency clarify the mixture rule in a number of ways. First, they suggested that EPA clarify whether mineral processing wastes that are temporarily excluded from RCRA Subtitle C requirements may be used (e.g., as air pollution control scrubber water) in production units that do not generate Bevill wastes, and similarly whether non-Bevill excluded wastes may be used in production units that generate Bevill excluded wastes. In particular, commenters requested clarification of the status of a Bevill-excluded waste that is used in a non-Bevill production unit when the waste exhibits a characteristic or hazardous waste after use in the non-Bevill operation only because the Bevill waste that is an input to the non-Bevill process exhibits the hazardous characteristic.

In addition, commenters argued that the October 26, 1989 supplement to the proposed regulations for burning of hazardous waste in boilers and industrial furnaces (54 FR 43718) conflicts with the interpretation of the mixture rule established in the September 1, 1989 final rule. The proposed rule on burning states that residues would remain within the Bevill exclusion if the character of the residual is determined by the Bevill material. In contrast, the September 1 final rule states that any material burned with a low volume, non-Bevill waste would be regarded as hazardous even if the characteristic exhibited is the same as the characteristic of the Bevill waste. Commenters requested that the Agency reconcile these conflicting interpretations of the mixture rule by adopting the approach in the proposed rule on burning.

b. Comments related to phosphoric acid production. Commenters from the phosphoric acid industry requested that the Agency provide a supplementary explanation of its mixture rule position as it relates to phosphoric acid process wastewaters, and allow for public comment. The ammoniated phosphate fertilizer (APF) process utilizes process wastewater as an influent and then returns it to the originating phosphate complex pond. One commenter contended that APF process wastewater does not exhibit hazardous characteristics when generated separately from a facility that produces phosphoric acid. Therefore, the commenter argued, APF wastewater must not contribute the hazardous

characteristic found in phosphoric acid process wastewater, and thus it should not trigger the removal of phosphoric acid process wastewater from the Bevill exclusion. Phosphate industry commenters urged the Agency to reject any interpretation of the mixture rule that would remove phosphate complex pond water from the Bevill exemption because it contained process wastewater used in the APF process.

Commenters urged the Agency to adopt an interpretation of the mixture rule consistent with the position advocated in the October 26, 1989 proposal (54 FR 43718) on burning, and allow small amounts of sulfuric acid process wastewater to be combined in the general process wastewater system without the removal of the entire system from the Bevill exclusion. Phosphate industry commenters objected to the mixture rule interpretation contained in the September 1, 1989 final rule in which the addition of sulfuric acid process wastewater to a phosphoric acid complex's water recirculation system would result in the entire system being removed from the Bevill exclusion. According to one commenter, although sulfuric acid process wastewater displays the same characteristic of corrosivity as phosphoric acid process wastewater, the addition of sulfuric acid process wastewater may constitute less than one percent of the daily wastewater generated at an average facility, and thus should not affect the Bevill status of the entire waste stream.

c. Comments related to hydrofluoric acid production. One commenter requested clarification on the use of hydrofluoric acid process wastewater in an aluminum fluoride plant, and asked the Agency to address the use of Bevill excluded characteristic wastes as a source of influent to other processes. The commenter argued that hazardous characteristics displayed by water existing the aluminum fluoride facility are solely from hydrofluoric acid (HF) process wastewater. Thus, the commenter asserted, the Agency's interpretation of the mixture rule should have no bearing on whether HF process wastewater remains within the Bevill exclusion. The commenter requested that if the Agency interprets the mixture rule such that the use of process wastewater in the aluminum fluoride plant results in all water in the pond where that water is finally disposed being removed from the Bevill exclusion, EPA should supplement the proposed rule with its rationale for such a decision, and allow for additional public comment.

d. Comments related to coal gasification. One commenter objected to the Agency's possible determination, based upon the mixture rule, that process wastewater from coal gasification is hazardous. The commenter asserted that if process wastewater was disposed of immediately rather than used in a cooling tower, the waste stream would not demonstrate hazardous characteristics; however, important water conservation and disposal practices could not then be practiced. Thus, the commenter concluded, the Agency should not withdraw the Bevill exclusion for coal gasification process wastewaters based upon hazardous characteristics when those characteristics result from appropriate water conservation and disposal practices.

e. Response to comments. In response to these questions and issues raised by commenters regarding the mixture rule, EPA makes the following observations. First, like the criteria established for identifying wastes eligible for the Bevill exemption, the Agency's position on the mixture rule was finalized on September 1, 1989 and is not open for comment as part of this rulemaking. Second, the Agency plans to add comments to the docket for the October 26th notice regarding the alleged contradiction between the October 26, 1989 (54 FR 43718) supplement to the proposed regulations for burning of hazardous waste in boilers and industrial furnaces and the mixture rule in the September 1, 1989 final rule. Third, wastes from operations that are not mineral processing operations based on the definition of mineral processing contained in the September 1 final rule are not mineral processing wastes regardless of the nature of any inputs (including Bevill wastes) to that process. Finally, the mixture rule is not a factor in today's decision to retain the Bevill exemption for process wastewater because Bevill wastes are being evaluated, not mixtures.

2. Land Disposal Restrictions

Two commenters expressed concern about the impact of Land Disposal Restrictions (LDRs) on wastes newly removed from the Bevill exclusion. One commenter stated that the Agency cannot accurately estimate the economic impact of the proposed rule until the "Third Third" rule is promulgated.

The second commenter requested that the Agency consider mineral processing wastes removed from the Bevill exclusion, "newly identified" wastes

under the LDRs. Since "chloride-ilmenite" wastes from titanium production were not considered RCRA hazardous wastes on November 9, 1984, the date of HSWA enactment, the commenter asserted that they must be considered newly identified wastes. The commenter argued that without terming these wastes newly identified, the facility would unfairly have to meet the hammer date of August 8, 1990 for California List wastes. Facilities that generated a waste subject to California List restrictions on underground injection were granted a two year national capacity variance during which they could either plan new capacity or submit a "no-migration" petition. The commenter maintained that equal opportunity must be granted to mineral processing facilities to develop new capacity or submit no-migration petitions.

In addition, the commenter asked that the Agency delay the applicability of the LDRs to chloride-ilmenite wastes by determining that such wastes are beneficial wastes and subject to further study by EPA. This would allow the Agency, according to the commenter, additional time to evaluate the protectiveness of underground injection for chloride-ilmenite wastes.

EPA responds that, as explained in the September 1, 1989 final rule and in the proposed land disposal restrictions (LDRs) for the third third schedule wastes (54 FR 48372, 48373; November 22, 1989), the Agency believes the wastes that are brought under Subtitle C regulation by today's final rule to be "newly identified" wastes for purposes of establishing LDR standards under section 3004(g)(4) of RCRA. (54 FR 36624). Accordingly, EPA has proposed that newly identified mineral processing wastes not be subject to the BDAT standards that the Agency proposed on November 22, 1989 (54 FR 48372) for characteristic hazardous wastes. As required by RCRA section 3004(g)(4)(C), EPA plans to study the mineral processing wastes removed from the temporary exemption to determine BDAT for ones that exhibit one or more characteristics of a hazardous waste. (See 54 FR 48493.) The Agency has taken comment on this issue in connection with the LDR proposal and will address the issue, including the costs, if any, of requirements when it promulgates that rule. Finally, the reader should refer to the discussion on individual waste streams and process definitions for clarification of the status of chloride-ilmenite wastes.

3. Retroactive Application of Subtitle C Requirements

One commenter expressed concern over the retroactive application of Subtitle C to chromium-contaminated fill, and criticized the Agency for not specifically considering chromium-contaminated fill in redefining the scope of the Bevill exclusion, the economic impact screening, or the sampling effort. The commenter asserted that EPA should make a separate Bevill determination regarding the status of chromium-contaminated fill. The commenter wished to confirm that chromium-contaminated fill already in a lined containment facility would not be affected by the loss of Bevill exempt status. In addition, the commenter stated that if fill excavated after the effective date of the rule was subject to RCRA Subtitle C regulation, it could impose a severe economic burden upon the commenter.

The commenter argued that samples gathered by the Agency in the summer of 1989 from operating plants are not representative of the chromium contaminated fill in question at the commenter's facility. The commenter maintained that the conditions at the facility demonstrate that the waste stream satisfies the low hazard criterion. Due to its mixture with soils and other non-hazardous materials, long *in situ* residence time, and weathering, the chromium fill material may be of a different physical and chemical nature than the wastes from chrome ore processing generated at operating plants, according to the commenter. Although soil samples from the initial excavation of this waste stream exceed the EP toxicity levels for chromium, more recent samples and ground-water samples have not been EP toxic. The commenter concluded that retaining chromium contaminated fill within the Bevill exclusion would allow for hazard testing of the material and adequate time to develop treatment options.

Based on the available information, EPA believes that chromium-contaminated fill is not a separate, discrete mineral processing waste because it may be, and likely is, as noted by the commenter, comprised of a mixture of mineral processing waste, non-mineral processing waste, and non-waste (e.g., soil) materials. In addition, EPA observes that the untreated residue from roasting/leaching of chrome ore is not low hazard and, thus, is not eligible for the Bevill exemption. As a result, the comments on the status of chromium-contaminated fill are only germane if the fill contains treated residue from roasting/leaching of chrome ore similar

to that which is currently being generated, which will need to be determined on a case-by-case basis. Because the composition of the fill and, therefore, the relevance of any data on the chemical composition of the fill is unclear, the Agency believes inclusion of such data in reaching a conclusion on the status of treated residue from roasting/leaching of chrome ore would be both inappropriate and impractical.

E. Costs and Impacts of the Proposed Rule

1. Technical Feasibility

Two commenters claimed that it would be technologically infeasible to manage their wastes according to subtitle C requirements. One commenter argued that it would be technologically infeasible to manage fluorogypsum or process wastewater from hydrofluoric acid production according to the minimum technology requirements or the LDRs. Another commenter maintained that insufficient land is available to retrofit existing waste management systems in order to manage phosphate rock processing wastes under subtitle C and the LDRs.

Because both of these wastes are retained within the Bevill exclusion by either the September 1 final rule, or today's rule, they will be studied in the Report to Congress which will address, among other issues, the technical feasibility of managing Bevill wastes under subtitle C of RCRA.

2. Compliance Cost Estimates

A commenter disapproved of EPA's analysis of economic impacts, contending that the Agency should include the costs due to corrective action requirements and land disposal restrictions (LDRs), because by ignoring these costs, EPA has underestimated the total costs of compliance. The difficulty of estimating these costs is, the commenter claimed, no justification for assuming zero costs for these requirements. Two of the wastes proposed for withdrawal from the Bevill exclusion are high-volume, and for those materials, LDR treatment is likely to be very costly. In addition, corrective action may impose high costs at some facilities.

EPA did not estimate the costs associated with land disposal restrictions because it is not possible, nor is it Agency policy, to estimate the effects of imposing regulations that do not yet exist. These economic impacts, if any, will be addressed by the Agency when it promulgates land disposal restriction treatment standards.

Nonetheless, EPA has, in both the September 25 proposed and today's final rule, estimated the costs associated with stabilizing residues from liquid waste treatment so as to make them amenable to land disposal. Therefore, while it is not possible, at present, to define BDAT (and thus, LDR impacts) for any wastes removed from the Bevill exclusion, EPA has attempted to capture some of the likely costs associated with future waste disposal activities. Prospective corrective action costs are by nature site-specific and difficult to estimate. Currently available information does not allow EPA to estimate these costs with confidence. To the extent, therefore, that any additional facilities are brought into the subtitle C on-site waste management system by this rule, EPA may have underestimated cost and economic impacts. The reader is referred to section VII below for additional discussion of the specific features of the methodology employed.

A commenter also indicated that the Agency also should recognize that commodity producers cannot pass compliance costs on to product consumers.

EPA responds that, in the Economic Impact Analysis provided in the September 25 NPRM, the Agency considered, on a commodity specific basis, the extent to which potential compliance costs could be passed through to consumers. As indicated in this analysis (and restated in Section VII, below) EPA believes that the commenter's suggestion that all mineral processors in all commodity sectors are "price takers," having no ability to pass through cost increases and therefore having to absorb them internally, is demonstrably untrue.

One commenter maintained that in order to accurately estimate the economic and regulatory impacts of the proposed rule, EPA must first resolve the issues of the "mixture rule," retroactivity and regenerated wastes. In particular, one commenter charged that EPA has not considered, as required by Executive Order 12291, the economic impact of excluding chromium contaminated fill from Bevill status. Also, to truly identify the economic and regulatory impacts of the proposed rule, the Agency should obtain information from all inactive facilities.

EPA responds that these issues were addressed in the September 1, 1989 final rule and are not relevant to this rulemaking. To briefly restate the positions outlined in that final rule, however, EPA maintains that Subtitle C regulations will not be imposed retroactively. However, active management of an historical

accumulation of waste will subject a facility to Subtitle C regulations if the material exhibits one or more characteristics of a hazardous waste.

3. Compliance Cost, Market, and Economic Impact Estimates

a. Treated residue from roasting/leaching of chrome ore. According to one commenter, if the Agency imposes subtitle C requirements for chrome ore processing waste used as fill, on-site treatment of the fill will become burdensome and expensive. Also, if future excavated fill must be managed as a hazardous waste, depending on the amounts of hazardous waste involved, a severe economic burden may result without any commensurate gain in health or environmental benefits. In addition, loss of Bevill status for the chromium-contaminated fill at a City of Baltimore wastewater treatment plant in Patapsco, Maryland, may prematurely interrupt the process of developing treatment alternatives.

The Agency does not view this issue as relevant to the status of the 20 waste streams addressed in today's rule because it is not clear that the fill material is one of the mineral processing wastes covered by today's rule.

Commenters contended that the cost of compliance with RCRA subtitle C for inactive facilities should be addressed by EPA. A commenter maintained that the docket should include information on existing inactive waste sites as well as the number of chrome ore "fill" sites that will be affected by the proposed rule.

EPA responds that inactive facilities were not sampled because they are not pertinent to this rulemaking.

Several commenters disagreed with the compliance cost estimate for residue from roasting/leaching of chrome ore. One commenter argued that the waste should be retained in the Bevill exemption because of the significant costs that corrective action requirements could impose. According to the commenter, disposal and treatment costs will be at least an additional \$2 million over the Agency's estimate of compliance costs. Another commenter, however, claimed that because its waste stream is treated on-site under the facility's NPDES permit and the treated waste is non-hazardous, there is no need for its facility to modify in any way current treatment or disposal practices, and thus there is no cost for compliance if the waste stream is removed from the Bevill exclusion.

One commenter contended that the impact of the removal of residue from roasting/leaching of chrome ore from the Bevill exclusion was incorrectly

estimated because EPA did not fully evaluate all of the information provided in the National Survey of Mineral Processors. In addition, not all of the samples taken from the facility by EPA were analyzed.

EPA responds that it used available Method 1312 data to evaluate compliance with the low hazard criterion. Because of time constraints, the Agency analyzed the samples collected on an "as generated" basis prior to analyzing those collected on an "as managed" basis; the former are directly pertinent to and necessary for the Bevill rulemaking process while the latter are primarily of use in preparing the Report to Congress. Since publication of the September 25 proposal, however, the Agency has had an opportunity to analyze additional samples. Based upon these new analyses and analyses performed in support of the September 25 proposal, the Agency agrees that the treated residue from roasting/leaching of chrome ore does not exhibit hazardous characteristics and hence, would not be subject to new regulatory requirements and associated costs if removed from the Bevill exclusion. The treated waste is, however, being retained under the Bevill exemption because it is both low hazard and high volume.

b. Process wastewater from coal gasification. EPA received several comments arguing that removing process wastewater from coal gasification from the Bevill exemption would impose severe economic impacts and would not in any way enhance the environment. The commenters maintained that the additional \$1 million in annual compliance costs (commenter's estimate) are unreasonable and would accomplish nothing except for increasing compliance costs, in light of the reuse of the fluids in the same industrial process. EPA should not, they stated, impose economic burdens upon the industry. Also, one commenter asserted that North Dakota will lose substantial amounts of tax revenues and employment opportunities if RCRA subtitle C regulation makes it economically infeasible to continue operating the Great Plains facility. Commenters representing the electric utility industry claimed that additional regulatory controls under RCRA over wastewater discharges from coal gasification are unnecessary and burdensome to the electric utility industry because the wastewater discharges are subject to NPDES permits under the Clean Water Act.

As discussed in section III, below, based upon further data in the form of a revised survey response provided by the facility in question, EPA now concludes that the waste stream does satisfy the high volume criterion and so will be retained for further study. Discussion of the prospective economic impacts of removing the waste from the Bevill exclusion as part of this rulemaking is, therefore, moot.

c. Furnace off-gas solids from elemental phosphorus production. One commenter agreed that due to the low cost of compliance with subtitle C regulations, treatment of furnace off-gas solids from elemental phosphorus production as hazardous wastes is reasonable and practicable. One elemental phosphorus industry commenter asserted that this company's waste stream is not hazardous, and therefore, no compliance costs will be incurred. EPA was unable to confirm this for the particular facility in question, and the commenter-supplied data was insufficient to confirm that the facility's waste will not exhibit a hazardous characteristic. The Agency has, accordingly, maintained its conservative approach to estimating potential cost and economic impacts associated with this rule by assuming that the waste is hazardous and that the facility will be affected by the rule even though this may not turn out to be the case.

d. Process wastewater from hydrofluoric acid production. One commenter reported that because of the co-mingling of fluorogypsum and process wastewater at the Calvert City, Kentucky plant, the annual estimated flow would be 2,900,000 metric tons per year, and not 103,528 metric tons per year as assumed in the Technical Background Document "Development of the Cost and Economic Impacts of Implementing the Bevill Mineral Processing Waste Criteria." Because these volumes differ by an order of magnitude, the effect on EPA's estimation of compliance costs for hydrofluoric acid waste streams subject to subtitle C at a Calvert City plant would be significant. As discussed below in section III, based upon further data in the form of a revised survey provided by one of the facilities in question and detailed written comments from the other, it appears that the waste stream meets the high volume criterion and the compliance costs that commenter claimed would be significant will in fact not be incurred.

e. Sulfate process waste solids from titanium dioxide production. One commenter questioned EPA's conclusion

that the proposed rule would have no economic impact on the commenter's facility. The commenter understands that under EPA's policy, non-excluded wastes which are disposed prior to the effective date of the rule which would make them subject to Subtitle C requirements would not be subject to direct Subtitle C controls such as closure and post-closure care requirements. In the commenter's case, solid wastes from the sulfate and chloride processes were accumulated in surface impoundments until October of 1988. Since that time, however, only non-hazardous wastes have been added. The commenter assumes that consistent with EPA's policy, these impoundments will not be subject to closure and post-closure requirements.

EPA responds that the commenter is correct in his assumption as long as the wastes previously placed in the surface impoundments are not actively managed after the effective date of today's rule. As discussed in the September 1, 1989 final rule, EPA will not be applying Subtitle C requirements retroactively. For further discussion of this issue see 54 FR 36592.

f. Wastes from phosphoric acid production. Commenters from the phosphate rock processing industry contended that the industry could not competitively withstand the costs of complying with Subtitle C or the LDR requirements. They contended that it is infeasible, if not impossible, to manage process wastewater from phosphoric acid production in compliance with subtitle C requirements, especially in view of the upcoming land disposal restrictions on characteristic wastes. It is essential that the Agency retain process wastewater from phosphoric acid in the Bevill Amendment exclusion.

As discussed below, EPA believes that process wastewater from phosphoric acid production complies with the high volume and low hazard criteria and therefore the waste stream is today retained within the Bevill exclusion. The need for and technical and economic feasibility of subjecting this material to Subtitle C requirements will be addressed in the Report to Congress.

F. Requests for Clarifications/Technical Corrections on the September 1, 1989 Final Rule

One commenter brought to the Agency's attention a difference between the preamble and rule language in the September 1, 1989 final rulemaking. In the preamble to the final rule, the Agency states that "roasting and autoclaving are considered beneficiation operations if they are used to remove

sulfur and/or other impurities in preparing an ore or mineral, or beneficiated ore or mineral, for leaching." (54 FR 36818) In addition, the commenter indicated that the Agency states that

chlorination is sometimes used prior to gold leaching operations in a procedure functionally identical to roasting and autoclaving (i.e., to change a sulfide ore to a chemical form more amenable to leaching). EPA recognizes that this type of pretreatment operation may be an integral part of leaching operations, and accordingly, considers non-destructive chlorination of ores, minerals, or beneficiated ores or minerals when used as a pretreatment step for leaching, to be a beneficiation operation. (54 FR 36818)

The commenter noted, however, that the language of the rule differs slightly and refers specifically only to "roasting in preparation for leaching." The commenter requested that EPA clarify the language of the September 1 final rule so that pretreatment autoclaving and chlorination, as well as roasting, are clearly considered beneficiation operations.

The Agency has reviewed the language of the September 1, 1989 final rule and agrees with the commenter that the rule could be read so that pretreatment autoclaving and chlorination might not be considered beneficiation activities. As discussed in the preamble, this was not the Agency's intention. Thus, the language of § 261.4(b)(7) has been revised in today's rule to read

"For purposes of this paragraph, beneficiation of ores and minerals is restricted to the following activities: * * * roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching * * *

G. Concerns With Administrative Procedures

Commenters on the proposed rule made a number of requests to the Agency regarding the procedures EPA has followed for administering the mineral processing rulemakings. One commenter requested that EPA defer final action on the proposed rule pending: (1) judicial review of the September 1, 1989 final rule; (2) clarification of the applicability of the rules to inactive processing facilities; and (3) a review of the mixture rule. Another commenter requested that the Agency publish its rationale and allow for public comment if EPA decides that process wastewater from the production of animal feed, ammoniated phosphate fertilizer, and phosphate complex ponds are not within the scope of the Bevill exclusion. The same commenter asked

that all documents used for previous rulemakings be included in the current docket (MW2P). One commenter asked EPA to assess the analytical results of the hazard sampling data and carefully compare them with the commenter's own split samples. Finally, one commenter sought additional time for public review and comment on the background documents for the high volume criterion. The commenter claimed that the documents were not available for comment before the September 25th proposed rule, yet support the criterion made final in the September 1st rule.

Because of court-imposed deadlines, the Agency is compelled to promulgate today's final rule on an accelerated schedule (signature by January 15, 1990). In order to ensure that all information compiled for previous rulemakings is fully available to the public, the Agency has incorporated by reference previous mineral processing waste dockets, except for the final rule relating six smelter wastes (53 FR 35412, September 13, 1988), into the current docket. EPA believes that the public has been provided an adequate opportunity to comment on this rulemaking and, therefore, an additional comment period is not required. In addition, EPA believes clarification of the applicability of the rules to inactive facilities and review of the mixture rule are not required or appropriate in the context of this rulemaking because EPA's position on these issues was established in the September 1, 1989 final rule.

III. Revised Application of the Final Criteria for Defining Bevill Mineral Processing Wastes

This section of the preamble presents clarifications to the waste stream definitions used in the proposal, revised waste volume data and additional discussion of selected data used in evaluating compliance with the low hazard criterion. Only those waste streams for which noteworthy changes have been made to the proposal are discussed in detail. A summary of the Bevill status of the 20 mineral processing wastes is also presented.

A. Clarification of Waste Stream Definitions

Based on careful review of public comments, and additional analysis of previous EPA studies and company responses to the 1989 National Survey of Solid Wastes from Mineral Processing Facilities, the Agency has made the following decisions concerning the definition of candidate Bevill waste streams, related process descriptions,

and the numbers of facilities generating each waste.

1. Treated Residue From Roasting/Leaching of Chrome Ore

The residue from roasting/leaching of chrome ore of concern in this rule is the settled residue following treatment of the slurried leaching waste. Both facilities that reported generating residue from roasting/leaching of chrome ore pump their untreated waste directly to an onsite treatment unit. In contrast to the September 25 NPRM, this final rule temporarily retains the exclusion from hazardous waste regulations for only those treated solids which are entrained in the slurry as it leaves the treatment facility and which settle out in disposal impoundments. Available data indicate that this mineral processing waste is both low hazard and high volume. As indicated in the proposal, the untreated waste is not low hazard.

2. Process Wastewater From Coal Gasification

The definition of process wastewater from the coal gasification operation has been revised to clarify that process wastewater from coal gasification is the "stripped gas liquor" generated during the gasification of the coal. This process wastewater may be run through several subsequent storage, treatment, and reuse operations. This stripped gas liquor was originally not nominated by the facility because of a misunderstanding about its status as a solid waste. In comments provided on the September 25 proposal, however, the company has requested that the entire stripped gas liquor stream be considered "process wastewater" rather than just the portion reported previously. EPA believes that the stripped gas liquor is a solid waste at the one facility that generates the waste, and has evaluated the extent to which the material complies with the final Bevill criteria accordingly. Because the facility's response to the 1989 National Survey indicates that the process stream, in part, is stored in surface impoundments, EPA does not consider its management system to be closed-loop recycling, meaning that for present purposes, the Agency believes this material is not eligible for the closed-loop exemption. However, this does not affect the Bevill status of the waste.

3. Slag Tailings From Primary Copper Processing

EPA has identified, as a result of public comments, an additional facility that processes slag from primary copper processing and thereby generates slag

tailings. This increases the number of facilities known by EPA to generate slag tailings to three.

4. Furnace Off-Gas Solids From Elemental Phosphorus Production

This waste stream will continue to be defined, depending on the facility in question, as either the solid or semi-solid material generated from the phosphorus furnaces or as the entrained solids contained within scrubber waters generated from cleaning furnace off-gases. In no instance is the scrubber water itself considered to be the candidate Bevill waste because it is not a high volume waste.

5. Process Wastewater From Phosphoric Acid Production

This waste stream, for purposes of determining Bevill status, includes the following process streams resulting from phosphoric acid plant operations: water from phosphoric acid production operations through concentration to merchant grade acid; phosphogypsum transport water; phosphogypsum stack runoff; process wastewater generated from the uranium recovery step of phosphoric acid production; process wastewater from animal feed production operations that qualify as mineral processing operations based on the definition of mineral processing that the Agency finalized on September 1; and process wastewater from superphosphate production. As proposed on September 25, phosphoric acid process wastewater is high volume and low hazard waste and is, therefore, retained in the exemption, although the data used to arrive at this conclusion have been modified in response to public comments.

6. Chloride Process Waste Solids From Titanium Tetrachloride Production

The "chloride-ilmenite" process reportedly employed by three titanium tetrachloride production facilities, for purposes of this rule, continues to be considered a processing operation. The primary reason for this determination is the understanding that during this "two-stage" process, the operation destroys the identity of the mineral, produces titanium tetrachloride gas (a mineral product), and generates wastes which are functionally identical to the wastes generated by the chloride process at the other six titanium tetrachloride facilities. The fact that the ore being utilized is of a different type and grade is not justification for classifying the operation as beneficiation. In addition, by the company's own admission, wastes from each part of the "two-step

beneficiation-chlorination" process are not separable. Accordingly, the wastes generated by this chlorination process are subject to EPA's reinterpretation of the Mining Waste Exclusion that was finalized on September 1 and this rulemaking. Assessments of volume and hazard performed both for the September 1 final rule and the September 25 proposal included "chloride-ilmenite" facilities as well as other chloride process facilities. These previous assessments, as well as updates made in support of this final rule, indicate that chloride process waste solids from titanium tetrachloride production are high volume and low hazard and, therefore, are retained in the exemption. Other wastes generated by the chloride process (i.e., wastes other than the chloride waste solids) were classified as non-Bevill mineral processing wastes by the September 1 rule.

B. Compliance with the High Volume Criterion

Revised waste generation rate estimates for the 20 conditionally retained wastes are presented in Table 1. Many of these estimates have been revised since publication of the September 25 proposal, primarily because of three factors. First, revised definitions or clarifications of what constitutes the individual waste streams have led the Agency to in some cases include, remove, or otherwise revise data related to volume estimates for particular waste streams.

Second, EPA has revised estimates in a limited number of cases in direct response to new data or other information (e.g., clarification of survey responses) contained in public comments on the proposal.

Finally, EPA has, for this final rule, revised one average annual per-facility waste volume presented in Table 1, not because of new information, but because the Agency has included confidential business information (CBI) in the calculation, after determining that the data could be aggregated and used without disclosing proprietary information. The Agency notes that this estimate is essentially the same as that used to make the high volume determination for the proposed rule; the average annual per-facility waste volume presented in Table 1 of the proposal did not, however, include data from the CBI facilities. In cases where proprietary information would be revealed by presenting in Table 1 the actual average based on CBI data, the Agency has either completely withheld the data from the table (i.e., where the only two facilities in the sector both

requested confidentiality, e.g., chrome ore and titanium dioxide sulfate process), has presented the sole non-CBI facility volume (i.e., where only one of several facilities is non-CBI, e.g., copper calcium sulfate sludge and lead process wastewater) or has published an average based on the non-CBI data (i.e., where only one of several facilities in CBI, e.g., steel wastes).

The Agency wishes to reiterate that the fundamental source of data for evaluating compliance with the high volume criterion has been, and continues to be, the 1989 National Survey. In order to account for market fluctuations, EPA allowed facilities to submit information in public comment on the September 25 proposal explaining, as necessary, that the reported generation rates for 1988 did not accurately reflect typical waste generation rates at the facility. In response, a small number of facilities chose to revise their survey responses, as noted above, but none claimed that relying upon 1988 data *per se* would produce an inaccurate result. Accordingly, EPA has, for this final rule, relied exclusively, with one exception described below, on its own in-depth analysis of written responses to the National Survey to evaluate waste-by-waste compliance with the high volume criterion.

1. Treated Residue From Roasting/Leaching of Chrome Ore

With the clarification that the waste in question is the treated residue and not the waste as it leaves the leach operation, EPA has reviewed the CBI data reported for the treated waste and confirmed that the waste stream as defined is, indeed, a high volume waste solid. Both facilities generate the non-liquid Bevill waste at rates in excess of 45,000 mt per year.

2. Process Wastewater From Coal Gasification

With the determination that process wastewater from coal gasification is stripped gas liquor, EPA has reviewed the quantities of the total process water generated at the facility and confirmed that the waste stream as redefined is, indeed, a high volume liquid waste.

3. Calcium Sulfate Wastewater Treatment Plant Sludge From Primary Copper Processing

The Agency has reviewed its analysis of the volume data provided for this waste stream in the National Survey. EPA has determined that the waste volume presented in the proposed rule for the non-CBI facility is not representative of the calcium sulfate

sludge, but of the sludge and the combined transport liquid. The waste volume used to evaluate the status of the waste, therefore, has been revised to reflect the quantity of actual sludge generated. These revised numbers are consistent with (1) the estimates made for previous proposed and final rules regarding the reinterpretation of the Bevill exclusion and (2) volume estimates presented in the facility's comments regarding those proposals. EPA notes that a review of the data from the CBI facility leaves some doubt as to the point in the process at which the residual waste stream is the Bevill waste, and therefore which waste volume should be used. The Agency, however, has confirmed that even a conservative calculation using the smallest volume reported still yields an average which exceeds the 45,000 metric ton threshold for the high volume criterion. EPA concludes, therefore, that the waste stream meets the high volume criterion.

4. Slag Tailings From Primary Copper Processing

With the addition of the third facility to the group of facilities generating this waste, the Agency reviewed the available survey data and revised the industry average generation rate for slag tailings to take into account for all three facilities that generate the waste. After revision of the quantity estimates, the waste stream continues to pass the high volume criterion.

5. Furnace Off-Gas Solids From Elemental Phosphorus Production

Confidential Business Information for three elemental phosphorus facilities was included in the recalculation of the average waste volume presented in Table 1 of today's rule, and this value was used to evaluate compliance with the high volume criterion. These CBI data were also used to evaluate compliance with the high volume criterion for the September 25 proposal, but were not presented in the NPRM in an effort, which upon closer examination proves unnecessary, to protect the confidentiality of the data.

The average waste volume in Table 1 represents the actual solids generated from cleaning the furnace off-gas; in some cases, these solids may have been entrained in scrubber water.* For EPA's calculations, however, the quantities of solids contained in these scrubber waters as reported in the surveys (either as percent solids in the scrubber water

* The available data indicate that the scrubber water is not a high volume waste.

or quantity of sludge generated from scrubber water settling) were the volumes ascribed to those facilities for purposes of developing the sector-wide annual waste generation rate. The average per-facility volume of this waste continues to be below the high volume criterion.

6. Process Wastewater From Hydrofluoric Acid Production

The Agency proposed to withdraw this waste stream as a low volume waste due to the failure of the facilities to provide waste generation data in the comments in which the waste streams were originally nominated or in their responses to the National Survey. Both facilities reportedly producing Bevill waste from hydrofluoric acid production have subsequently presented the Agency with volume data in comments and (in one case) a revised facility survey. The Agency has reviewed these industry comments and the additional survey data and has concluded that process wastewater from hydrofluoric acid production satisfies the high volume criterion for liquids. As the waste stream has been determined to be low-hazard, the process wastewater is retained in the Bevill exclusion.

7. Process Wastewater from Primary Lead Production

The Agency has reevaluated its methodology for volume estimation of this waste stream, and has subsequently removed from the analysis one facility which was not operated on a consistent basis (37 days in 1988). The Agency's analysis indicates, however, that although removal of this facility from the analysis increases the average

annual per-facility waste volume, the process wastewater is not generated on a sector-wide basis in quantities sufficient to meet the high volume criterion. The waste stream, therefore, has been withdrawn from the Bevill exclusion. The value reported in Table 1 is the volume of process wastewater from the remaining non-CBI facility; this is not the actual sector facility average used to make the high volume determination.

8. Air pollution control dust/sludge from lightweight aggregate production

EPA has revised its estimate of the volume of this waste stream based on additional analysis of information included in the surveys submitted by the majority of the lightweight aggregate facilities. Waste management data submitted in the survey were analyzed to determine more accurately the actual generation of solids, in lieu of basing the estimates on solids entrained in wastewaters. These revised estimates, confirmed by data submitted by commenters addressing the earlier proposed reinterpretations, were used to calculate a new sector average for the waste stream. The Agency acknowledges that the facilities that use air pollution controls other than wet scrubbers, a minority in the sector, have not been represented in the analysis because data are not available on the quantities of APC dust that these facilities may generate. Data collected in the National Survey for the iron and steel industry, however, indicates that APC dust resulting from dry collection methods is typically of lower volume than sludges generated from wet scrubbers. As a result, EPA believes that

inclusion of APC dust volume data in the analysis would not increase the facility average, much less double the average as would be needed to meet the high volume criterion. Based on EPA's revised estimate, air pollution control dust/sludge from lightweight aggregate production does not pass the high volume criterion and is hereby withdrawn from the Bevill exclusion.

9. Sulfate Process Waste Solids from Titanium Dioxide Production

Waste solids from the production of titanium dioxide using the sulfate process are removed from the processing operations and managed in multiple ways at the two facilities that employ the sulfate process. In its original response to the 1989 National Survey, one facility reported an aggregated volume of waste solids from chloride and sulfate processing operations. Because EPA was unable to disaggregate the volume of wastes from chloride v. sulfate processing operations at this facility, EPA used data provided by the other sulfate process facility as the basis for the average annual per facility waste generation rate in the proposal. In comments on the proposed rule, the facility that had previously reported aggregated volume data provided separate volume data for chloride and sulfate process waste solids. As a result, for today's proposal, EPA has developed a revised per-facility average annual waste generation rate that is based on data from both facilities. However, as in the proposal, the waste is not high volume. The waste stream, therefore, has been withdrawn from the Bevill exclusion.

TABLE 1.—RESULTS OF APPLYING THE HIGH VOLUME CRITERION TO TWENTY CONDITIONALLY RETAINED PROCESSING WASTES*

Commodity sector	Conditionally retained waste	Solid or liquid	Average per facility generation (mt/yr)	Notes	No. of facilities reporting	Passes high volume criterion
Coal gas.....	Gasifier ash.....	Solid.....	240,000	B	1	Yes.
Coal gas.....	Process wastewater.....	Liquid.....	4,830,000	C	1	Yes.
Copper.....	Calcium sulfate wastewater treatment plant sludge.....	Solid.....	78,000	A, B, D	2	Yes.
Copper.....	Slag tailings.....	Solid.....	503,915	C	3	Yes.
Elemental phosphorus.....	Furnace off-gas solids.....	Solid.....	11,044	A, C	5	No.
Hydrofluoric acid.....	Fluorogypsum.....	Solid.....	268,780	C	2	Yes.
Hydrofluoric acid.....	Process wastewater.....	Liquid.....	4,300,000	C	2	Yes.
Iron.....	Air pollution control dust/sludge.....	Solid.....	51,662	B, C	24	Yes.
Iron.....	Blast furnace slag.....	Solid.....	724,508	B	26	Yes.
Lead.....	Process wastewater.....	Liquid.....	858,000	A, C, D	5	No.
Lightweight aggregate.....	Air pollution control dust/sludge.....	Solid.....	15,813	B, C	17	No.
Magnesium.....	Anhydrous process wastewater.....	Liquid.....	2,485,000	B	1	Yes.
Phosphoric acid.....	Process wastewater.....	Liquid.....	67,402,600	A, B, C	18	Yes.
Sodium chromate/bichromate.....	Treated residue from roasting/leaching of chrome ore.....	Solid.....	W/H	A, B	2	Yes.
Steel.....	Basic oxygen furnace and open hearth furnace air pollution control dust/sludge.....	Solid.....	60,892	A, C, E	25	Yes.
Steel.....	Basic oxygen furnace and open hearth furnace slag.....	Solid.....	553,844	A, B	26	Yes.
Titanium dioxide.....	Sulfate process waste acids.....	Liquid.....	W/H	A, B	2	Yes.

TABLE 1.—RESULTS OF APPLYING THE HIGH VOLUME CRITERION TO TWENTY CONDITIONALLY RETAINED PROCESSING WASTES*—
Continued

Commodity sector	Conditionally retained waste	Solid or liquid	Average per facility generation (mt/yr)	Notes	No. of facilities reporting	Passes high volume criterion
Titanium dioxide.....	Sulfate process waste solids.....	Solid.....	W/H	A, C	2	No.
Titanium tetrachloride.....	Chloride process waste solids.....	Solid.....	89,349	A, 3	9	Yes.
Zinc.....	Slag.....	Solid.....	157,000	3	1	Yes.
Total number of wastes meeting high volume criterion.....						16
Total number of wastes failing high volume criterion.....						4

*Data are from 1989 National Survey of Solid Wastes from Mineral Processing Facilities, except as noted.
W/H— withheld to avoid disclosing confidential business information (CBI).
A. The data for one or more of the generating facilities are CBI.
B. Generation data are obtained directly from the survey.
C. Calculated or interpreted by EPA based on information provided in the survey and public comments.
D. Data presented is from one facility; one or more of the generating facilities are CBI. Reported number was not used to make Bevill determination; average including CBI facilities does not change Bevill status.
E. Generation data was obtained from the survey for 12 facilities; data for 13 facilities was reported by AISI.

C. Compliance with the Low Hazard Criterion

Consistent with the low hazard criterion established on September 1, 1989, the Agency has used only waste analysis data derived using EPA Method 1312 because there was no compelling evidence that any of the 20 mineral processing wastes "is generated at five or more facilities; and substantial additional relevant data are available and the preponderance of these additional data indicate that the waste should be considered low hazard." (See 54 FR 38630.) The majority of the Method 1312 data used are the result of EPA sampling at selected facilities, but some results are for split samples or other sample analysis results provided by operating facilities.

In addition, for today's final rule, the Agency has utilized newly available data from EPA's 1989 waste sampling effort to make low hazard determination

for certain waste streams or components of waste streams that may have been included by redefinition or clarification of the waste stream or the operation's process in today's final rule. Final results of EPA's application of the low hazard criterion are presented in Table 2.

1. Treated Residue from Roasting/Leaching of Chrome Ore

With the clarification that the waste in question is the treated residue from roasting/leaching of chrome ore and not the waste as it leaves the leaching operation, EPA has reviewed its waste sampling data of the treated residue, and has confirmed that the treated residue passes the low hazard criterion.

2. Process wastewater from coal gasification

With the determination that process wastewater from coal gasification is

"stripped gas liquor," EPA has reviewed the sampling data for the stripped gas liquor generated at the facility, and established that the waste stream as redefined is a low hazard liquid waste.

3. Process wastewater from primary lead production

The Agency has responded to concerns from one commenter that a composite wastewater sample taken at one facility was not a sample of their process wastewater, but included additional process waste streams. In response, EPA analyzed non-composited samples of slag granulation water, which reportedly accounts for more than 90 percent of the process wastewater at this facility. This sample was found to exceed the low hazard criterion. Because the process wastewater also exceeded the criterion at a second facility, EPA concludes that this waste stream is not low hazard.

TABLE 2.—RESULTS OF APPLYING THE LOW HAZARD CRITERION TO TWENTY CONDITIONALLY RETAINED MINERAL PROCESSING WASTES

Commodity sector	Conditionally retained waste	No. of fac. believed to generate waste	No. of fac. sampled by EPA	No. of fac. submitting method 1312 data	Passes low hazard criterion	Reason for failure
Coal gas.....	Gasifier ash.....	1	1	0	Yes.....	N/A
Coal gas.....	Process wastewater.....	1	1	0	Yes.....	N/A
Copper.....	Calcium sulfate wastewater treatment plant sludge.....	2	2	0	Yes.....	N/A
Copper.....	Slag tailings.....	2	2	1	Yes.....	N/A
Elemental phosphorus.....	Furnace off-gas solids.....	5	2	0	Yes.....	N/A
Hydrofluoric acid.....	Fluorogypsum.....	3	2	1	Yes.....	N/A
Hydrofluoric acid.....	Process wastewater.....	3	2	0	Yes.....	N/A
Iron.....	Air pollution control dust/sludge.....	30	4	0	Yes.....	N/A
Iron.....	Blast furnace slag.....	30	4	0	Yes.....	N/A
Lead.....	Process wastewater.....	5	3	0	No.....	As, Cd, Pb
Lightweight aggregate.....	Air pollution control dust/sludge.....	28	2	0	Yes.....	N/A
Magnesium.....	Anhydrous process wastewater.....	1	1	0	Yes.....	N/A
Phosphoric acid.....	Process wastewater.....	28	2	0	Yes.....	N/A
Sodium chromate/bichromate.....	Treated residue from roasting/leaching of chrome ore.....	2	2	0	Yes.....	N/A

TABLE 2.—RESULTS OF APPLYING THE LOW HAZARD CRITERION TO TWENTY CONDITIONALLY RETAINED MINERAL PROCESSING WASTES—Continued

Commodity sector	Conditionally retained waste	No. of fac. believed to generate waste	No. of fac. sampled by EPA	No. of fac. submitting method 1312 data	Passes low hazard criterion	Reason for failure
Steel	Basic oxygen furnace and open hearth furnace air pollution control dust/sludge.	27	3	0	Yes	N/A
Steel	Basic oxygen furnace and open hearth furnace slag.	27	3	0	Yes	N/A
Titanium dioxide	Sulfate process waste acids	2	2	0	No	pH, Cr
Titanium dioxide	Sulfate process waste solids	2	2	0	Yes	N/A
Titanium tetrachloride	Chloride process waste solids	9	3	0	Yes	N/A
Zinc	Slag	1	1	0	Yes	N/A
Total number of wastes meeting low hazard criterion						18
Total number of wastes failing low hazard criterion						2

D. Bevil Status of Conditionally Retained Mineral Processing Wastes

The Bevil status of the 20 conditionally retained mineral processing wastes is presented in Table

3. Fifteen of the 20 wastes have been retained and will be studied in the Report to Congress and addressed by the subsequent Regulatory Determination. The other five wastes,

will, as of the effective date of this rule, become subject to regulation as hazardous wastes under subtitle C of RCRA if they exhibit hazardous characteristics.

TABLE 3.—RESULTS OF APPLYING BOTH BEVILL CRITERIA TO TWENTY CONDITIONALLY RETAINED MINERAL PROCESSING WASTES

Commodity sector	Conditionally retained waste	No. of fac. believed to generate waste	Passes high volume criterion	Passes low hazard criterion	Retained within Bevil exclusion
Coal Gas	Gasifier ash	1 Yes	Yes	Yes	
Coal Gas	Process wastewater	1 Yes	Yes	Yes	Yes
Copper	Calcium sulfate wastewater treatment plant sludge	2 Yes	Yes	Yes	Yes
Copper	Slag tailings	2 Yes	Yes	Yes	Yes
Elemental Phosphorus	Furnace off-gas solids	5 No	Yes	Yes	No
Hydrofluoric Acid	Fluorogypsum	3 Yes	Yes	Yes	Yes
Hydrofluoric Acid	Process wastewater	3 Yes	Yes	Yes	Yes
Iron	Air pollution control dust/sludge	30 Yes	Yes	Yes	Yes
Iron	Blast furnace slag	30 Yes	Yes	Yes	Yes
Lead	Process wastewater	5 No	No	No	No
Lightweight Aggregate	Air pollution control dust/sludge	28 No	Yes	Yes	No
Magnesium	Anhydrous process wastewater	1 Yes	Yes	Yes	Yes
Phosphoric Acid	Process wastewater	28 Yes	Yes	Yes	Yes
Sodium Chromate/Bichromate	Treated residue from roasting/leaching of chrome ore	2 Yes	Yes	Yes	
Steel	Basic oxygen furnace and open hearth furnace air pollution control dust/sludge	27 Yes	Yes	Yes	Yes
Steel	Basic oxygen furnace and open hearth furnace slag	27 Yes	Yes	Yes	Yes
Titanium Dioxide	Sulfate process waste acids	2 Yes	No	No	No
Titanium Dioxide	Sulfate process waste solids	2 No	Yes	Yes	No
Titanium Tetrachloride	Chloride process waste solids	9 Yes	Yes	Yes	Yes
Zinc	Slag	1 Yes	Yes	Yes	Yes
Total number of wastes retained within Bevil exclusion					15
Total number of wastes withdrawn from Bevil exclusion					5

IV. Analysis of and Response to Comments on Clarification to the Definition of "Designated Facility" and Modification of the Standards Applicable to Generators of Hazardous Waste

In the proposed rule of September 25, 1989, EPA proposed a clarification to the definition of designated facility regarding waste shipments from a state where a waste is subject to the hazardous waste regulations to a state where the waste is not yet regulated as

hazardous. This circumstance can arise when EPA lists or identifies a new waste as hazardous under its pre-HSWA authority. In such a case, the waste is subject to RCRA hazardous waste regulations only in those states that do not have interim or final authorization to operate the RCRA program. In a state authorized by EPA to operate a hazardous waste program in lieu of the federal program (under the authority of section 3006 of RCRA), the waste would not be subject to RCRA

requirements until the state revises its program to classify the waste as hazardous and receives EPA authorization for these requirements. This set of circumstances results from the fact that RCRA allows states a specified time to adopt new regulations in order to minimize disruptions to the implementation of authorized state programs. In contrast, that situation does not occur when the wastes are newly listed or identified pursuant to the HSWA authorities since Congress

specified that HSWA provisions are to be implemented by EPA in all states until such time as states are authorized to implement the new regulations.

EPA's generator regulations require a generator of hazardous waste to "designate on the manifest one facility which is permitted to handle the waste described on the manifest." (See 40 CFR 262.20). The regulations clearly state that the facility designated on the manifest is the "designated facility" as defined in § 260.10 (See the direct reference in the definition of "designated facility" to the manifest requirement in § 262.20). A designated facility as currently defined in 40 CFR 260.10 must either (1) have an EPA permit (or interim status) in accordance with parts 270 and 124, (2) have a permit from a state authorized in accordance with part 271, or (3) be a recycling facility that is regulated under § 261.6(c)(2) or subpart F of part 266, and must also be designated on the manifest by the generator pursuant to § 262.20.

It has become apparent that when promulgated in 1990, the definition of "designated facility" did not contemplate the above situation which has potentially broad impacts on the RCRA program. EPA's current interpretation of the statute is that the manifest requirement and the definition do not apply to materials that are not officially identified as RCRA hazardous wastes in the state that is receiving the wastes. Today's clarification amends the definition of "designated facility" and the standards applicable to generators of hazardous waste in 40 CFR 262.23, in order to make this interpretation clear to the public and the regulated community.

A. General Comments on the Proposed Definition

A number of commenters supported EPA's effort to clarify the existing regulations so that the parties affected by non-HSWA waste identifications and listings know the status of these wastes and the management standards that apply to them when they are shipped across state borders. These commenters indicated that the proposed revision to the definition of "designated facility" in § 260.10 offers additional clarity and an appropriate level of flexibility to assist both the regulatory agencies and the regulated community. Several commenters also supported the proposed change to § 262.23 by adding paragraph (e) to clarify the requirement that the generator must ensure that the designated facility returns the manifest to the generator to complete the waste tracking procedures as required by RCRA regulations.

Two commenters argued that the statute prohibits EPA from making this change to the definition of designated facility. These commenters pointed out that RCRA Section 3002(a)(5), which sets out standards applying to hazardous waste generators, requires use of a manifest system

• • • to assure that *all such hazardous waste* is designated for treatment, storage or disposal in and arrives at, treatment, storage, or disposal facilities (other than facilities on the premises where the waste is generated) *for which a permit has been issued as provided in the subtitle* • • • (emphasis added).

Section 3003(a)(4), pertaining to transporters, contains substantially similar language.

The commenter argues that these provisions require materials that officially have the status of RCRA hazardous waste to go to facilities holding Subtitle C permits. EPA generally agrees with this view. EPA, however, notes that the mining wastes that become hazardous wastes as a result of this federal rule will not have official status as RCRA Subtitle C wastes in all states at the same time. New RCRA rules—including new waste identification rules—that are promulgated using statutory authorities in effect before the 1994 HSWA amendments take effect only in states that are not yet authorized to implement the pre-1984 RCRA hazardous waste program. Currently, only 7 states lack authorization for the pre-1984 program. Consequently, today's rule will take effect only in those states. In all other states, Subtitle C regulation of these wastes must wait for the states to promulgate parallel regulations or statutory changes, and obtain EPA approval to implement these new additions to their Subtitle C programs. This process can take many months. See generally 50 FR 28729-28730 (July 15, 1985), describing RCRA Section 3006. See also the state authorization section to today's notice.

Consequently, EPA believes that the "permitted facility" requirements of sections 3002(a)(5) and 3003(a)(4) apply only within the boundaries of those states where the relevant mining wastes have officially attained the status of RCRA-regulated subtitle C "hazardous wastes." Status as a "hazardous waste" is, indeed, the basic prerequisite for the exercise of any subtitle C jurisdiction. If a material is not yet a hazardous waste in the state to which it is sent for treatment, storage, or disposal, no subtitle C regulations apply. A manifest is not legally required, and the facility that accepts the waste need not have a

subtitle C permit. EPA, in fact, would be unable to enforce manifest and permitting requirements in a state where a material is not yet a subtitle C hazardous waste.

Since at least two interpretations of the statute are possible, EPA may exercise its discretion to choose the view that best promotes the overall policy goals of RCRA. EPA believes that there are sound policy considerations favoring the "jurisdictional" view, which considers the material's RCRA hazardous waste status to be a jurisdictional prerequisite.

The commenters' interpretation of RCRA sections 3002(a)(5) and 3003(a)(4) would force newly regulated wastes that are generated in unauthorized states to be managed in those states. Essentially, these wastes would be "trapped" in these unauthorized states, and they could only be managed in avoidance with the treatment, storage, and disposal alternatives that are available in those states (which could be limited). This is primarily because TSD facilities in authorized states would not be able to obtain the necessary permit modification or change in interim status. Since the wastes are not yet hazardous in these states, one problem which can arise from this situation is that the facilities best suited to the management of wastes which are newly listed or identified may not be located in the states where the rulemaking is in effect. The Agency believes that such facilities should not be precluded from accepting wastes from states where the rule is in effect while the state in which they are located is seeking authorization for the waste stream.

One example of particular interstate concern involves a mixed waste stream (i.e., a waste stream that contains both hazardous waste and radioactive waste) called scintillation cocktails. Scintillation cocktails are commonly generated by approximately 10,000 hospitals and universities across the country. This waste stream became regulated pursuant to non-HSWA authority as described in the July 3, 1986, Federal Register notice, and therefore were initially regulated under the RCRA program only in the unauthorized states. Approximately 80 percent of the national capacity for treatment of these particular wastes resides with one facility. The Agency understands that this facility is in compliance with state standards that are equivalent to the federal RCRA requirements. However, the facility is located in a state that has not yet received mixed waste authorization, and therefore the facility does not have a

RCRA permit or interim status. If all these scintillation cocktails were required to go to RCRA permitted facilities as suggested by these commenters, a significant number of waste shipments from thousands of generators would be disrupted. In fact, in this case the Agency believes that such a restriction would generally result in less protective waste management since it is doubtful that the wastes would be treated and recovered to the same degree as is presently occurring at this large facility.

The Agency would also like to point out that, without the flexibility provided by today's rule, there would likely be a significant disincentive for states to adopt new waste listings unless they were confident that adequate treatment, storage, or disposal capacity exists for wastes within the state. This is because generators in the first few states to adopt the waste listing would not be able to send their wastes to facilities in other authorized states (which are the vast majority of states) that have not adopted the listing because the TSD facilities in these states would not be able to obtain the necessary RCRA permit modifications or changes in interim status. EPA believes that this disincentive would not be desirable.

The same two commenters, in arguing that EPA's proposal should be withdrawn, contended that there is no firm evidence that the problem hypothetically facing the regulated community actually exists. The commenters stated that the problem is miniscule, if not completely illusory. The commenters indicated that the problem that EPA attempts to address in the rulemaking could only arise if EPA lists or identifies a waste as hazardous pursuant to non-HSWA authorities; the generator needs to send the waste off-site and the only available off-site waste facilities capable of managing the waste are located in authorized states. The commenters indicated this scenario would occur in only a very limited number of circumstances, and therefore does not warrant any change to the definition of designated facility. The commenters go on to say that EPA can only identify three non-HSWA rulemakings resulting in newly listed or identified wastes.

EPA strongly disagrees with the statement that this is an illusory problem for the following reasons. In the September 25 proposal, EPA identified three recent non-HSWA rules only as illustrative examples of situations where interstate shipments could be a problem. However, there have been other non-HSWA rules that list or bring in new

waste streams, namely: Redefinition of solid waste (January 4, 1985); and mixed waste (July 3, 1986). Furthermore, the Agency recently proposed additional non-HSWA listings for wood preserving wastes, and may in the future consider the regulation of other waste streams under the Agency's pre-HSWA authority. Furthermore, as discussed in the mixed waste scintillation cocktail example above, the Agency has already encountered situations of interstate shipments affecting thousands of generators, indicating that the problem being addressed in today's rule is a real one and deserves clarification.

The same two commenters argued that EPA's proposal could create a disincentive for waste generators to ship their wastes to licensed hazardous waste facilities. This disincentive could result from allowing the generator to choose to ship its hazardous waste to either a hazardous waste facility or a nonhazardous waste facility. Given the alternatives, a generator may simply choose the least cost option.

The Agency acknowledges that this approach to interstate shipments may appear to be a disincentive to the management of these hazardous wastes in subtitle C facilities. However, the Agency believes that there are other circumstances that mitigate this apparent disincentive. First, this situation is temporary. States are required to adopt federal RCRA waste listings or identifications within specified deadlines. Second, until that regulatory adoption, these wastes will be regulated under subtitle D of RCRA and any other applicable requirements of the receiving state. Last, some generators will elect to send their wastes to subtitle C facilities or other facilities that perform equivalent treatment in order to minimize any potential future liability resulting from the management of their wastes.

The two commenters also noted that the practice of shipping newly listed or identified wastes to facilities in states where the waste is unregulated would be limited to the period of time an authorized state requires to promulgate the new listing or characteristic. However, the commenters maintained that while such a period is finite, it is not necessarily short and can take up to three and a half years, assuming that authorized states comply with EPA regulations for revising state programs. The commenter further indicated that there are no immediate consequences for the state or the regulated community in that state if the state fails to meet these deadlines.

It should be recognized that the three and a half year period is the maximum allowed by the state authorization regulations. Generally, states are required to adopt federal program changes within two years (or three years if the state needs to amend its statute). Some extensions of these deadlines are available. However, EPA recognizes that while some states have been able to meet the authorization deadlines, others have not due to the number and complexity of the changes to RCRA regulations in the past few years. The Agency intends to place increased emphasis on prompt state adoption of new waste listings to ensure uniform, national coverage of newly listed or identified wastes. It should also be noted that there is a lag time between state adoption of a requirement and the official EPA action to authorize that state to implement the regulation under RCRA authority. Therefore, in many cases states are regulating these new activities in a manner equivalent to the RCRA program well before they have received authorization.

B. Relationship Between Today's Clarification and Non-RCRA State Hazardous Wastes

One commenter was concerned about the situation where a waste is generated in a state which, as a matter of state law only, regulates the waste as hazardous, but is transported to a receiving state that does not. In this case, the receiving state is under no federal compulsion to amend its regulations to add that waste to its list of hazardous wastes, since the listing of the non-RCRA waste is a matter of state law. EPA has no jurisdiction over this situation. Thus, this clarification of the definition of designated facility does not apply to state listed non-RCRA hazardous waste.

A second commenter shared the above concern but also stated that EPA's proposed clarification does not distinguish between state and federally classified hazardous waste. The commenter contended that the Agency should stipulate that this clarification only applies to federally regulated wastes, that the Agency did not intend to preclude the receiving state from designating the type of facility which can manage such state-classified hazardous waste, and that federal authorization is irrelevant to the interstate transportation of state-classified wastes.

The Agency recognizes the issue presented by the commenter; however, EPA believes that this is not a comment on the clarification to the definition of the term "designated facility" as

proposed on September 25, 1989. Rather, the issue raised by this commenter concerns the requirements of the current definition. Indeed, the current definition does not apply to non-RCRA hazardous wastes since it only applies to the hazardous wastes that the Federal government has authority to regulate (i.e., federally listed or identified hazardous wastes). If a state chooses to be more stringent and regulate additional wastes not regulated under RCRA, that state must adapt its RCRA regulations with regard to the definition of designated facility to accommodate these new wastes. Each state must determine, therefore, how it will regulate the out-of-state shipment of state-listed wastes. Furthermore, the Agency does not, under the original definition or this subsequent clarification, intend to specify to authorized states the types of facilities that can manage state-classified hazardous wastes. Finally, EPA also does not, with this clarification or the original rule, seek to regulate the interstate transportation of state-classified wastes. Neither the original federal definition, nor today's clarification has any impact on the state regulation of state-classified hazardous wastes or the out-of-state shipment of these wastes.

C. Who Can Qualify as a Designated Facility?

One commenter argued that EPA's proposed clarification raised ambiguities by suggesting that some kind of approval is needed in a state receiving a waste, even if none is required by state law. The concept of a state having to provide an "allowance" to a facility in order for it to accept wastes that are not regulated in the first place appeared to be burdensome and unnecessary. One commenter stated that EPA should acknowledge that a waste that is not regulated in a receiving state can be sent to any facility in that state so long as nothing under state law disqualifies it from receiving such waste.

EPA would like to clarify that under today's rule, the laws of the receiving state determine which facilities may accept and manage the waste streams. The receiving state also determines what prior approvals, licenses, permits, etc., if any, are necessary. Today's clarification adds no additional approval requirements on facilities managing non-hazardous wastes from other states. The requirements placed on these facilities are a matter of stated law.

D. Which Standards Apply to Interstate Shipments?

Another commenter argued that the standards of the state where the generator is located should apply to the treatment, storage, or disposal of hazardous waste, rather than the standards of the receiving state because it would be extremely burdensome for the generator of a hazardous waste to keep track of the continuously evolving hazardous waste regulations of all fifty states.

The Agency disagrees with this commenter. A state can only apply its laws and regulations to facilities over which they have jurisdiction (i.e., facilities within the stated boundaries). Therefore, if a generator is sending wastes to a facility out-of-state, the treatment, storage, or disposal standards that apply are those of the state where the TSD facility is located. It is incumbent on the generator to know the requirements of the states where the wastes will be managed. However, much of the responsibility for complying with the receiving state's regulations falls on the TSD facility. In most cases, the generator simply has to ask a potential receiving TSD facility if it is allowed to manage the generator's wastes by its state government. The Agency does not believe that this is particularly burdensome to the generator.

E. Other Comments

A minor technical correction is also included in the rule language of "designated facility" to clarify that an interim status facility in an authorized state may be a designated facility. EPA believes that it is universally understood that these interim status facilities can accept hazardous waste shipments, and this was the original intent of the provision. Therefore, in the first sentence of the rule a parenthetical clause is added with the words "or interim status".

The Agency has noted and corrected the typographical error that appeared in the proposed rule as follows: Under proposed § 260.10(4), the generator is designated on the manifest pursuant to § 262.20, not § 260.20.

F. Manifesting requirements

Today's clarification will not alter the requirement that a generator offer his waste only to transporters who have EPA identification numbers. (See 40 CFR 262.12(c)). Thus, if a newly listed waste is transferred between transporters in a state where the waste is not yet hazardous, both transporters should be identified on the manifest. The initial

transporter is still required to keep the copy of the manifest on file.

In order to ensure that the waste reaches the designated facility, EPA is requiring the generator to arrange that the designated facility owner or operator sign and return the manifest to the generator, and that out-of-state transporters sign and forward the manifest to the designated facility. The return of the manifest to the generator will "close the loop" on the disposition of the generated waste and allow the generator to attempt to resolve any discrepancies in the manifest, as required by 40 CFR 262.42. This new requirement parallels the requirements in 40 CFR 264.71 and 265.71. However, as opposed to those sections, which require the receiving facility to return the manifest, § 262.23(e) puts the burden on the generator to ensure the return of the manifest when the waste is sent to a facility in a state not yet authorized to treat the waste as hazardous. EPA believes that this approach is appropriate, since the facility receiving the waste and any out-of-state transporters may not be subject to subtitle C regulation, if they do not otherwise handle any RCRA hazardous wastes. It should be noted that with this approach the designated facility and out-of-state transporters are not required to obtain EPA identification numbers since the waste is not hazardous in their state. (Of course, once the state becomes authorized to regulate the particular waste as hazardous, the facility would need a RCRA Subtitle C permit (or interim status) to continue managing the waste and all transporters would need EPA identification numbers.)

V. Regulatory Implementation and Effective Dates of the Final Rule

EPA is finalizing this rule in accordance with the March 14, 1989 order of the U.S. Court of Appeals for the D.C. Circuit (see *Environmental Defense Fund v. EPA*, 852 F.2d 1310 (D.C. Cir. 1988) cert. denied, 109 S.Ct. 1120 (1989)). As of the effective date of this final rule (i.e., six months after today or July 23, 1990, the five mineral processing wastes for which the temporary exemption from subtitle C regulations (previously provided by RCRA section 3001(b)(3)(A)(ii)) is being removed by today's rulemaking may be subject to subtitle C requirements in those states that do not have authorization to administer their own hazardous waste programs in lieu of EPA. Generators, transporters, and treatment, storage, and disposal (TSD) facilities that manage any of these five

wastes in authorized states will be subject to RCRA requirements imposed as a result of this final rule only after the state revises its program to adopt equivalent requirements and EPA authorizes the revision.

The requirements imposed as a result of removing the temporary exemption include: Determining whether the solid waste(s) exhibit hazardous characteristics (40 CFR 262.11) and, for those wastes that are hazardous, obtaining an EPA identification number for managing hazardous wastes (40 CFR 262.34); complying with recordkeeping and reporting requirements (40 CFR 262.40-262.43); and obtaining interim status and seeking a permit (or modifying interim status, including permit applications or modifying a permit, as appropriate) (40 CFR Part 270).

A. Section 3010 Notification

When EPA published its September 1, 1989 final rule (54 FR 36592), the Agency removed the temporary exemption from subtitle C regulations for all but twenty-five mineral processing wastes. In that rulemaking, the Agency indicated that all persons generating, transporting, treating, storing, or disposing of one or more of those wastes were to notify either EPA or an authorized state within 90 days (i.e., by November 30, 1989) of such activities, pursuant to section 3010 of RCRA, if those wastes are characteristically hazardous under 40 CFR part 261, subpart C. (see 54 FR 36632.) Following the publication of the September rule, however, a number of facilities expressed confusion regarding the notification requirement because section VII of the preamble to the September 1, 1989 final rule also states that "the final rule is not effective in authorized states because its requirements are not being imposed pursuant to the Hazardous and Solid Waste Amendments of 1984." (See 54 FR 36633). This statement was correct in regard to the requirement to file a part A permit application and TSD standards. It was not correct in regard to section 3010 notification, which was intended to apply to all persons generating, transporting, treating, storing or disposing of hazardous wastes identified by characteristics regardless of whether in an authorized state or not. Because the September 1, 1989 final rule removed a temporary exemption and thus identified as characteristically hazardous some wastes, section 3010 required notification within 90 days.

Because some potentially affected facilities may have been confused by the September 1 preamble and because the Agency has not yet published a

clarification, EPA is today eliminating the notification requirement established by the September 1 final rule for facilities in authorized states. For facilities in unauthorized states, the deadline for compliance with the notification requirement established by the September 1 rule is being extended until 90 days following today's publication (i.e., April 23, 1990). EPA has concluded that it is appropriate to waive the notification requirement in authorized states because (1) the universe of newly regulated activities will be identified when state regulations are revised, as they must be for the states to retain authorization; and (2) RCRA identification numbers provided to notifiers in authorized states are obtained by the state from EPA, so in this way EPA is informed of the notifications that authorized states receive.

Accordingly, not later than 90 days following today's publication (i.e., April 23, 1990), all persons in unauthorized states who generate, transport, treat, store, or dispose of wastes that (1) are removed from the Bevill exemption by this final rule, and (2) are characteristically hazardous under 40 CFR part 261, subpart C, must notify EPA of such activities pursuant to Section 3010 of RCRA. Notification instructions are set forth in 45 FR 12746.

Persons who previously have notified EPA or an authorized state of their activities pursuant to section 3010 of RCRA, (i.e., persons who previously have notified EPA or an authorized state that they generate, transport, treat, store or dispose of hazardous waste and have received an identification number—see 40 CFR 262.12, 263.11 and 265.1) need not re-notify.* Persons without EPA identification numbers are prohibited from transporting, offering for transport, treating, storing, or disposing of hazardous wastes.

For the same reasons discussed above, facilities managing wastes removed from the exclusion in authorized states need not notify EPA or an authorized state within 90 days of today's rule. Section 3010 Notification will be required of such facilities after the state receives authorization or otherwise amends its program to regulate these or require such notification.

* Under the Solid Waste Disposal Amendments of 1980, (Pub. L. 96-482) EPA was given the option of waiving the notification requirement under section 3010 of RCRA following revision of the section 3001 regulations, at the discretion of the Administrator.

B. Compliance Dates for Today's Rule

1. Interim Status and Permit Modifications in Unauthorized States

Facilities in unauthorized states that currently treat, store, or dispose of wastes that have been removed from temporary Bevill exclusion and are characteristically hazardous under 40 CFR Part 261, Subpart C, but have not received a permit pursuant to Section 3005 of RCRA and are not operating pursuant to interim status, may be eligible for interim status (see Section 3005(e)(1)(A)(ii) of RCRA, as amended). In order to operate pursuant to interim status, such facilities must submit a Section 3010 notice pursuant to 40 CFR 270.70(a) within 90 days of today's final rule (i.e., by April 23, 1990),* and must submit a part A permit application within six months of today's final rule (i.e., by July 23, 1990). Under section 3005(e)(3), land disposal facilities qualifying for interim status under section 3005(e)(1)(A)(ii) must also submit a part B application and certify that the facility is in compliance with all applicable ground-water monitoring and financial responsibility requirements within 18 months of today's final rule (i.e., by July 23, 1991). If the facility fails to do so, interim status will terminate on that date.

Completion of final permit application will require individual facilities to develop and compile information on their on-site waste management operations including, but not limited to, the following activities: Ground-water monitoring (if waste management on land is involved); manifest systems, recordkeeping, and reporting; closure and, if appropriate, post-closure requirements; and financial responsibility requirements. The permit applications may also require development of engineering plans to upgrade existing facilities. In addition, many of these facilities will, in the future, be subject to land disposal restrictions (LDR) standards. As explained in the September 1, 1989 final rule and in the proposed LDRs for third scheduled wastes (54 FR 48372, 48492; November 22, 1989) EPA considers wastes that are brought under Subtitle C regulation by today's final rule to be "newly identified" wastes for purposes of establishing LDR standards under section 3004(g)(4) of RCRA. (54 FR 36624). Accordingly, EPA has proposed that newly identified mineral processing

* Except persons who previously have notified EPA or an authorized state that they generate, transport, treat, store or dispose of hazardous waste and have received an identification number.

wastes not be subject to the BDAT standards that the Agency proposed on November 22, 1989 for characteristic hazardous wastes. As required by RCRA section 3004(g)(4)(C), EPA plans to study the mineral processing wastes removed from the temporary exemption to determine BDAT for ones that exhibit one or more characteristic of a hazardous waste.

All existing hazardous waste management facilities (as defined in 40 CFR 270.2) that treat, store, or dispose of hazardous wastes covered by today's final rule, and that are currently operating pursuant to interim status under Section 3005(e) of RCRA, must file with EPA an amended Part A permit application within six months of today's publication (i.e., by July 23, 1990), in accordance with § 270.72(a).

Under current regulations, a hazardous waste management facility that has received a permit pursuant to Section 3005 may not treat, store, or dispose of the wastes removed from the temporary exclusion by today's final rule, if those wastes are characteristically hazardous under 40 CFR Part 261, Subpart C, when the final rule becomes effective (i.e., July 23, 1990) unless and until a permit modification allowing such activity has occurred in accordance with § 270.42. Consequently, owners and operators of such facilities will want to file any necessary modification applications with EPA before the effective date of today's final rule. EPA has recently amended its permit modification procedures for newly listed or identified wastes. (See 40 CFR 270.42(g).) For more details on the permit modification procedures, see 53 FR 37912, September 28, 1988.

2. Interim Status and Permit Modifications in Authorized States

Until the state is authorized to regulate the wastes that are being removed from temporary exclusion by today's final rule and that are hazardous under 40 CFR part 261, subpart C, no permit requirements apply. Facilities lacking a permit, therefore, need not seek interim status until state authorization is granted. Any facility treating, storing, or disposing of these wastes on the effective date of state authorization may qualify for interim status under applicable state law. Note that in order to be no less stringent than the Federal program, the state "in existence" date for determining interim status eligibility may not be later than the effective date of EPA's authorization of the state to regulate these wastes. These facilities must provide the state's equivalent of a part A permit

application as required by authorized state law.

Finally, RCRA section 3005(e) (interim status) or any authorized state analog apply to waste management facilities qualifying for state interim status. For those facilities managing wastes under an existing state RCRA permit, state permit modification procedures apply.

VI. Effect on State Authorizations

Because the requirements in today's final rule are not being imposed pursuant to the Hazardous and Solid Waste Amendments of 1984, they will not be effective in RCRA authorized states until the state program amendments are effective. Thus, the removal of the temporary exclusion will be applicable six months after today's publication (i.e., on July 23, 1990) only in those few states that do not have final authorization to operate their own hazardous waste programs in lieu of the Federal program. In authorized states, the reinterpretation of the regulation of non-excluded processing wastes will not be applicable until the state revises its program to adopt equivalent requirements under state law and receives authorization for these new requirements. (Of course, the requirements will be applicable as state law if the state law is effective prior to authorization).

Based on the scope of today's final rule, states that have final authorization (40 CFR 271.21(e)) must revise their programs to adopt equivalent standards regulating non-Bevill mineral processing wastes that exhibit hazardous characteristics as hazardous by July 1, 1991 if regulatory changes only are necessary, or by July 1, 1992 if statutory changes are necessary. These deadlines can be extended by up to six months (i.e., until January 1, 1992 and January 1, 1993, respectively) in exceptional cases (40 CFR 271.21(e)(3)). Once EPA approves the revision, the state requirements become RCRA Subtitle C requirements in that state. States are not authorized to regulate any wastes subject to today's final rule until EPA approves their regulations. Of course, states with existing standards that address these wastes may continue to administer and enforce their regulations as a matter of state law.

Currently unauthorized states that submit an official application for final authorization less than 12 months after the effective date of today's final rule (i.e., before January 23, 1991) may be approved without including an equivalent provision (i.e., to address non-Bevill mineral processing wastes) in the application. However, once authorized, a state must revise its

program to include an equivalent provision according to the requirements and deadlines provided at 40 CFR 271.21(e).

VII. Economic Impact Screening Analysis Pursuant to Executive Order 12291

Sections 2 and 3 of Executive Order 12291 (46 FR 13193) require that a regulatory agency determine whether a new regulation will be "major" and, if so, that a Regulatory Impact Analysis (RIA) be conducted. A major rule is defined as a regulation that is likely to result in one or more of the following impacts:

- (1) An annual effect on the economy of \$100 million or more;
- (2) A major increase in costs or prices for consumers, individuals, industries, Federal, State, and local government agencies, or geographic regions; or
- (3) Significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Today's final rule completes the Agency's revised interpretation of the Bevill Mining Waste Exclusion for mineral processing wastes. The first part of this reinterpretation, dealing with the vast majority of individual mineral processing waste streams, was made final on September 1, 1989. The preamble to the September 1 rule presented the results of the Agency's economic impact screening analysis, covering scores of small volume mineral processing wastes, and examining cost impacts associated with 39 potentially hazardous low volume wastes in detail. This analysis indicated a total annual compliance cost for subtitle C waste management of about \$54 million. As indicated in section III of this preamble, today's final rule removes five additional processing wastes from the Bevill exclusion and subjects them to regulation under subtitle C of RCRA if they exhibit hazardous characteristics.

Consistent with Executive Order 12291, the Agency has completed a revised economic impact screening analysis for the five mineral processing wastes removed from the Bevill exclusion by today's rule. These revisions account for changes in the Bevill status of certain wastes since the September 25, 1989, NPRM and comments received on the original analysis. Results of this revised analysis suggest that three of the five waste streams are likely to exhibit hazardous characteristics at some or all of the

facilities that generate them. One additional waste stream (air pollution control solids from lightweight aggregate production) may be regulated at some facilities under the subtitle C "derived-from" rule. As a consequence, as many as eleven mineral processing facilities in four different commodity sectors may incur compliance costs due to this rule. The Agency estimates that total annual compliance costs are not likely to exceed \$18.5 million and therefore concludes that today's final rule is not a "major rule" according to the first criterion of E.O. 12291.⁷

With respect to the other E.O. 12291 criteria, the Agency does not predict a substantial increase in costs or prices for consumers or a significant effect on international trade or employment in connection with today's final rule. Some individual mineral processing facilities in the lightweight aggregate and titanium dioxide sectors may experience significant compliance costs which would affect their ability to compete in their respective commodity sectors. On balance, however, the Agency concludes that today's rule does not constitute a major rule as defined by E.O. 12291.

The following paragraphs of this section briefly restate the Agency's economic impact screening approach and assumptions, and provide revised results.

A. Approach

1. Methodology and Assumptions

The revised screening analysis prepared for today's final rule used essentially the same methodology employed for and described in the September 25, 1989, NPRM (54 FR 39312-16) and accompanying background documents, to which the reader is referred for details.

Substantial differences between the scope and results of the analysis described in the proposed rule and those reported here primarily reflect a shift in the Bevill status of several key waste streams based on new information on waste generation rates and chemical characteristics, as described above in section III. Specifically, the final rule restores the Bevill status for two wastes for which the Agency has previously estimated compliance cost impacts in the September 25 NPRM (roast leach ore residue from chromite processing and process wastewater from hydrofluoric

acid production), thus obviating the predicted impacts for these two sectors.

On the other hand, APC dust/slugge from lightweight aggregate production (proposed for retention within the exclusion based upon preliminary review of EPA survey data) has now been removed from the Bevill exclusion following a closer examination of the data, which indicates that average scrubber solid volumes are well below the high volume criterion.

Because EPA waste sampling data and information submitted both in response to the Agency's RCRA section 3007 letter and in public comment indicate that APC solids from lightweight aggregate are unlikely to exhibit hazardous waste characteristics, the Agency believes that removing this material from the Bevill exclusion will not impose any cost or economic impacts on most of the 30 or so facilities that generate it. Nonetheless, it is well known that several lightweight aggregate production facilities currently burn listed hazardous wastes as a primary fuel and would hence experience subtitle C regulatory compliance costs as a consequence of the "derived-from" rule (see 40 CFR 261.3(b)(2)(i)).

EPA has not substantially modified its estimates of the distribution and magnitude of the costs or impacts for the remaining four affected waste streams whose status remained unchanged from the September 25 NPRM (elemental phosphorus off-gas solids, primary lead process wastewater, titanium dioxide sulfate process waste acids, and titanium dioxide sulfate process waste solids).

Of the five waste streams reviewed for potential hazard characteristics, the preliminary screening assessment suggests that two—lightweight aggregate APC scrubber solids and sulfate process waste solids from titanium dioxide production—are not likely to exhibit hazardous characteristics under current RCRA hazardous waste test procedures. Therefore, EPA has assumed in its economic impact screening analysis that facilities generating these wastes will experience no compliance cost impacts associated with potential subtitle C regulation of these wastes. The primary exception relates to five (out of 30) lightweight aggregate producers that currently burn listed hazardous wastes as fuel. EPA's information indicates that five facilities operated by the Solite Corporation and one facility operated by the Norlite Corporation burn hazardous waste as fuel; one of the Solite facilities apparently does not

generate any solid wastes. With few specific exceptions (based on waste sampling data), the remaining three waste streams were considered hazardous at all facilities, for the characteristics specified, as follows:

- Elemental phosphorus off-gas solids (from wet collection)—EP toxic for cadmium
- Primary lead process wastewater—EP toxic for arsenic, cadmium, and lead, corrosive
- Titanium dioxide sulfate process waste acids—EP toxic for chromium, corrosive

Fourteen facilities in these four affected commodity sectors, were then further analyzed on a site-specific basis in terms of current (baseline) management practices in order to determine consistency with current subtitle C management requirements and to select reasonable site-specific compliance options as a basis for estimating costs.

EPA determined that one of the 14 facilities analyzed on the basis of company-provided data is currently managing hazardous wastes in compliance with current subtitle C requirements, and thus may not incur additional costs when today's rule becomes effective. The data supporting this finding were obtained from responses to EPA's 1987-88 National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (TSDF Survey).⁸ For some other individual facilities, data from the National Survey of Solid Wastes from Mineral Processing Facilities document that current practice for several of the wastes (particularly the wastewaters) removed by today's rule includes treatment in a wastewater treatment plant, direct discharge via NPDES permit provisions, and/or recycling to the process generating the waste in question. EPA has reviewed this information, and used it to develop baseline and subtitle C compliance scenarios for this analysis. As a result, estimated compliance costs at several of the facilities affected by today's final rule are zero. That is, removal of the waste from Bevill will impose no operational or economic impacts because these facilities already appear to employ management practices consistent with subtitle C requirements.

2. Costing Assumptions for Lightweight Aggregate APC Scrubber Solids

As discussed above, five facilities producing lightweight aggregate air

⁷ The Preamble to the September 25, 1989, proposed rule presented an annual compliance cost estimate of \$5.2 million for 9 affected facilities in 5 commodity sectors. The net increase to \$18.5 million is attributable entirely to the addition of lightweight aggregate APC scrubber solids to the list of affected wastes.

⁸ USEPA. 1989. *Development of the High Volume Criterion for Mineral Processing Wastes*. Special Wastes Branch, Office of Solid Waste. August 18, 1989.

pollution control (APC) scrubber solids will face economic impacts due to the removal of this waste stream from the Bevill exclusion by today's final rule, because they burn listed hazardous waste as fuel. Because this sector was not evaluated in the original screening analysis for the NPRM, the following paragraphs present the Agency's costing approach and engineering design assumptions for evaluating compliance options and estimating costs.

In general, there are a multitude of possible compliance options available to lightweight aggregate producers, varying from conversion to fossil fuels to various possible waste reduction methods to possible delisting petition options. Because of lack of data necessary to perform quantitative cost estimates for most of these alternatives (as well as time constraints on this final court-ordered rule), the Agency's screening analysis has been forced to focus only on the extremely high-cost option of managing the APC scrubber solids (generated as wet sludges) as Subtitle C hazardous wastes. The Agency's cost estimates are thus based on the difference in disposal costs between managing the reported sludge volumes in unlined impoundments or waste piles versus disposal in a permitted subtitle C landfill. For these and other reasons outlined below, the Agency's cost estimates for this sector should be regarded as upper-bound estimates.

The waste quantities potentially subject to subtitle C landfill disposal have been estimated using responses to the industry survey and, in one case, written public comments. Methods for developing these estimates are described in a supplemental technical background document that may be found in the docket for today's rule.* The Agency has assumed that the waste quantities reported by the facilities represent relatively dry material, and that dewatering would not be feasible as a volume reduction method prior to land disposal. If dewatering would be possible, then the quantity of waste for subtitle C landfill disposal has been overestimated and, to this extent, EPA has, accordingly overestimated compliance costs, which are directly related to the mass of waste that must be disposed.

The Agency has also conservatively assumed that all lightweight aggregate kilns at each affected facility (most

facilities operate three to five kilns) do and will continue to burn *listed* hazardous wastes as fuel. Consequently, in this analysis the entire scrubber solids stream for all facilities is assumed to be affected by the derived-from rule and therefore subject to subtitle C. To the extent that some or all facilities do not burn listed hazardous wastes in all of their kilns and/or do (or could) segregate listed and non-listed (characteristic) hazardous wastes prior to their use as fuel, EPA has further overestimated costs and impacts.

In addition, the Agency has some concerns about the waste volume data reported by one of the two affected firms, the Solite Corporation. Solite's facilities report waste generation rates that are substantially higher than any other lightweight aggregate producer, even when corrected for differences in plant size and production rate. The waste-to-product ratio calculated by EPA for Solite's facilities ranges from 15 percent to more than 25 percent. This is from two and one half to 250 times the ratio calculated for the other reporting facilities generating the same waste. Nonetheless, the data reported in the National Survey and used in this analysis are consistent with information previously submitted to EPA by the company. This may or may not be related to the issue of moisture content discussed above. It should be noted, however, that these very high reported waste generation rates lead directly to significant compliance cost estimates. If actual waste generation rates are lower, actual compliance costs and associated impacts will be less than those predicted here.

Another conservative assumption that the Agency has made in conducting this analysis is that affected firms would continue using current air pollution control methods and, therefore, continue to generate wet APC scrubber solids. Nearly one half of the lightweight aggregate industry currently uses dry collection methods, including one of the facilities operated by Solite that burns hazardous waste fuel. Waste generation rates using dry collection methods are generally significantly lower than those using wet collection methods. In addition, information submitted to EPA indicates that at some facilities, the APC dust is recycled into the lightweight aggregate kilns from which it is generated, such that the process does not generate any substantial quantity of solid wastes. To the extent that the facilities examined in this analysis could install dry dust collection systems and recycle the solids rather than continue to use wet collection systems, costs and

related impacts could be reduced *even if* the facilities continued to utilize listed hazardous wastes as fuel supplements.

Finally, the affected firms, Solite and Norlite, could potentially avoid subtitle C regulation altogether by either (1) converting entirely to other fuels and discontinuing use of listed hazardous wastes as fuel, or (2) having their waste streams delisted on a site-specific basis. EPA notes here that Solite has indicated in its public comments on the September 25, 1989, and previous proposed rules that it would not continue to accept and burn hazardous waste fuels if the Bevill exemption were to be removed from its wastes. While the Agency recognizes that this course of action is a distinct possibility and perhaps the least cost compliance alternative, the Agency was not able in the present screening analysis to evaluate the available fuel conversion option due to a lack of factual information about such factors as retrofitting costs, thermal value of currently used hazardous waste fuels, and the revenues accruing to the two firms for accepting the hazardous wastes from individual generators. For the same reasons, i.e., insufficient data, it has also not been possible to predict the outcome of any attempt by the firms to have the APC scrubber wastes in question officially delisted (withdrawn from subtitle C regulation) by the Agency.

Similarly, while EPA acknowledges that intermediate alternatives may be available, such as burning only characteristic rather than listed hazardous wastes in at least some kilns, currently available information is insufficient to assess the feasibility or cost implications of this type of operational change.

Consequently, EPA's compliance cost analysis has been conducted using the best currently available information to develop what are essentially worst-case compliance cost estimates for the lightweight aggregate commodity sector. To the extent that the affected facilities can (1) avoid subtitle C regulation by fuel changes and/or equipment modifications or successful delisting petitions, or (2) employ waste-reduction techniques to generate lesser quantities of APC scrubber solids subject to the derived-from rule, the costs and impacts reported here may represent a substantial overestimate.

B. Aggregate and Sector Compliance Costs

The impact screening analysis projects that eleven facilities in four different mineral processing commodity

* Addendum to the Technical Background Document: Development of the Cost and Economic Impacts of Implementing the Bevill Mineral Processing Wastes Criteria. Economic Analysis Staff, Office of Solid Waste, USEPA, January 12, 1990.

sectors will be affected directly by today's final rule. Thirty-five facilities in these four sectors are expected to be unaffected by today's rule because they either (1) do not generate the processing waste in question, (2) routinely recycle the material as a process input, or (3) produce a waste that apparently does not fail standard EPA hazardous waste test criteria. Another three facilities, one in the titanium dioxide sector, and two in the lead sector, are believed to be unaffected by virtue of already incorporating subtitle C (or equivalent NPDES wastewater treatment) practices in their current waste management systems. In aggregate, the total impact of today's rule is estimated to be about \$18.5 million per year. EPA cost estimates for individual commodity sectors and facilities are presented in Table 4.

For the reasons discussed above, the major part of the total estimated compliance costs (96 percent) falls upon the five lightweight aggregate facilities currently burning listed hazardous wastes as fuel. Cost impacts range from \$2.5 million annually for the Norlite and Florida Solite facilities to almost \$4.6 million annually for Solite's Arvonis, Virginia, facility. The reasons for the large magnitude of these compliance cost estimates are the host of conservative analytical assumptions articulated above, together with the relatively large quantities of scrubber wastes reported by the Solite company.

One other sector, titanium dioxide, is expected to experience aggregate sector

impacts of about \$1.8 million annually. Within this sector, all of the cost impacts are predicted to fall on one of the two facilities, with the other producer's waste management costs being unaffected by removal from the Bevill exclusion. Three of five primary lead facilities are projected to incur costs. Two primary lead producers, Asarco and Doe Run, are expected to experience annual compliance costs of \$41,000 and \$235,000, respectively, with estimated costs for their individual primary lead facilities ranging from zero to \$201,000 annually, depending on current management practices and plant-specific waste characteristics.

The two (of five) elemental phosphorus plants that are expected to experience impacts have total estimated incremental costs of \$179,000 annually, with the vast majority (\$173,000) imposed on the facility owned by Occidental Chemical Corporation.

In response to public comments on the analysis presented in the September 25 proposal, EPA wishes to clarify certain aspects of these cost estimates as they relate to land disposal restrictions and corrective action. The Agency did not explicitly address the potential impact of prospective land disposal restrictions in the present economic impact screening analysis. The Agency did, however, develop its compliance cost estimates based on environmentally sound management practices for subtitle C waste disposal. For example, for EP toxic liquid waste streams, the Agency included a solidification and

stabilization step in the waste treatment sequence, which would allow any treatment residual (e.g., EP toxic sludge) to be disposed in a subtitle C landfill. While this engineering compliance construct does not necessarily represent a precise BDAT under the LDRs for the wastes in question (because LDRs for characteristic wastes have not been promulgated, nor has BDAT been defined), EPA believes that it is a reasonable and realistic means of characterizing environmentally protective waste management under subtitle C, and captures the essence of what would be required of facility operators when LDRs for these wastes go into effect.

With respect to corrective action, EPA did not consider the effect of corrective action requirements on potential costs and impacts associated with today's rule. Many of the facilities potentially affected by today's are likely to avoid being drawn into the subtitle C system as a treatment, storage, or disposal (TSD) facility and hence avoid becoming subject to corrective action requirements. To the extent that a facility must become permitted, facility-wide corrective action would apply. In the case of the one facility that is already a permitted TSD, today's rule has no incremental impact, because it is already subject to corrective action requirements. Therefore, the Agency believes that the practical consequences of not addressing corrective action requirements in the present screening analysis may not be substantial.

TABLE 4.—SUMMARY OF PRODUCTION, VALUE OF SHIPMENTS, AND COMPLIANCE COSTS

Commodity sector ¹	Number of plants producing commodity	Production ² (MT/YR)	Unit value ³ (\$/MT)	Value of shipments (\$/YR)	Compliance costs (\$/YR)	Costs per metric ton of product ⁴ (\$/MT)	Costs/value of shipments ⁵ (percent)
Elemental Phosphorus							
Entire Sector.....	5	341,950	1688	577,268,155	179,000	0.5	<0.1
Facilities Evaluated.....	2	174,150	1688	293,992,312	179,000	1.0	0.1
FMC—Pocahontas ID.....		122,449	1098	200,713,345	8,000	<0.1	<0.1
Occidental—Columbia TN.....		51,701	1688	87,278,958	173,000	3.3	0.2
Lead							
Entire Sector.....	5	374,633	724	271,162,781	276,000	0.7	0.1
Facilities Evaluated.....	5	374,633	724	271,162,781	276,000	0.7	0.1
Asarco—East Helena MT ⁶		52,189	724	37,775,036	41,000	0.9	0.1
Asarco—Glover MO ⁶		52,189	724	37,775,036	0	0.0	0.0
Asarco—Omaha NE ⁶		52,189	724	37,775,036	0	0.0	0.0
Doe Run—Buick MO.....		92,762	724	67,141,706	34,000	0.4	0.1
Doe Run—Herculaneum MO.....		125,304	724	90,695,963	201,000	1.6	0.2
Lightweight Aggregate							
Entire Sector ⁷	30	4,140,642	27.5	113,973,910	16,206,000	3.9	14.2
Facilities Evaluated.....	6	911,458	27.5	25,089,493	16,206,000	17.8	64.6
Carolina Solite—Norwood NC ⁸		220,454	27.5	6,068,143	3,610,000	16.4	59.5
Florida Solite—Green Cove FL ⁸		112,491	27.5	3,098,390	2,518,000	22.4	81.3
Kentucky Solite—Brooks KY ⁸		175,088	27.5	4,819,414	2,907,000	17.1	62.2
Virginia Solite—Arvonis VA ⁸		221,989	27.5	6,110,373	4,553,000	20.5	74.5
Norlite—Cohoes NY ⁸		181,437	27.5	4,994,174	2,528,000	13.9	50.6
Titanium Dioxide							
Entire Sector.....	9	893,378	1891	1,690,482,634	1,817,000	2.0	0.1
Facilities Evaluated.....	2	114,266	1891	216,134,766	1,817,000	15.9	0.8
Kemira Oy—Savannah GA ⁹		54,422	1891	102,921,317	0	0.0	0.0
SCM—Baltimore MD ⁹		59,864	1891	113,213,449	1,817,000	30.4	1.6

TABLE 4.—SUMMARY OF PRODUCTION, VALUE OF SHIPMENTS, AND COMPLIANCE COSTS—Continued

Commodity sector ¹	Number of plants producing commodity	Production ² (MT/YR)	Unit value ³ (\$/MT)	Value of shipments (\$/YR)	Compliance costs (\$/YR)	Costs per metric ton of product ⁴ (\$/MT)	Costs/value of shipments ⁵ (percent)
Combined total—all four sectors							
All Facilities.....	49	5,751,103	461	2,652,885,481	18,478,000	3.2	0.7
Affected Facilities Only ⁶	11	1,415,726	444	627,906,964	18,478,000	13.1	2.9

¹ Facilities evaluated are those believed to generate wastes that may exhibit hazardous characteristics or be hazardous by virtue of the derived-from rule.

² 100 percent capacity utilization is assumed, except as noted.

³ Totals for unit value, costs per metric ton of product, and costs/value of shipments are calculated and not the sum of the individual facility values.

⁴ Capacity and production values apportioned equally among the three Asarco facilities.

⁵ Production figure source: Minerals Yearbook, 1987, p. 258.

⁶ Production figure as reported by the facility in response to the 1989 National Survey of Solid Wastes from Mineral Processing.

⁷ Production figure calculated from firm-wide waste-to-product ratio and reported waste generation rate provided in 11/88 public comments.

⁸ Sulfate process only.

⁹ Affected facilities are the facilities evaluated having non-zero compliance costs.

C. Economic Impacts

EPA's screening-level analysis of economic impact compared the magnitude of annual compliance costs for each affected facility to the estimated value of shipments. This ratio provides a first approximation of the extent to which the profitability of firms, or, alternatively, commodity prices, or other measures of national impact may be adversely affected by the imposition of regulatory compliance costs.

Sectors or facilities with ratios above one percent were considered vulnerable to moderate to significant financial impacts and were evaluated in more detail in terms of market and industry factors that might affect the ultimate incidence and impact of the costs.

As seen in Table 4, despite the fact that only a small percentage of facilities in the lightweight aggregate sector would be affected (five of thirty), the magnitude of the estimated incremental waste management cost is sufficient to indicate potentially significant sector-wide impacts, particularly at the regional level. Upper bound compliance cost ratios at the level of the individual affected facilities are extreme, ranging from 51 percent to 81 percent of value of shipments.

For the other sectors, only one facility (in the titanium dioxide (sulfate) sector) is predicted to experience impacts somewhat one percent level, at about 1.5 percent. This level of impact is regarded as moderate. The two elemental phosphorus (FMC and Occidental), and primary lead (Asarco and Doe Run) producers examined in this study are expected to experience relatively minor long-term economic impacts. Obviously, firms and facilities already in compliance and with compliance costs of zero (i.e., Kemira and Asarco) will not experience any negative economic impacts associated with this rule.

1. Facility and Sector Impacts

To further explore the economic impact of today's final rule, EPA has examined some of the factors that influence the ability of affected firms to pass through prospective compliance costs to product consumers in the form of higher prices. These factors include absolute price levels, major end uses of the mineral commodity, competition from imports and substitutes, secondary production, and flexibility in other production cost factors.

a. Lightweight Aggregate. Lightweight aggregate has three major uses, which generally reflect its superior performance capabilities as a construction material. The three main applications are in concrete block (81 percent of total consumption), highway resurfacing (19 percent), and structural concrete (18 percent).¹⁰ A fourth, though small use (about 2 percent), involves new applications in recreational and horticultural materials.¹¹

Most lightweight aggregate produced in the U.S. is used in manufacturing concrete block. Lightweight aggregate is valued as a high-strength aggregate for concrete forms, because it allows a significant weight savings over heavier aggregates. The weight savings permit structures to be designed at an overall lower cost.¹² Concrete block fabricated from lightweight aggregate also has better insulating properties than block using denser substitutes.

Lightweight aggregate's second major use is in road surfacing, where it is used as an ingredient in asphalt surfaces. It offers superior skid-resistance compared to other bulk fillers.¹³ Lightweight

aggregate's third major application is as a component of structural concrete, such as in bridge surfaces and floors in high-rise buildings, where its low weight and high strength are useful.¹⁴

Lightweight aggregate is valued in its main applications because of its weight savings and performance features (skid resistance, insulating abilities, and strength), though substitutes can compete in cases where users do not have stringent requirements for these qualities and are willing to use one of the available substitutes. Competition within lightweight aggregate's primary applications comes from other building materials, with the main substitute being heavy-weight stone (aggregate). Other substitutes include light natural aggregates (pumice or cinders) and foam.¹⁵

Markets for lightweight aggregate are basically regional or local rather than national. The widespread availability of domestic clays suitable for lightweight aggregate production, the high cost of transportation for aggregates, and the relatively low market value (price) of this commodity limit the size of market areas. As a result, firms in the industry, which are widely scattered across the U.S., are limited in their ability to expand their sales into competitors' territories without actually constructing new plants.

International trade in the lightweight aggregate sector is extremely limited. As shown in Table 5, the United States is a significant net exporter of clays as a general category. Trade data for finished lightweight aggregate are not available, though a trade source indicates that imports have not affected lightweight aggregate's market to a large degree, other than some recent imports of pumice from the Mediterranean area.¹⁶

¹⁰ Bureau of Mines, *Minerals Yearbook 1987*.

"Clays," Page 254.

¹¹ *Ibid.*

¹² *The Building Estimator's Reference Book*, F.R. Walker Publishers, Lisle, IL, 1989, Page 3.158.

¹³ Amptian, Sarkis G. "Clays," in *Mineral Facts and Problems*, U.S. Bureau of Mines, 1987, Page 165.

¹⁴ *Ibid.*, page 165.

¹⁵ J. Ries, Expanded Clay and Shale Institute, Personal communication, December 29, 1989.

¹⁶ *Ibid.*

Energy costs are an important component of production costs for the lightweight aggregate industry. Kilns are reported to require 2.0 to 6.1 million BTUs of fuel per MT of lightweight aggregate produced.¹⁷ Residual oil (the fuel used in most kilns) costs approximately \$2.39 per million BTUs in 1988.¹⁸ Assuming this fuel cost, the cost of fuel per MT lightweight aggregate is at least \$4.80, and could possibly be as high as \$14.60 (though the higher fuel consumption rate might apply at plants configured to use less expensive fuels).

It is therefore apparent that energy costs account for a substantial portion of the margin between the raw material cost of clay (\$10 per MT) and the price of finished lightweight aggregate (as low as \$24 per MT). Consequently, facilities that can achieve fuel cost savings by using hazardous wastes as fuel supplements are likely to have a substantial current cost advantage over facilities relying solely upon other fuels, such as oil or coal, especially since they can generally charge a disposal fee to waste generators. Compliance costs associated with today's rule would reduce this cost advantage, though if a facility elected to continue using listed hazardous wastes its total production costs would rise above industry norms only to the extent that the incremental compliance costs exceeded the fuel cost savings that it currently enjoys. Alternatively, if the facility elected to stop using the listed hazardous wastes, it would (after any necessary retrofitting) have fuel costs comparable to the majority of other facilities in the industry.

In summary and for several reasons, EPA believes that the lightweight aggregate producers affected by today's rule will not suffer the calamitous economic impacts that might be

suggested by the Agency's incremental cost estimates, even if one assumes that these upper limit cost impacts will actually be incurred. First, facilities that currently burn hazardous waste as fuel enjoy a potentially significant cost advantage with respect to their competitors. This advantage may mitigate, perhaps to a considerable extent, the cost impacts of today's rule. In addition, because of the special physical characteristics offered by lightweight aggregate in comparison with conventional aggregates, affected producers may have some ability to pass through compliance costs to local industrial and public sector markets in the form of higher prices, though to an uncertain extent. Finally, high transportation costs and a widely dispersed domestic industry suggest that moderate price increases could be sustained, at least for lightweight aggregate applications that require the low density and high strength offered by this material.

b. Titanium Dioxide. Titanium dioxide is used in pigments for paints and surface coatings, paper manufacturing, and plastics. Half of titanium dioxide production is consumed in pigments, where its competitive position is strong. Demand for high-quality paper also favors titanium dioxide.

The domestic industry supplies most of the titanium dioxide used in the U.S., with imports exceeding exports by only a moderate degree. As a result, titanium dioxide is in a relatively strong domestic market position. Producers using the sulfate process, however, are in a minority and account for only one eighth of domestic production. It is not likely that the one affected producer could establish a premium for its product and would therefore be limited in the extent to which it could recover cost increases.

2. Effects on Consumer Prices

For several reasons, EPA believes that

this rule will not create any appreciable changes in consumer prices. The first and principal reason is the generally low overall percentage of compliance costs to product value, which does not exceed one percent for any affected commodity except lightweight aggregate. Combined with this is the fact that not all producers in these sectors are affected equally (many domestic competitors are not affected at all) and that other domestic or foreign competitors could fill production shortfalls, either with identical or substitutable products. Finally, since all the affected commodities are primary intermediate raw material inputs to the production of other finished products, their relative contribution to final consumer goods prices is, in any case, typically quite small.

3. Foreign Trade Impacts

Trade is substantial in many of the mineral commodities covered by today's rule, but is probably only likely to be a factor with respect to titanium dioxide. Basic import and export data for the sectors that generate potentially hazardous wastes are presented in Table 5. Import and export figures for lightweight aggregate (expanded shale) are not available, although international trade is not thought to be a significant factor for this sector. Because imports of titanium dioxide are significant, the ability of the affected domestic producer to raise prices to recover compliance costs, is, as discussed above, further limited, and there may be a modest stimulus towards import expansion.

In view of the above, it is unlikely that the overall trade balance in the domestic minerals industry will be significantly affected by today's rule, though in one sector regulatory cost impacts may increase already positive net imports to a small degree.

TABLE 5.—IMPORTS AND EXPORTS OF MINERALS, 1987

Commodity sector	Commodity forms(s)	Domestic production		Imports		Exports	
		Quantity (MT)	Value (\$000)	Quantity (MT)	Value (\$000)	Quantity (MT)	Value (\$000)
Elemental Phosphorus		341,950	577,256	4,463	6,609	20,302	30,796
Lead	Pigs and bars (content) ¹	374,633	271,153	185,673	123,157	10,116	11,945
Lightweight Aggregate	Clays (all types) ²	* 4,140,642	* 113,974	34,191	9,392	3,023,533	512,964
Titanium Dioxide	Titanium Dioxide Pigments (content)	893,878	1,630,483	162,739	236,945	99,731	181,707

Source: Bureau of Mines. Minerals Yearbook 1987. pp. 61, 64, 221, 223, 258, 260, 262, 377, 684, 889, 893, and 894.

¹ Exports include cathodes and sheets.

² Import/export data for lightweight aggregate are unavailable.

* Data reflect lightweight aggregate production only.

VIII. Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA) of 1980 (Pub. L. 96-354), which amends the Administrative Procedures Act, requires Federal regulatory agencies to consider "small entities" throughout the regulatory process. The RFA requires, in section 603, an initial screening analysis to be performed to determine whether a substantial number of small entities will be significantly affected by a regulation. If so, regulatory alternatives that eliminate or mitigate the impacts must be considered.

In the preamble to the September 25 proposed rule, the Agency presented documentation of and the rules from a screening analysis to determine the potential for significant small business impacts imposed by the proposed reinterpretation of the Mining Waste Exclusion (see 54 FR 39316-7). At that time it was determined that no small business enterprises would be adversely affected by the rule, as proposed.

The changes that have occurred in today's final rule, as distinct from the September 25, 1989, proposal, have served to reduce the number of potentially affected sectors while increasing slightly the number of potentially affected facilities. Based upon the revised cost and economic impact analysis presented above, and further data collection and analysis by the Agency, EPA has concluded that only one small business enterprise, Norlite Corporation, with approximately 75 employees,¹⁹ might be adversely affected by today's final rule. Therefore, EPA concludes that, just as in the September 25 proposal, there will not be a significant adverse impact on a substantial number of small mineral processing companies, because among the affected sectors there is only one small business that is expected to experience impacts from today's final rule.

IX. List of Subjects in 40 CFR 260, 261 and 262

Designated facility, Hazardous waste, Waste treatment and disposal, Recycling, Reporting and recordkeeping requirements, Manifests.

Dated: January 12, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, parts 260, 261 and 262 of title

40 of the Code of Federal Regulations is amended as follows:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for Part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

2. Section 260.10 is amended by revising the definition "designated facility" to read as follows:

§ 260.10 Definitions.

"Designated facility" means a hazardous waste treatment, storage, or disposal facility which (1) has received a permit (or interim status) in accordance with the requirements of parts 270 and 124 of this chapter, (2) has received a permit (or interim status) from a State authorized in accordance with part 271 of this chapter, or (3) is regulated under § 261.6(c)(2) or subpart F of part 266 of this chapter, and (4) that has been designated on the manifest by the generator pursuant to § 260.20. If a waste is destined to a facility in an authorized State which has not yet obtained authorization to regulate that particular waste as hazardous, then the designated facility must be a facility allowed by the receiving State to accept such waste.

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

3. The authority citation for Part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6922.

4. Section 261.4 is amended by revising paragraph (b)(7), to read as follows:

§ 261.4 Exclusions.

(b)
(7) Solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore. For purposes of § 261.4(b)(7), beneficiation of ores and minerals is restricted to the following activities: Crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or

chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and *in situ* leaching. For the purposes of § 261.4(b)(7), solid waste from the processing of ores and minerals will include only the following wastes, until EPA completes a report to Congress and a regulatory determination on their ultimate regulatory status:

- (i) Slag from primary copper processing;
- (ii) Slag from primary lead processing;
- (iii) Red and brown muds from bauxite refining;
- (iv) Phosphogypsum from phosphoric acid production;
- (v) Slag from elemental phosphorus production;
- (vi) Gasifier ash from coal gasification;
- (vii) Process wastewater from coal gasification;
- (viii) Calcium sulfate wastewater treatment plant sludge from primary copper processing;
- (ix) Slag tailings from primary copper processing;
- (x) Fluorogypsum from hydrofluoric acid production;
- (xi) Process wastewater from hydrofluoric acid production;
- (xii) Air pollution control dust/sludge from iron blast furnaces;
- (xiii) Iron blast furnace slag;
- (xiv) Treated residue from roasting/leaching of chrome ore;
- (xv) Process wastewater from primary magnesium processing by the anhydrous process;
- (xvi) Process wastewater from phosphoric acid production;
- (xvii) Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;
- (xviii) Basic oxygen furnace and open hearth furnace slag from carbon steel production;
- (xix) Chloride process waste solids from titanium tetrachloride production;
- (xx) Slag from primary zinc processing.

¹⁹ Source: Duns Market Identifiers, Dialog Information Services, Inc., 1989.

**PART 262—STANDARDS APPLICABLE
TO GENERATORS OF HAZARDOUS
WASTE**

5. The authority citation for Part 262 continues to read as follows:

Authority: 42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937.

6. Section 262.23 is amended by adding paragraph (e) to read as follows:

§ 262.23 Use of the manifest.

* * * * *

(e) For shipments of hazardous waste to a designated facility in an authorized State which has not yet obtained authorization to regulate that particular

waste as hazardous, the generator must assure that the designated facility agrees to sign and return the manifest to the generator, and that any out-of-state transporter signs and forwards the manifest to the designated facility.

[FR Doc. 90-1402 Filed 1-22-90; 8:45 am]
BILLING CODE 6560-50

RCRA REVISION CHECKLIST 72

Modification of F019 Listing

55 FR 5340-5342

February 14, 1990

(Non-HSWA Cluster VI)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART D - LISTS OF HAZARDOUS WASTES

† HAZARDOUS WASTE FROM NON-SPECIFIC SOURCES

revise entry "F019"	261.31				
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Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
*	*	*
F019.....	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(T)
*	*	*

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261 and 302

(FRL-3680-6)

RIN 2050-AC78

Hazardous Waste Management Systems; Identification and Listing of Hazardous Waste; Reportable Quantity Adjustment

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is today amending the list of hazardous wastes from non-specific sources under 40 CFR 261.31 by modifying the scope of the EPA Hazardous Waste No. F019. The Agency is amending the F019 listing to exclude wastewater treatment sludges from the zirconium phosphating step, when such phosphating is an exclusive process in the aluminum can washing process, because the Agency believes that such sludges do not pose a substantial hazard to human health or the environment and should not be regulated as a listed hazardous waste. The Agency also is removing these zirconium phosphating sludges from the list of hazardous substances under Part 302.4. This modification to the F019 listing does not affect any other wastewater treatment sludges from the chemical conversion coating of aluminum.

DATE: This regulation becomes effective on February 14, 1990.

ADDRESSES: Copies of materials relevant to this final rulemaking are located at the RCRA docket at the U.S. EPA, 401 M Street, SW., Washington, DC 20460. The RCRA docket is located in Room SE 2427 and is open from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays; the public must make an appointment in order to review materials by calling (202) 475-9327. Refer to "Docket number F-89-F19P-FFFFF" when making appointments to review materials relevant to this rulemaking. The public may copy 100 pages from the docket at no charge; additional copies are \$0.15 per page.

FOR FURTHER INFORMATION CONTACT: The RCRA/CERCLA Hotline at (800)-424-9346 or, in the Washington, DC area, (202) 382-3000. For technical information on the RCRA portion of the rule, contact Ms. Denise A. Wright, Listing Section, Office of Solid Waste (OS-333) at (202) 245-3519. For technical information on the CERCLA portion of the rule, contact Ms. Ivette Vega,

Response Standards and Criteria Branch, Emergency Response Division (OS-210) at (202) 475-7369. Both are available at U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

SUPPLEMENTARY INFORMATION: The contents of today's preamble are listed in the following outline:

- I. Background
- II. Response to Comments
- III. Relationship to Other Regulatory Authorities
- IV. State Authority
 - A. Applicability of Rules in Authorized States
 - B. Effect on State Authorizations
- V. Effective Date
- VI. Regulatory Impact
- VII. Regulatory Flexibility Act
- VIII. Paperwork Reduction Act

I. Background

On August 4, 1989, EPA proposed to amend its regulations under RCRA to modify the scope of the F019 hazardous waste listing to exclude wastewater treatment sludges from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process (54 FR 32320). The Agency proposed to exclude these wastes because they do not pose a substantial hazard to human health and the environment and should not be regulated.

EPA originally listed wastewater treatment sludges from the chemical conversion coating of aluminum as F019 due to its belief that these processes used complexed cyanides and chromium and typically resulted in hazardous sludges. The Agency later learned, however, that one of the chemical conversion coating processes—zirconium phosphating performed during the washing of aluminum cans—is not expected to result in hazardous wastewater treatment sludges.

After reviewing the process chemistry, typical conversion coating solutions used, and analytical data, the Agency concluded that, although the sludge currently meets the F019 listing description, this sludge should not have been included in the F019 listing because it is not hazardous. No hazardous constituents (listed in appendix VIII of 40 CFR part 261) are contained or used in this conversion coating step, except for hydrofluoric acid. The zirconium phosphate solution typically used includes fluorozirconic acid (as a source of zirconium), nitric and hydrofluoric acids, and phosphoric acid. The hydrofluoric acid, which is present in the can washing wastewater in low concentrations that are readily treated, is chemically converted in the

wastewater treatment process into calcium fluoride or calcium aluminum fluoride, which is non-hazardous. Thus, the slightly alkaline sludge would not be expected to contain any hazardous constituents, nor exhibit any of the characteristics of hazardous waste. The Agency's review of analytical data on these wastewater treatment sludges did not indicate the presence of significant concentrations of Appendix VIII constituents. Additionally, the data showed that these sludges do not exhibit any hazardous waste characteristics. The Agency is, therefore, amending the F019 listing to exclude the wastewater treatment sludges from the zirconium phosphating step of the aluminum can washing process.

This final exclusion applies only to sludges from processes that exclusively use zirconium phosphating solutions that do not contain chromium or cyanides. Further, these processes are not associated with electroplating or conversion coating steps where hazardous constituents are used. For example, if a can maker employs a chromating step, separately or in conjunction with such zirconium phosphating, the wastewater treatment sludges would meet the F019 listing and would not be excluded under this rulemaking.

As a result of this final exclusion, two delisting petitions that have been filed under 40 CFR 260.20 and 260.22 are unnecessary, since the wastes described in the petitions are not the F019 wastes. The two petitions are #0742 and #0743, which were filed by Continental Can Company for their Glendale, Wisconsin and LaCrosse, Wisconsin facilities, respectively. The Agency intends, therefore, to take no further action on these petitions.

II. Response to Comments

EPA received eight comments on the Agency's proposal to exclude wastewater treatment sludges from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process. All commenters supported the Agency's proposal. Two commenters, however, requested that EPA modify the proposed wording to exclude other zirconium-based conversion coating processes. The commenters claimed that these other zirconium processes do not contain hazardous constituents but did not provide any data to support their contention that the sludges from these processes are substantially equivalent to those covered by today's rule.

As stated in our proposal, the Agency recognizes that there may be other

wastewater treatment sludges from conversion coating processes falling within the scope of F019 which may not, in fact, contain or produce hazardous constituents. Because EPA does not have data on such wastes, the Agency did not propose to exclude them from the F019 listing. Thus, today's final rule does not address such wastes.

III. Relationship to Other Regulatory Authorities

All hazardous wastes listed pursuant to 40 CFR 261.31 through 261.33, as well as any solid waste that meets one or more of the characteristics of a RCRA hazardous waste (as defined in 40 CFR 261.21 through 261.24), are hazardous substances as defined at section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The CERCLA hazardous substances are listed at 40 CFR 302.4 along with their reportable quantities (RQs). CERCLA section 103(a) requires that persons in charge of vessels or facilities from which a hazardous substance has been released in a quantity that is equal to or greater than its RQ shall immediately notify the National Response Center of the release. In addition, section 304 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires the owner or operator of a facility to report the release of a hazardous substance or an extremely hazardous substance to the appropriate state emergency response commission (SERC) and to the local emergency planning committee (LEPC) when the amount released equals or exceeds the RQ for the substance, or one pound when no RQ has been set.

Effective today, the description of hazardous waste stream F019 in Table 302.4 is amended to exclude wastewater treatment sludges from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process. These zirconium phosphating sludges are no longer listed hazardous substances under CERCLA sections 101(14) and 102(a). Reporting of releases of sludge from the zirconium phosphating of aluminum cans process is no longer required, except as indicated below, under either section 103 of CERCLA or section 304 of SARA. Although the Agency has no reason to believe that releases of zirconium phosphating sludges will contain hazardous constituents subject to reporting under section 103 of CERCLA or section 304 of SARA, the Agency reminds the regulated community that reporting of releases of such sludges is required if a hazardous substance (which is contained as a constituent of the sludge)

is released to the environment above its RQ. Reporting also is required when the wastewater treatment sludge meets one or more of the characteristics of unlisted hazardous waste for ignitability, corrosivity, reactivity, or EP Toxicity and 100 pounds or more is released to the environment (50 FR 13456, April 4, 1985).

The existing 10-pound RQ of waste stream F019 is not affected by this rule, except for the exclusion of sludges from processes that use only zirconium phosphating. Releases of wastewater treatment sludges from the chemical conversion coating of aluminum (other than from exclusive zirconium phosphating) remain subject to the reporting requirements of section 103 of CERCLA and section 304 of SARA when a RQ or more is released to the environment.

IV. State Authority

A. Applicability of Rules in Authorized States

Under section 3008 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains inspection authority under section 3007 and enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized States have primary enforcement responsibility.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities in the State which the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under section 3008(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the Hazardous and Solid Waste Amendments of 1984 (HSWA) take effect in authorized States at the same time that they take effect in non-authorized States. The rulemaking promulgated today is not imposed pursuant to HSWA.

B. Effect on State Authorizations

Today's final rule is not effective in authorized States since the regulations are not being imposed pursuant to HSWA. Thus, the regulation is applicable only in those States that do not have interim or final authorization. In authorized States, the regulations will not be applicable until the State revises its program to adopt equivalent regulations under State law.

40 CFR 271.21(e)(2) requires that States that have final authorization must modify their programs to include equivalent regulations within a year of promulgation of these regulations if only regulatory changes are necessary, or within two years of promulgation if statutory changes are necessary. These deadlines can be extended in exceptional cases (40 CFR 271.21(e)(3)). Once EPA approves the modification, the State requirements become Subtitle C RCRA requirements.

It should be noted that authorized States are only required to modify their programs when EPA promulgates Federal regulations that are more stringent or broader in scope than the existing Federal regulations. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. This is a result of section 3009 of RCRA, which allows States to impose regulations in addition to those in the Federal program. The regulations promulgated today at 40 CFR 261.31 are considered to be less stringent or to reduce the scope of the existing Federal regulations. Therefore, authorized States are not required to modify their programs to adopt regulations equivalent or substantially equivalent to the provisions listed above.

V. Effective Date

This rule is effective February 14, 1990. The Hazardous and Solid Waste Amendments of 1984 amended section 3010 of RCRA to allow rules to become effective in less than six months when the regulated community does not need the six month period to come into compliance. This is the case here since this rule reduces, rather than increases, the existing requirements for persons generating hazardous wastes. In light of the unnecessary hardship and expense which would be imposed on the regulated community by an effective date six months after promulgation and the fact that such a deadline is not necessary to achieve the purpose of section 3010, this rule is effective February 14, 1990. This modification to

the listing is retroactive with regard to the above described previously generated zirconium wastes, because these particular wastes should not have been included within the scope of the 1980 listing. Thus, where this rule applies, EPA does not consider such wastes, whenever they were generated, to be F019. EPA's decision, however, does not affect authorized State regulation of such waste if a State's regulation is more stringent or broader in scope.

VI. Regulatory Impact

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This final rule reduces the regulatory requirements applicable to the regulated community. It is not major because it will not result in an effect on the economy of \$100 million or more, nor will it result in a major increase in costs or prices to individual industries, consumers, Federal, State or local government agencies, or geographic regions. Finally, there will be no adverse impact on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets. Accordingly, this final amendment is not a major regulation, and no Regulatory Impact Analysis has been conducted.

This final amendment was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291.

VII. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601-612, whenever an agency is required to publish a general notice of rulemaking, for any proposed or final rule, it must prepare and make available for public comment a

regulatory flexibility analysis which describes the impact of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). The Administrator may certify, however, that the rule will not have a significant economic impact on a substantial number of small entities.

This final amendment will not have a significant economic impact on small entities since it reduces regulatory requirements. Accordingly, I certify that this final rule will not have a significant economic impact on a substantial number of small entities. This regulation, therefore, does not require a regulatory flexibility analysis.

VIII. Paperwork Reduction Act

This final rule does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects

40 CFR Part 261

Hazardous wastes, Recycling.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous materials, Hazardous substances, Hazardous wastes, Intergovernmental relations, Natural resources, Nuclear materials, Pesticides and pests, Radioactive materials, and Recycling.

Dated: February 1, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, title 40 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

OSWER, DTP, No. 9541-00-14
Authority: Sections 1004, 2002(a), 3001, and 3002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6905, 6912(a), 6921 and 6922).

2. Section 261.31 is amended by revising entry "F019" to read as follows:

§ 261.31 Hazardous waste from non-specific sources.

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
F019.....	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(T)

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

3. The authority citation for part 302 continues to read as follows:

Authority: Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602; sections 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

4. Table 302.4 of § 302.4 is amended by revising the description of Hazardous waste stream F019 under the heading "Hazardous Substance" to read as follows:

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ		
			RQ	Code	RCRA Waste Number	Category	Pounds (kg)
F019: Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.....							

RCRA REVISION CHECKLIST 73

Testing and Monitoring Activities; Technical Corrections
 55 FR 8948-8950
 March 9, 1990
 (Non-HSWA Cluster VI)

Note: This checklist contains technical corrections to the final rule addressed by Revision Checklist 67 (54 FR 40260; September 29, 1989). States are encouraged to adopt the corrections addressed by this present checklist at the same time that the Revision Checklist 67 provisions are adopted.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART B - DEFINITIONS

REFERENCES

add a list of the
47 analytical testing
methods incorporated
by reference

260.11(a)

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

APPENDIX III TO PART 261

CHEMICAL ANALYSIS TEST METHODS

revise Footnote "a" of Table 2	Appendix III/Table 2				
revise Methods 7081 and 7420 in Table 3	Appendix III/Table 3				
revise Footnote "a" of Table 3	Appendix III/Table 3				

Special Analyses

As noted in the preceding paragraph, it has been determined that these regulations are not major regulations as defined in Executive Order 12291. Therefore, a Regulatory Impact Analysis is not required. It has also been determined that section 553(b) of the Administrative Procedure Act (5 U.S.C. chapter 5) and the Regulatory Flexibility Act (5 U.S.C. chapter 6) do not apply to these regulations and, therefore, a final Regulatory Flexibility Analysis is not required. Pursuant to section 7805(f) of the Internal Revenue Code, a copy of these regulations have been submitted to the Administrator of the Small Business Administration for comment on their impact on small business.

Drafting Information

The principal author of these final regulations is Frank Boland, Office of Assistant Chief Counsel (Passthroughs and Special Industries), Internal Revenue Service. However, personnel from other offices of the Internal Revenue Service and the Treasury Department participated in developing the regulations, both on matters of substance and style.

List of Subjects

26 CFR 1.0-1 through 1.58-8

Income taxes, Tax liability, Tax rates, Credits.

Adoption of Amendments to the Regulations

Accordingly, 26 CFR part 1 is amended as follows:

PART 1—INCOME TAX

Paragraph 1. The authority for part 1 continues to read in part:

Authority: 26 U.S.C. 7805 * * *

Par. 2. Section 1.40-1 is revised to read as follows:

§ 1.40-1 Questions and answers relating to the meaning of the term "qualified mixture" in section 40(b)(1).

Q-1. What is a "qualified mixture" within the meaning of section 40(b)(1)?

A-1. A "qualified mixture" is a mixture of alcohol and gasoline or of alcohol and special fuel which (1) is sold by the taxpayer producing such mixture to any person for use as a fuel, or (2) is used as a fuel by the taxpayer producing such mixture.

Q-2. Must alcohol be present in a product in order for that product to be considered a mixture of alcohol and either gasoline or a special fuel?

A-2. No. A product is considered to be a mixture of alcohol and gasoline or of

alcohol and a special fuel if the product is derived from alcohol and either gasoline or a special fuel even if the alcohol is chemically transformed in producing the product so that the alcohol is no longer present as a separate chemical in the final product, provided that there is no significant loss in the energy content of the alcohol. Thus, a product may be considered to be "mixture of alcohol and gasoline or of alcohol and a special fuel" within the meaning of section 40(b)(1)(B) if such product is produced in a chemical reaction between alcohol and either gasoline or a special fuel. Similarly a product may be considered to be a "mixture of alcohol and gasoline or of alcohol and a special fuel" if such product is produced by blending a chemical compound derived from alcohol with either gasoline or a special fuel.

Thus, for example, a blend of gasoline and ethyl tertiary butyl ether (ETBE), a compound derived from ethanol (a qualified alcohol), in a chemical reaction in which there is no significant loss in the energy content of the ethanol, is considered for purposes of section 40(b)(1)(B) to be a mixture of gasoline and the ethanol used to produce the ETBE, even though the ethanol is chemically transformed in the production of ETBE and is not present in the final product.

Fred T. Goldberg, Jr.,

Commissioner of Internal Revenue.

Approved: February 23, 1990.

Kenneth W. Gideon,

Assistant Secretary of the Treasury.

[FR Doc. 90-5063 Filed 3-8-90; 8:45 am]

BILLING CODE 4830-01-M

ENVIRONMENTAL PROTECTION AGENCY**40 CFR Part 141**

[FRL-3731-7]

National Primary Drinking Water Regulations; Monitoring Requirements

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of public meeting.

SUMMARY: This notice announces the time and place for a public meeting to discuss a framework for standardizing monitoring requirements for most drinking water contaminants regulated under the Safe Drinking Water Act. This framework would establish three-, six-, and nine-year compliance monitoring cycles and include, at a minimum,

inorganic, synthetic organic, and radionuclide contaminants.

DATES: EPA will hold a public meeting to discuss the framework on April 6, 1990. The meeting will run from 9 a.m. until approximately 12 p.m.

ADDRESSES: The meeting will be held at EPA's Washington Information Conference Center, room #3 North, 401 M Street SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: Al Havinga, (202) 382-5555.

SUPPLEMENTARY INFORMATION: Copies of the proposed framework and further information with respect to this notice are available through (1) the Safe Drinking Water Hotline, telephone (800) 426-4791 or (202) 382-5533 in Alaska and the Washington, DC metropolitan area; or by contacting Al Havinga, Criteria and Standards Division, Office of Drinking Water (WH-550D), Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, telephone (202) 382-5555.

Dated: March 2, 1990.

Robert H. Wayland III,

Acting Assistant Administrator for Water.

[FR Doc. 90-5453 Filed 3-8-90; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Parts 260 and 261

[FRL-3731-6]

Hazardous Waste Management System; Testing and Monitoring Activities

AGENCY: Environmental Protection Agency (EPA).

ACTION: Technical corrections.

SUMMARY: The Environmental Protection Agency (EPA) is today making corrective amendments to a final rule adopting 47 analytical testing methods for use in meeting the regulatory requirements under subtitle C of the Resource Conservation and Recovery Act (RCRA), published on September 29, 1989 (54 FR 40260-40269). These new methods are found in the Third Edition of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Office of Solid Waste Publications SW-846, and its Revision I. Today's correction adds a list of the 47 analytical testing methods to the section of the regulations that incorporates these methods by reference, 40 CFR 260.11(a). This amendment is necessary since language incorporating these methods was inadvertently left out of the final rule. This amendment also corrects Tables 2 and 3 of Appendix III to 40 CFR part 261.

EFFECTIVE DATE: This amendment becomes effective on March 9, 1990. The incorporation by reference of portions of the publication listed in the regulation is approved by the Director of the Federal Register as of March 9, 1990.

ADDRESSES: The official record for this rulemaking (Docket No. F-84-ATMP-FFFFF) is available for review at the EPA RCRA Docket, Room M-2427, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, and is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding Federal holidays. The public must make an appointment to review docket materials by calling (202) 475-9327. The public may copy 100 pages of material from any one regulatory docket at no cost; additional copies cost \$0.15 per page.

Copies of the Third Edition of SW-846 and its Revision I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238. The document number is 955-001-00000-1 and the cost is \$110.00 for the four-volume set plus updates. Update packages are automatically mailed to all subscribers.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline at (800) 424-9346 (toll free) or (202) 382-3000. For information on the technical aspects of this rule contact Charles Sellers, Office of Solid Waste, OS-331, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-4761.

SUPPLEMENTARY INFORMATION:

I. Background and Rationale

On September 29, 1989, the Agency published a Final Rule in the *Federal Register* (54 FR 40260-40269), adopting 47 analytical testing methods for use in meeting regulatory requirements under subtitle C of the Resource Conservation and Recovery Act (RCRA). The 47 methods are found in the Third Edition of SW-846 and its Revision I. All 47 methods were originally proposed on October 1, 1984 (49 FR 33786-33812).

When methods are adopted, as they were in the September 1989 notice of final rulemaking, they are incorporated by reference in 40 CFR 260.11. While the final rule did amend § 260.11, no specific reference was made to the 47 analytical testing methods, where they were published, or how to obtain copies. Therefore, the Agency is amending the final rule, published on September 29, 1989, by including in § 260.11 a list of the 47 analytical testing methods, a description of where they are published, and directions on how to obtain copies.

The Agency is also amending the footnote to Tables 2 and 3 of Appendix III of 40 CFR part 261 (54 FR 40266, 40267) to clarify that the 47 analytical testing methods are found in the Third Edition of SW-846 and its Revision I.

In addition, Table 3 of Appendix III, "Sampling And Analysis Methods Contained in SW-846," has two typographical errors in the Second Edition column under "Method No." Method 7881 (Barium, Furnace AAS) should be changed to Method 7081, and Method 7470 (Lead, Flame AAS) should be changed to Method 7420. The Agency is amending Table 3 to incorporate the above changes.

Since this notice involves only technical corrections and clarification, no public comment period will be necessary. Any correspondence regarding corrections to Appendix III of part 261 should be sent to Mr. Charles Sellers at the address shown in the "FOR FURTHER INFORMATION CONTACT" section of this notice. Under 5 U.S.C. 553(b)(B), a rule is exempt from notice and public comment requirements "when the Agency for good cause finds (and incorporates the finding and a brief statement of reasons therefore in the rules issued) that notice and public procedures thereon are impracticable, unnecessary, or contrary to the public interest. See 5 U.S.C. 553(d) and 42 U.S.C. 6930(b).

II. Regulatory Impact Analysis

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirement of a Regulatory Impact Analysis. Due to the nature of this regulation (technical correction), the amendment is not "major"; therefore, no Regulatory Impact Analysis is required.

III. List of Subjects in 40 CFR Parts 260 and 261

Hazardous waste, Reporting and recordkeeping requirements, incorporation by reference.

Dated: March 2, 1990.

Mary A. Gade,

Acting Assistant Administrator for Solid Waste and Emergency Response.

For the reasons set out in the preamble, title 40 of the Code of Federal Regulations is amended as follows:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

Subpart B—Definitions

2. Section 260.11 is amended by adding a fifth reference in paragraph (a) to read as follows:

§ 260.11 References.

(a)
The following 47 analytical testing methods are contained in the Third Edition of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" EPA Publication SW-846 (November 1986) and its Revision I (December 1987), which are available for the cost of \$110.00 from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238 (document number 955-001-00000-1):¹

- 0010 Modified Method 5 Sampling Train
- 0020 Source Assessment Sampling System (SASS)
- 0030 Volatile Organic Sampling Train
- 1320 Multiple Extraction Procedure
- 1330 Extraction Procedure for Oily Wastes
- 3611 Alumina Column Cleanup and Separation of Petroleum Wastes
- 5040 Protocol for Analysis of Sorbent Cartridges from Volatile Organic Sampling Train
- 6010 Inductively Coupled Plasma Atomic Emission Spectroscopy
- 7090 Beryllium (AA, Direct Aspiration)
- 7091 Beryllium (AA, Furnace Technique)
- 7198 Chromium, Hexavalent (Differential Pulse Polarography)
- 7210 Copper (AA, Direct Aspiration)
- 7211 Copper (AA, Furnace Technique)
- 7380 Iron (AA, Direct Aspiration)
- 7381 Iron (AA, Furnace Technique)
- 7460 Manganese (AA, Direct Aspiration)
- 7461 Manganese (AA, Furnace Technique)
- 7550 Osmium (AA, Direct Aspiration)
- 7770 Sodium (AA, Direct Aspiration)
- 7840 Thallium (AA, Direct Aspiration)
- 7841 Thallium (AA, Furnace Technique)
- 7910 Vanadium (AA, Direct Aspiration)
- 7911 Vanadium (AA, Furnace Technique)
- 7950 Zinc (AA, Direct Aspiration)
- 7951 Zinc (AA, Furnace Technique)
- 9022 Total Organic Halides (TOX) by Neutron Activation Analysis
- 9035 Sulfate (Colorimetric, Automated, Chloranilate)
- 9036 Sulfate (Colorimetric, Automated, Methylthymol Blue, AA II)
- 9038 Sulfate (Turbidimetric)
- 9060 Total Organic Carbon
- 9065 Phenolics (Spectrophotometric, Manual 4-AAP with Distillation)
- 9066* Phenolics (Colorimetric, Automated 4-AAP with Distillation)
- 9067 Phenolics (Spectrophotometric, MBTH with Distillation)

¹ The Agency notes that, for guidance purposes, the Third Edition and its Revision I supersede the Second Edition and its Updates I and II. However, for regulatory purposes, the Second Edition and Updates I and II remain in effect together with the 47 methods of the Third Edition and its Revision I cited above. See 54 FR 40260-40269, September 29, 1989.

- 9070 Total Recoverable Oil and Grease
(Gravimetric, Separatory Funnel
Extraction)
- 9071 Oil and Grease Extraction Method for
Sludge Samples
- 9080 Cation-Exchange Capacity of Soils
(Ammonium Acetate)
- 9081 Cation-Exchange Capacity of Soils
(Sodium Acetate)
- 9100 Saturated Hydraulic Conductivity,
Saturated Leachate Conductivity, and
Intrinsic Permeability
- 9131 Total Coliform: Multiple Tube
Fermentation Technique
- 9132 Total Coliform: Membrane Filter
Technique
- 9200 Nitrate
- 9250 Chloride (Colorimetric, Automated
Ferricyanide AAI)
- 9251 Chloride (Colorimetric, Automated
Ferricyanide AAI)
- 9252 Chloride (Titrimetric, Mercuric Nitrate)
- 9310 Gross Alpha and Gross Beta
- 9315 Alpha-Emitting Radium Isotopes
- 9320 Radium-228

*When Method 9066 is used it must be preceded by the manual distillation specified in procedure 7.1 of Method 9065. Just prior to distillation in Method 9065, adjust the sulfuric acid-preserved sample to pH 4 with 1 + 9 NaOH. After the manual distillation is completed, the autoanalyzer manifold is simplified by connecting the re-sample line directly to the sampler.

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

3. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6922.

Appendix III—Chemical Analysis Test Methods

4. Footnote "a" of Table 2 is revised with the following:

* The Third Edition of SW-846 and its Revision I are available from the Government

Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238, document number 955-001-00000-1.

5. Methods 7081 and 7420 in Table 3 are revised to read as follows:

TABLE 3.—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846

Title	Third edition		Second edition	
	Section No.	Method No.	Section No.	Method No.
Barium, Furnace AAS.....	3.3	7081	7.0	7081
Lead, Flame AAS....	3.3	7420	7.0	7420

6. Footnote "a" of Table 3 is revised with the following:

* The Third Edition of SW-846 and its Revision I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238, document number 955-001-00000-1.

[FR Doc. 90-5454 Filed 3-8-90; 8:45 am]
BILLING CODE 5560-50-M

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Part 65

[Docket No. FEMA-6971]

Changes in Flood Elevation Determinations

AGENCY: Federal Emergency Management Agency.

ACTION: Interim rule; correction.

SUMMARY: This document corrects a Notice of Changes in Flood Elevation Determinations of modified base (100-

year) flood elevations previously published at 54 FR 43179 on October 23, 1989. This correction notice provides a more accurate representation of the Flood Insurance Rate Map in effect for the City of Atlanta, Fulton and De Kalb Counties, Georgia.

FOR FURTHER INFORMATION CONTACT: John L. Matticks, Chief, Risk Studies Division, Federal Insurance Administration, Federal Emergency Management Agency, Washington, DC 20472, (202) 646-2767.

SUPPLEMENTARY INFORMATION: The Federal Emergency Management Agency gives notice of the correction to the Notice of Changes in Flood Elevation Determinations of modified base (100-year) flood elevations for selected locations in the City of Atlanta, previously published at 54 FR 43179 on October 23, 1989, in accordance with section 110 of the Flood Disaster Protection Act of 1973 (Pub. L. 93-234), 87 Stat. 980, which added section 1363 to the National Flood Insurance Act of 1968 (title XIII of the Housing and Urban Development Act of 1968 (Pub. L. 90-448)), 42 U.S.C. 4001-4128, and 44 CFR part 65.4.

List of Subjects in 44 CFR Part 65

Flood insurance, Floodplains.

PART 65—[AMENDED]

1. The authority citation for part 65 continues to read as follows:

Authority: 42 U.S.C. 4001 et seq., Reorganization Plan No. 3 of 1978, E.O. 12127.

§ 65.4 [Amended]

2. Section 65.4 is amended by adding in alphabetical sequence new entries to the table.

State and county	Location	Date and name of newspaper where notice was published	Chief executive officer of community	Effective date of modification	Community No.
Georgia: Fulton and De Kalb.	City of Atlanta.....	October 19, 1989, October 26, 1989, <i>Atlanta Journal-Constitution</i> .	The Honorable Andrew Young, Mayor, City of Atlanta, 55 Trinity Avenue SW., Atlanta, Georgia 30335-0325.	October 23, 1989.	135157

Issued: March 1, 1990.

Harold T. Duryee,
Administrator, Federal Insurance
Administration.

[FR Doc. 90-5464 Filed 3-8-90; 8:45 am]

BILLING CODE 6718-03-M

RCRA REVISION CHECKLIST 74

Toxicity Characteristic Revisions
 55 FR 11798-11877
 March 29, 1990
 as amended on June 29, 1990, at 55 FR 26986-26998
 (RCRA Cluster II)

Note: 1) A correction to the preamble of the March 29, 1990 rule was published on August 2, 1990 (55 FR 31387). This notice corrected an implementation timetable and extended the period of time within which affected small quantity generators must comply with the new modification requirements. An August 10, 1990 (55 FR 32733) notice corrected the August 2, 1990 notice. On September 27, 1990, a clarification to the March 29 final rule was published in the Federal Register (55 FR 39409) regarding four implementation issues. The clarification did not affect the Federal code addressed by this checklist. An interim final rule promulgated on October 5, 1990 (55 FR 40834) did affect the Federal code relevant to the Toxicity Characteristic. A separate revision checklist (Revision Checklist 80) was developed to address those changes effected by the interim final rule.

2) Two interim final rules (55 FR 40834; October 5, 1990 and 56 FR 3978; February 1, 1991) and a final rule (56 FR 13406; April 2, 1991) extended the compliance date of the Toxicity Characteristic (TC) rule for certain hydrocarbon recovery and remediation operations. This extension is addressed by Revision Checklist 80. Because a less stringent requirement than that imposed by the TC rule is in effect until January 23, 1993, that Revision Checklist is optional.

3) States are strongly encouraged to adopt the Permit Modifications rule (53 FR 37912; September 28, 1988; Revision Checklist 54) and the "Christmas Tree Rule" (54 FR 9596; March 7, 1989; Revision Checklist 61) to ease implementation of the Toxicity Characteristic Rule and future waste listings. While both of these rules are optional, they will greatly reduce the immediate permit burden resulting from the TC rule.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

EXCLUSIONS

replace "characteristic of EP toxicity" with "Toxicity Characteristic"	261.4(b)(6)(i)				
replace "characteristic of EP toxicity" with "Toxicity Characteristic solely for arsenic"	261.4(b)(9)				

RCRA REVISION CHECKLIST 74: Toxicity Characteristic Revisions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 add new paragraph regulating petroleum-contaminated media and debris that fail the 261.24 Toxicity Characteristic test and are subject to Part 280 corrective action	261.4(b)(10)				

PCB WASTES REGULATED UNDER TOXIC SUBSTANCE CONTROL ACT

exemption for PCB-containing wastes, already regulated under Part 761 (TSCA), that fail the 261.24 Toxicity Characteristic test (D018 through D043 only)	261.8				
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SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE

TOXICITY CHARACTERISTIC

remove "EP" before "toxicity"; insert "using the methodology outlined in Appendix II" after "after filtering"; change "purposes" to "purpose"	261.24(a)				
1 remove "EP" before "toxicity"; add D018 through D043 to Table 1; add new column with CAS numbers	261.24(b)				

RCRA REVISION CHECKLIST 74: Toxicity Characteristic Revisions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TABLE 1.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No. ¹	Contaminant	CAS No. ²	Regula- tory Level (mg/L)
D004	Arsenic.....	7440-38-2	5.0
D005	Barium.....	7440-39-3	100.0
D018	Benzene.....	71-43-2	0.5
D006	Cadmium.....	7440-43-9	1.0
D019	Carbon tetrachloride.....	56-23-5	0.5
D020	Chlordane.....	57-74-9	0.03
D021	Chlorobenzene.....	108-90-7	100.0
D022	Chloroform.....	67-68-3	6.0
D007	Chromium.....	7440-47-3	5.0
D023	o-Cresol.....	95-48-7	* 200.0
D024	m-Cresol.....	108-39-4	* 200.0
D025	p-Cresol.....	106-44-5	* 200.0
D026	Cresol.....		* 200.0
D016	2,4-D.....	94-75-7	10.0
D027	1,4- Dichloroben- zene.....	106-46-7	7.5
D028	1,2- Dichloroeth- ane.....	107-06-2	0.5
D029	1,1- Dichloroethy- lene.....	75-35-4	0.7
D030	2,4- Dinitrotoluene.....	121-14-2	* 0.13
D012	Endrin.....	72-20-8	0.02
D031	Heptachlor (and its hydroxide).....	76-44-8	0.008

D032	Hexachloroben- zene.....	118-74-1	* 0.13
D033	Hexachlorobuta- diene.....	87-68-3	0.5
D034	Hexachloroeth- ane.....	67-72-1	3.0
D008	Lead.....	7439-92-1	5.0
D013	Lindane.....	58-89-9	0.4
D009	Mercury.....	7439-97-6	0.2
D014	Methoxychlor.....	72-43-5	10.0
D035	Methyl ethyl ketone.....	78-93-3	200.0
D036	Nitrobenzene.....	98-95-3	2.0
D037	Pentachloro- phenol.....	87-86-5	100.0
D038	Pyridine.....	110-86-1	* 5.0
D010	Selenium.....	7782-49-2	1.0
D011	Silver.....	7440-22-4	5.0
D039	Tetrachloroethyl- ene.....	127-18-4	0.7
D015	Toxaphene.....	8001-35-2	0.5
D040	Trichloroethyl- ene.....	79-01-6	0.5
D041	2,4,5- Trichloro- phenol.....	95-95-4	400.0
D042	2,4,6- Trichloro- phenol.....	88-06-2	2.0
D017	2,4,5-TP (Silvex).....	93-72-1	1.0
D043	Vinyl chloride.....	75-01-4	0.2

¹ Hazardous waste number.² Chemical abstracts service number.³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.⁴ If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

SUBPART D - LISTS OF HAZARDOUS WASTES

GENERAL

replace "EP Toxic Waste" in the hazard codes and in the text following the hazard codes with "Toxicity Characteristic Waste"

261.30(b)

RCRA REVISION CHECKLIST 74: Toxicity Characteristic Revisions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX II TO PART 261

METHOD 1311 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

2 EP toxicity test PRO- cedures are replaced by Method 1311 Toxicity Character- istic Leaching Procedures (TCLP)	Appendix II				
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PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS
WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART N - LANDFILLS

DESIGN AND OPERATING REQUIREMENTS

replace "EP Toxicity Characteristics" with "Toxicity Character- istics"; insert "with EPA Hazardous Waste Numbers D004 through D017" after "chapter"	264.301(e)(1)				
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PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART K - SURFACE IMPOUNDMENTS

DESIGN REQUIREMENTS

replace "EP Toxicity Characteristics" with "Toxicity Character- istics"; insert "with EPA Hazardous Waste Numbers D004 through D017" after "chapter"	265.221(d)(1)				
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RCRA REVISION CHECKLIST 74: Toxicity Characteristic Revisions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART M - LAND TREATMENT

WASTE ANALYSIS

replace "exceed" with
"equal or exceed";
replace "EP Toxicity
Characteristic"
with "Toxicity
Characteristic"

265.273(a)

PART 268 - LAND DISPOSAL RESTRICTIONS

APPENDIX I TO PART 268

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

3 replace Appendix with
note stating the TCLP
is located in
Appendix II of
Part 261

Appendix I

¹ Also see technical corrections to the rule at 55 FR 26986 (June 29, 1990).

² Because the June 29, 1990 (55 FR 26986) notice made extensive corrections to Appendix II, Part 261, the Appendix in that notice should be used instead of the one in the March 29, 1990 (55 FR 11798) notice.

³ As background, the TCLP was originally promulgated in 268, Appendix I, on November 7, 1986 (51 FR 40572; Revision Checklist 34) for use in the Land Disposal Restrictions (LDR) program to determine whether certain wastes require treatment prior to land disposal and to determine whether certain treated wastes meet the applicable treatment standards. The TC rule and its June 29, 1990 modification promulgated a revised TCLP at 261, Appendix II, with modifications based on the Agency's own research and public comment. This TCLP is to be used in both the TC and the LDR programs. The objective of the above footnoted revision to 268, Appendix I, is to assure that the TCLP entered into the code by the November 7, 1986 notice (51 FR 40572; Revision Checklist 34) is removed and replaced by the TCLP entered into the code and amended by the final rules (55 FR 11798 and 55 FR 26986) addressed by Revision Checklist 74. The actual placement of the TCLP within a State's code is not that important, per se; what is important is that a State's code contains only the Revision Checklist 74 TCLP. States that have not yet adopted Revision Checklist 34 (the first of the LDR restrictions) need not make this particular revision to 268, Appendix I, as they would not yet have entered the original Part 268 TCLP into their code. Also, the change on page 2 of this checklist for 261, Appendix II,

RCRA REVISION CHECKLIST 74: Toxicity Characteristic Revisions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

assures that they add the Revision Checklist 74 TCLP to their code. However, such States must be careful when adding the LDR restrictions to their code, i.e., the Revision Checklist 34 TCLP should not be added at that time--rather, the Revision Checklist 74 TCLP should remain the only TCLP in their code. States using the Consolidated LDR Checklist should be sure to read Footnote 40 on that checklist regarding this issue.

**Thursday
March 29, 1990**

Federal Register

Part II

Environmental Protection Agency

**40 CFR Part 261 et al.
Hazardous Waste Management System;
Identification and Listing of Hazardous
Waste; Toxicity Characteristics Revisions;
Final Rule**

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, 268, 271, and 302

[SWH-FRL-3601-1; EPA/OSW-FR-89-026]

RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: On June 13, 1986, the Environmental Protection Agency (EPA) proposed to revise the existing toxicity characteristics, which are used to identify those wastes defined as hazardous and which are subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. The proposed rule was designed to refine and broaden the scope of the hazardous waste regulatory program and to fulfill specific statutory mandates under the Hazardous and Solid Waste Amendments of 1984 (HSWA).

EPA is today promulgating the Toxicity Characteristics (TC). Today's rule retains many of the features of the original proposal: It replaces the Extraction Procedure (EP) leach test with the Toxicity Characteristic Leaching Procedure (TCLP); it adds 25 organic chemicals to the list of toxic constituents of concern; and it establishes regulatory levels for these organic chemicals based on health-based concentration thresholds and a dilution/attenuation factor that was developed using a subsurface fate and transport model. In response to comments received on the proposed rule and related notices, the final rule incorporates a number of modifications in the leaching procedure, the list of toxicants, the chronic toxicity reference levels, and the fate and transport model.

The overall effect of today's action will be to subject additional wastes to regulatory control under subtitle C of RCRA, thereby providing for further protection of human health and the environment.

DATES: Effective Date: September 25, 1990.

Compliance Dates: Large quantity generators: September 25, 1990. Small quantity generators (SQGs): March 29, 1991. Any person that would like to use the Toxicity Characteristic Leaching

Procedure (TCLP) before the effective date may do so in order to determine whether the eight heavy metals and six pesticides that are currently regulated under the Extraction Procedure (EP) Toxicity Characteristic leach at levels of regulatory concern.

ADDRESSES: The official record for this rulemaking (Docket Number F-90-TCF-FFFFF) is located in the EPA RCRA Docket (Second Floor, Rm 2427), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. The docket is open from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding federal holidays. The public must make an appointment to review docket materials by calling (202) 475-9327. The public may copy material at a cost of \$0.15 per page.

FOR FURTHER INFORMATION CONTACT:

For general information about this rulemaking, contact the RCRA/Superfund Hotline at (800) 424-9348 (toll free) or (202) 382-3000 in the Washington, DC metropolitan area. For information on specific aspects of this rule, contact Steve Cochran, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-8551.

SUPPLEMENTARY INFORMATION

Preamble Outline

- I. Authority
- II. Background
 - A. Definition of Hazardous Waste
 - B. Existing Extraction Procedure Toxicity Characteristic
 - C. The Hazardous and Solid Waste Amendments of 1984
 - D. Previous Federal Register Notices
 - E. Other Notices Relating to the Proposal
 - F. Pollution Prevention
 - G. Summary of Final Rule
- III. Response to Major Comments and Analysis of Issues
 - A. General Approach
 - 1. Expanded Use of Hazardous Waste Characteristics
 - 2. Mismanagement Scenario
 - a. Extent to Which Scenario is Reasonable
 - b. Worst-Case Scenario Selection
 - c. Extent to Which the Mismanagement Scenario for Wastes Managed in Surface Impoundments is Appropriate
 - 3. Targeted Risks
 - 4. Accuracy
 - 5. Solvent Override
 - B. Constituents of Concern
 - 1. Final List of Constituents
 - 2. Toxicants Versus Indicator Parameters
 - 3. Method for Selecting Constituents
 - a. Specific Organic Constituents
 - b. Vinyl Chloride
 - c. Bis(2-chloroethyl) Ether
 - d. Toxaphene
 - e. Pentachlorophenol

5. Specific Inorganic Constituents

- a. Silver
- b. Chromium
- c. Nickel and Thallium
- C. Chronic Toxicity Reference Levels
 - 1. Maximum Contaminant Levels
 - 2. Risk-Specific Doses for Carcinogenic Constituents
- 3. Apportionment of Health Limits
- D. Use of Generic Dilution/Attenuation Factors (DAFs)
- E. Application of a Subsurface Fate and Transport Model
 - 1. Introduction
 - a. June 13, 1986, Proposed Rule (51 FR 21648)
 - b. August 1, 1988, Notice of Data Availability and Request for Comments; Supplement to Proposed Rule (52 FR 28892)
 - 2. Modifications of the Subsurface Fate and Transport Model (EPASMOD) in Response to Comments
 - a. General Modifications
 - i. Unsaturated Zone
 - ii. Source Characterization
 - iii. Treatment of Dilution from Recharge
 - iv. Location of the Receptor Well
 - v. Dispersivity Values
 - vi. Hydraulic Conductivity
 - vii. Hydrolysis
 - viii. Steady-State Assumption
 - ix. Biodegradation
 - x. Summary of General Modifications
 - b. Use of the EPACML for Surface Impoundments
 - 3. Newly Acquired Data
 - a. Landfill Data
 - b. Chemical-Specific Parameters
 - 4. DAF Evaluation
 - a. Selection of an Appropriate Percentile
 - b. Resulting DAFs for Landfills
 - c. Resulting DAFs for Surface Impoundments
 - d. Final DAF Selection
 - F. Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311)
 - 1. Introduction
 - 2. Adoption in the LDR Rulemaking and Modification from the Proposed Rule
 - 3. Applicability of TCLP to Solidified Waste
 - 4. Analytical Methods
 - G. Testing and Recordkeeping Requirements
 - 1. Existing Requirements for Generators
 - 2. Changes Considered
 - H. Applicability to Wastes Managed in Surface Impoundments
 - 1. Sampling Point
 - 2. Multiple Surface Impoundments
 - I. Relationship to Other RCRA Regulations
 - 1. Hazardous Waste Identification Regulations
 - a. Hazardous Waste Listings
 - b. "Mixture" and "Derived From" Rules
 - c. Mixture Rule Exemption
 - d. Delisting
 - 2. Land Disposal Restrictions
 - a. Risk Levels and Frequency Interval
 - b. Treatment Standards for TC Wastes
 - c. Schedule for LDR Determinations
 - 3. RCRA Corrective Action and Closure Requirements
 - 4. Minimum Technology Requirements

- a. Applicability
- b. Scope of Minimum Technology Requirements
 - 1. Permitted Facilities
 - 2. Interim Status Facilities
- c. Compliance with Minimum Technology Requirements
 - 5. RCRA Subtitle D (Solid Wastes)
 - a. Municipal Waste Combustion Ash
 - b. Impact on Wastes Excluded from Subtitle C Regulation
 - 6. RCRA Subtitle I (Underground Storage Tanks)
 - a. Scope of the Underground Storage Tank Program
 - b. Deferral for Petroleum-Contaminated Media and Debris Subject to Part 280 Corrective Action Requirements
 - 7. RCRA Section 3004(n) Air Regulations
 - J. Relationship to Other Regulatory Authorities
 - 1. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - 2. Clean Water Act
 - a. Conflict with NPDES Effluent Guidelines and Pretreatment Standards
 - b. Permit Requirements for Wastewater Treatment Facilities
 - c. Sludges from Publicly Owned Treatment Works (POTW)
 - 3. Safe Drinking Water Act
 - 4. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
 - a. Pesticide Wastes
 - b. Treated Wood Wastes
 - 5. Food, Drug, and Cosmetic Act (FDCA)
 - a. Food Wastes
 - b. Pharmaceutical and Cosmetic Wastes
 - 6. Used Oil Recycling Act
 - 7. Toxic Substances Control Act (TSCA)
 - K. Implementation Issues
 - 1. Notification
 - 2. Effective Date
 - 3. Permitting
- IV. Regulatory Levels
 - A. List of Constituents
 - 1. Proposed List
 - 2. Constituents for Which Final Regulatory Levels Are Not Now Being Promulgated
 - 3. Final List of Constituents
 - a. Organic Constituents
 - b. Inorganic Constituents
 - B. Selection of DAFs
 - C. Analytical Constraints
 - D. Final Regulatory Levels
- V. Implementation
 - A. State Authority
 - 1. Applicability of Final Rule in Authorized States
 - 2. Effect on State Authorization
 - B. Integration of Today's Final Rule with Existing EPTC
 - 1. Facilities Located in Authorized States
 - 2. Facilities Located in Unauthorized States
 - C. Notification
 - D. Permitting
 - E. Compliance Date
- VI. Regulatory Requirements
 - A. Introduction
 - B. Regulatory Impact Analysis
 - 1. Executive Order No. 12291
 - 2. Basic Approach
 - 3. Methodology
 - a. Determination of Affected Wastes and Facilities

- b. Cost Methodology
 - 1. Social Costs
 - 2. Compliance Costs
 - c. Economic Impact Methodology
 - d. Benefits Methodology
 - 1. Human Health Risk Reduction
 - 2. Resource Damage Avoided
 - 3. Cleanup Costs Avoided
 - e. Used Oil Methodology
 - 4. Results
 - a. Affected Wastes and Facilities
 - 1. Affected Wastes
 - 2. Affected Facilities
 - 3. Sensitivity Analysis of Affected Wastes and Facilities
 - b. Cost Results
 - 1. Social Costs and Compliance Costs
 - 2. Sensitivity Analysis of Costs
 - c. Economic Impact Results
 - 1. Significantly Affected Facilities
 - 2. Effects on Product and Capital Markets
 - 3. Sensitivity Analysis of Economic Impacts
 - d. Benefits Results
 - 1. MEI Risk
 - 2. Population Risk
 - 3. Resource Damage
 - 4. Cleanup Costs Avoided
 - 5. Sensitivity Analysis of Benefits
 - e. Cost Effectiveness
 - f. Used Oil Results
 - C. Regulatory Flexibility Analysis
 - 1. Approach
 - 2. Results
 - D. Response to Comments on RIA for June 13, 1986, Proposal
 - 1. Industries Included in the Analysis
 - 2. Estimation of Costs and Economic Impacts
 - 3. Estimation of Benefits
 - 4. Cost-Benefit Comparisons
 - 5. Small Business Analysis
 - E. Paperwork Reduction Act
- VII. References

I. Authority

The amendments to the hazardous waste regulations in 40 CFR parts 261 and 271 are being promulgated under the authority of sections 1006, 2002(a), 3001, 3002, and 3006 of the Solid Waste Disposal Act of 1970, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6921, 6922, and 6926). The amendments to the list of hazardous substances and reportable quantities in 40 CFR part 302 are being promulgated under the authority of section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9602), as amended, and sections 311 and 301(a) of the Federal Water Pollution Control Act (33 U.S.C. 1321 and 1361).

II. Background

A. Definition of Hazardous Waste

Subtitle C of the Resource Conservation and Recovery Act (RCRA), as amended, establishes a federal program for the comprehensive regulation of hazardous waste. Section

1004(5) of RCRA defines hazardous waste, among other things, as solid waste that may "... pose a substantial present or potential hazard to human health and the environment when improperly treated, stored, transported, disposed, or otherwise managed." Under RCRA Section 3001, EPA is charged with defining which solid wastes are hazardous by either identifying the characteristics of hazardous waste or listing particular hazardous wastes. Identifying characteristics of hazardous waste and listing hazardous wastes are distinct and fundamentally different mechanisms for defining hazardous wastes.

The hazardous waste characteristics promulgated by EPA designate broad classes of wastes which are clearly hazardous by virtue of an inherent property. In the May 19, 1980 final rule (45 FR 33084) that instituted EPA's general framework for identifying hazardous waste, the Agency established two basic criteria for identifying hazardous waste characteristics: (1) The characteristic should be capable of being defined in terms of physical, chemical, or other properties which cause the waste to meet the statutory definition of hazardous waste; and (2) the properties defining the characteristic must be measurable by standardized and available testing protocols or reasonably detected by generators through their knowledge of the waste (40 CFR 261.10). In the May 19, 1980 final rule, EPA stated that it adopted the second criterion in recognition that the primary responsibility for determining whether wastes exhibit hazardous characteristics rests with generators, for whom standardization and availability of testing protocols are essential.

The approach EPA uses to establish hazardous waste characteristics is to determine which properties of a waste would result in harm to human health or the environment if a waste is mismanaged. The Agency then establishes test methods and regulatory levels for each characteristic property; solid waste that exceeds the regulatory level for any characteristic property is a hazardous waste.

The regulatory levels for characteristics that have been established provide a high degree of certainty that wastes exceeding those regulatory levels would pose hazards to human health and the environment if improperly managed and therefore require regulation under subtitle C. Wastes that do not exhibit hazardous waste characteristics are not necessarily nonhazardous. The Agency may

evaluate wastes from either specific or nonspecific sources and decide to list them as hazardous wastes based on criteria defined in 40 CFR 261.11.

To list a waste as hazardous, EPA conducts a detailed industry or process study involving literature reviews, engineering analyses, surveys and questionnaires, site visits, and waste sampling. For listing, the Agency places particular emphasis on hazardous constituents contained in specific wastes generated by the industry or process being studied (See 40 CFR 261.11(a)(3)). However, EPA uses a comparatively flexible approach when deciding to list wastes as hazardous; the approach includes consideration of factors such as type of threat posed, plausible ways that the waste might be mismanaged, migration potential and persistence in the environment, waste quantity, and actions of other regulatory programs. The Agency also promulgated two other rules for identifying solid wastes as hazardous wastes—the mixture and derived-from rules. The mixture rule says that any mixture of a listed hazardous waste and a solid waste is the listed hazardous waste (40 CFR 261.3(a)(2)(iii)–(iv)); the derived-from rule says that any solid waste derived from the treatment, storage, or disposal of a listed hazardous waste is considered the listed hazardous waste (40 CFR 261.3(c)–(d)).

B. Existing Extraction Procedure Toxicity Characteristic

The Extraction Procedure (EP) toxicity characteristic is one of four existing hazardous waste characteristics (along with ignitability, corrosivity, and reactivity) that EPA has identified and promulgated (40 CFR 261.24). The Extraction Procedure Toxicity Characteristic (EPTC) defines the toxicity of a waste by measuring the potential for the toxic constituents in the waste not subject to subtitle C controls to leach out and contaminate ground water at levels of health or environmental concern. To determine if a waste exhibits the EPTC, constituents are extracted in a procedure that simulates the leaching action that occurs in municipal landfills. Because a "hazardous waste" is defined as a waste that may pose a substantial hazard "when mismanaged," the EP was designed based on the assumption that wastes not subject to subtitle C controls would be co-disposed with municipal waste in an actively decomposing landfill that overlies an aquifer. Thus, the EP identifies wastes that are likely to leach hazardous concentrations of particular toxic constituents to ground

water under conditions of improper management.

The Agency recognized that not all wastes are managed according to the mismanagement scenario postulated for the EP. However, it is necessary to make assumptions about management practices for unregulated wastes in order to determine whether a waste poses a threat to human health and the environment and thus meets the statutory definition of hazardous waste. In addition, the Agency believed that a reasonably conservative mismanagement scenario was warranted in light of the statutory mandate to protect human health and the environment.

Under the existing EPTC, the liquid waste extract obtained from the EP is analyzed to determine whether it possesses any of 14 toxic contaminants that were identified in the National Interim Primary Drinking Water Standards (NIPDWS): eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), four insecticides (endrin, lindane, methoxychlor, and toxaphene), and two herbicides (2,4-D and 2,4,5-TP). NIPDWS levels are used as health-based concentration limits. At the time of promulgation of the EPTC, the NIPDWS were the only available benchmarks for toxicity that were scientifically recognized and that also addressed chronic exposure.

The regulatory levels established for the EPTC were 100 times the NIPDWS. The 100-fold factor is a dilution and attenuation factor (DAF) that estimates the dilution and attenuation of the toxic constituents in a waste as they travel through the subsurface from the point of leachate generation (i.e., the landfill) to the point of human or environmental exposure (i.e., at a drinking-water well). The Agency had originally proposed a DAF of 10 for use in the EP. In light of the fact that there were few empirical data on which to base the DAF and other considerations, the Agency adopted a DAF of 100 in the final rule (45 FR 33084, May 19, 1980). EPA was confident that any waste which exhibited the EPTC using the 100-fold factor would have the potential to present a substantial hazard regardless of the actual site-specific attenuation mechanisms. The Agency also noted that it would adjust the DAF if future studies indicated that another DAF was more appropriate.

C. The Hazardous and Solid Waste Amendments of 1984

On November 8, 1984, the Hazardous and Solid Waste Amendments of 1984 (HSWA) were enacted: these

amendments have had far-reaching ramifications for EPA's hazardous waste regulatory program. RCRA sections 3001 (g) and (h), which were among the many provisions added by HSWA, direct EPA to examine and revise the EP Toxicity Characteristic and to identify additional hazardous waste characteristics, including measures of toxicity. Today's rule fulfills these mandates by promulgating an improved leaching procedure that better predicts leaching and an expansion of the Toxicity Characteristics (TC) list to include additional toxicants.

RCRA section 3001(g) specifically directs EPA to examine the EP leach procedure as a predictor of the leaching potential of waste and to make changes necessary to ensure that it accurately predicts the leaching potential of wastes that may pose a threat to human health and the environment when mismanaged. The legislative history for this provision indicates that Congress was specifically concerned about the EP's ability to accurately represent the mobility of toxicants under a wide variety of conditions. The legislative history also suggests that Congress intended for EPA to develop a more aggressive leaching medium for the test and noted that the EP only evaluated the mobility of elemental toxicants and not the mobility of organic toxicants.

Concerned that some wastes posing a threat to human health and the environment were not being brought into the hazardous waste system, Congress adopted RCRA section 3001(h), which directs EPA to promulgate additional characteristics. Of specific concern to Congress was the fact that the existing characteristics did not identify wastes that were hazardous due to toxic levels of organic constituents. Although Congress recognized that the development of such a characteristic would entail technical problems, Congress urged the Agency to make reasonable assumptions for purposes of regulation, rather than await definitive technical answers. In response to the 3001(g) and 3001(h) mandates, EPA issued a proposed rule to revise and expand the TC (51 FR 21648, June 13, 1986) which is discussed below in Section II.D.

D. Previous Federal Register Notices

As indicated above, EPA published a Federal Register notice (June 13, 1986) proposing to expand the existing TC. The proposal specifically identified 52 compounds that could cause a waste to be hazardous via toxicity, including the existing 14 EPTC compounds and 38 additional organic compounds. In

addition, it described the Toxicity Characteristic Leaching Procedure (TCLP), a new version of the EP. The TCLP is designed to more accurately address the leaching of organic compounds and to improve upon technical aspects of the testing protocol.

The June 13 proposal used a subsurface fate and transport model to determine compound-specific dilution and attenuation factors (DAFs) as a basis for establishing the regulatory levels. (As mentioned above, the existing TC used a generic DAF of 100 which was not derived from modeling, but rather was an estimated factor indicating the potential for substantial hazard.) The extract from the second-generation extraction procedure, the TCLP, was analyzed for the presence of the 52 constituents at the proposed regulatory levels. In choosing the 38 new toxicants, the Agency identified those Appendix VIII constituents for which appropriate chronic toxicity reference levels were available and for which there existed adequate fate and transport data to establish a compound-specific DAF. (Appendix VIII of 40 CFR part 261 is the list of hazardous constituents that the Agency considers in evaluating the potential hazard posed by wastes; these constituents have been shown to have toxic, carcinogenic, mutagenic, or teratogenic effects.)

Chronic toxicity reference levels are those levels below which chronic exposure for individual toxicants in drinking water is considered safe or considered to pose minimal risk (in the case of carcinogens). The Agency decided to use, when possible, human health criteria and standards that have been proposed or promulgated for substances in particular media, because these have already received Agency and public review and evaluation. EPA proposed the continued use of the

Drinking Water Standards (DWS) for the 14 existing EP toxicants and use of Recommended Maximum Contaminant Levels (RMCLs) for eight of the constituents being added to the TC list. For the remaining newly added constituents, EPA proposed to establish chronic toxicity reference levels using Reference Doses (RfDs) for non-carcinogens and Risk-Specific Doses (RSDs) for carcinogens.

The RfD is an estimate of the daily dose of a substance that will result in no adverse effect even after a lifetime of exposure to the substance at that dose. In order to account for toxicant exposure from sources other than water (i.e., air and food), the Agency proposed to apportion the RfD based on proportionate compound-specific exposure routes, as is done in developing drinking water standards.

The RSD is the daily dose of a carcinogen over a lifetime that will result in an incidence of cancer equal to a specific risk level. EPA proposed a weight-of-evidence approach, which involves categorizing carcinogens according to the quality and adequacy of the supporting toxicological studies, to establish the risk levels most appropriate for setting chronic toxicity reference levels for carcinogens.

The Agency proposed using a subsurface fate and transport model to calculate constituent-specific DAFs. This model incorporated compound-specific hydrolysis and soil adsorption data, coupled with parameters describing an underground environment (e.g., ground water flow rate, soil porosity, ground water pH). Values for parameters were selected based on review of geological conditions at existing landfills. Since the model was specifically developed to simulate transport of organics and a model for inorganics could not be completed in

time for the June 13 proposal. EPA proposed to retain the existing EP levels for the eight inorganic toxicants.

The proposed rule introduced the TCLP as a second-generation leaching procedure to replace the existing EP. The main impetus behind the development of the TCLP was the need to address the leaching of organic compounds. However, the Agency also recognized that the EP protocol could be improved in certain ways. The TCLP was described in detail as a proposed revision to Appendix II of part 261. Further supporting information on the TCLP was provided through notices of availability of reports on July 9, 1986 (51 FR 24856) and September 19, 1986 (51 FR 33297). After the TC proposal, the Land Disposal Restrictions final rule (51 FR 40572, November 7, 1986) promulgated the TCLP for monitoring compliance with treatment standards for certain spent solvent wastes and dioxin-contaminated wastes. See Section II.E below for further discussion of these notices.

E. Other Notices Relating to the Proposal

Today's rule is based on three fundamental analytic components that were set forth in the original June 13 proposal: a set of chronic toxicity reference levels, a subsurface fate and transport model, and the TCLP. In addition to the June 13, 1986 proposed rule described in the preceding section of this preamble, EPA has published several other notices in the Federal Register dealing with these three components. These notices are listed in Table II.1 and are summarized in this section. A more detailed discussion is presented on several of these notices in other sections of this preamble, as identified in Table II.1.

TABLE II.1—RELATED FEDERAL REGISTER NOTICES DISCUSSING ONE OR MORE OF THE ANALYTICAL COMPONENTS OF THE REVISED TC

Federal Register Notice	Analytic Component			Relevant preamble section of today's rule
	CTRLs ¹	Model ²	TCLP ³	
Jan. 14, 1986, 51 FR 1602 (Proposed LDR framework)		X	X	III.E, III.I
Nov. 7, 1986, 51 FR 40572 (Final LDR approach)			X	III.F
May 18, 1987, 52 FR 19583 (Consideration of separate wastewater TC)		X	X	III.A, III.H
May 19, 1988, 53 FR 18024 (CTRLs updated, two-tiered DAF alternative proposed)	X	X		III.C, III.D
May 24, 1988, 53 FR 18792 (Proposal to replace particle reduction)			X	III.F
Aug. 1, 1988, 53 FR 29932 (Proposed modifications to ground water model)		X		III.E

¹ Chronic Toxicity Reference Levels.

² Ground water fate and transport model.

³ Toxicity Characteristic Leaching Procedure.

EPA's first discussion of the development of regulatory levels through the use of chronic toxicity reference levels in combination with a subsurface fate and transport model was in the proposed rule governing land disposal restrictions for solvents and dioxins (51 FR 1602, January 14, 1986). This proposal introduced the concept involved in "back-calculating" regulatory levels (i.e., multiplying chronic toxicity reference levels by dilution/attenuation factors) and also discussed the Agency's plan for revising the EP. In the final rule on land disposal restrictions for solvents and dioxins (51 FR 40572, November 7, 1986), EPA decided not to use the "back-calculation approach" for the LDR program in favor of an engineering determination based on the best demonstrated available technology (BDAT). However, the Agency did promulgate the revised TCLP as the leaching procedure to be used in the land disposal restrictions program. Specifically, the TCLP is used to demonstrate that certain wastes meet the best demonstrated available technology standards.

On May 18, 1987, EPA published a Supplemental Notice of Proposed Rulemaking (52 FR 18583) in response to numerous comments on the June 1986 proposal concerning the application of the revised TC to wastewaters. The commenters' main concern was that it may be inappropriate to apply the TC mismanagement scenario (co-disposal of wastes with municipal wastes in an unlined landfill) to wastewaters managed in surface impoundments. The commenters believe that such an approach would result in inappropriately low regulatory levels. The Supplemental Notice outlined several alternatives for the application of the TC to wastewaters that would result in a separate set of regulatory levels for these wastes. The alternative scenario for wastewaters assumed that subject wastes are managed in an unlined impoundment instead of being co-disposed in a municipal landfill. Sections III.A.2, III.E., and III.H provide further discussion of the Supplemental Notice for wastewaters and related issues.

The Agency then published a Notice of Data Availability and Request for Comments on May 19, 1988 (53 FR 18024), as a result of its concern about uncertainties and technical difficulties involved with developing sufficiently representative dilution/attenuation factors (DAFs) for specific constituents. In that notice, the Agency proposed an alternative to the constituent-specific DAFs in the proposed TC. The Agency

presented a two-phased approach to implementing DAFs for the TC. In the first phase, the Agency would use generic DAFs for all 38 new TC organic constituents while the development of constituent-specific DAFs proceeded; once the development of the constituent-specific DAFs was completed, these DAFs would be implemented in the second phase. The Agency specifically requested comment on the use of a generic DAF that would initially bring into the hazardous waste regulatory system the most toxic of the wastes subject to the June 1986 proposal. The Agency also updated the chronic toxicity reference levels for a number of constituents based on newly available information. Section III.C discusses the incorporation of the new information into the chronic toxicity reference levels for specific constituents and Section III.D describes in more detail the two-tiered DAF approach.

In response to numerous comments expressing concern as to whether the particle reduction requirement in the TCLP was appropriate, EPA published a proposal (53 FR 18792, May 24, 1988) requesting comment on modifications to the TCLP as promulgated on November 7, 1986. Based on further experimental evaluation of the original testing methodology, the Agency proposed to modify the TCLP to include a cage insert requirement in place of the particle reduction step for certain materials. The specific revisions discussed in the proposal are presented in detail in section III.F of this preamble, and the TCLP protocol is presented in Section VIII of today's final rule. Today's rule does not include a cage requirement, but rather retains the particle reduction step for monolithic or fixated wastes.

In addition to the above-mentioned modifications, on August 1, 1988, the Agency published a Supplemental Notice (53 FR 28892) introducing potential modifications to the subsurface fate and transport model used to calculate constituent-specific DAFs in the proposed TC. In addition, the Agency presented currently available hydrogeological data on municipal waste landfills and proposed to modify the subsurface fate and transport model to more accurately reflect conditions in the universe of municipal waste landfills. Section III.E presents a more detailed description of the subsurface fate and transport model and the modifications made during its development.

F. Pollution Prevention

In section 1003(b) of RCRA, Congress declared waste minimization to be a national policy. Similarly, EPA has

made pollution prevention an Agency objective, in both regulatory and nonregulatory programs. (See EPA's policy statement emphasizing the importance of pollution prevention (54 FR 3845, January 26, 1989).) This policy places highest priority on source reduction (i.e., reducing the volume or toxicity of wastes generated) and use of all pollutants for all sectors of society. A reduction in the amount of waste which must be managed (i.e., by source reduction and recycling) provides direct benefits related to protecting human health and the environment from the mismanagement of hazardous wastes. Pollution prevention measures can also reduce waste treatment and disposal costs, decrease costs for raw materials, minimize liability and regulatory burdens for waste generators, and may enhance efficiency, product quality, and public image. The Agency encourages industries affected by this rule to consider achieving compliance through pollution prevention.

The Agency has taken several steps to create pollution prevention incentives. First, EPA is developing institutional structures within each of its offices to ensure that the pollution prevention philosophy is incorporated into every feasible aspect of internal EPA planning and decision-making. Second, EPA is making technical information available to help firms reduce waste generation. EPA is developing the Pollution Prevention Information Clearinghouse (PPIC), a network of people and resources throughout the United States that have direct experience in many industries. PPIC includes the Electronic Information Exchange System (EIES), and a database of bulletins, programs, contacts, and reports related to pollution prevention. Third, the Agency is supporting the development of state programs to assist generators in their waste reduction efforts. Many states are already providing such help. For example, the Alaska Health Project has published technical assistance packets for specific industries; North Carolina has a pollution prevention bibliography; and Oregon conducts a hazardous waste reduction program. Finally, EPA has initiated specific regulatory requirements addressing waste minimization. Under the Resource Conservation and Recovery Act (RCRA) regulations, hazardous waste generators are required to certify on their hazardous waste manifests and annual permit reports that they have a program in place to reduce the volume or quantity and toxicity of their hazardous wastes as much as economically practical. RCRA regulations also require

generators to describe on their RCRA biennial reports the efforts they have undertaken during the year to reduce the volume and toxicity of their hazardous waste and to compare these efforts to previous years.

As important as the efforts just described is the Agency's commitment to ensuring that regulations under development encourage pollution prevention, whenever possible. The TC (TC), we believe, provides significant incentives for pollution prevention. Currently, there is little incentive for industries to implement pollution prevention efforts for unregulated solid wastes. In particular, there are few controls on units handling solid wastes that have the potential for releases of hazardous constituents to groundwater. Large quantities of solid wastes containing TC constituents currently are managed in unregulated land-based units, such as surface impoundments and landfills. Many of these units are in states that are either highly dependent on groundwater for public water supply or where groundwater is hydraulically connected to surface water, or both. By subjecting management of TC wastes to subtitle C regulation, EPA is in effect requiring that waste managers rethink their practices for solid wastes that contain hazardous constituents. EPA's experience has been that hazardous waste regulations provide significant incentives for pollution prevention. For example, some listed wastestreams (e.g., bottoms from tetrachloroethylene production) are now completely recycled.

The characteristic mechanism used by EPA to identify hazardous waste is especially effective in encouraging pollution prevention because it sets a concentration level or criteria (e.g. test) that determines the point at which the waste is no longer regulated as characteristically hazardous. Because of the high cost of compliance with RCRA subtitle C requirements, members of the regulated community will have significant new incentives to reduce TC waste generation as a result of today's rule. Industries will consider substitutes for the specific chemicals on the TC list of toxicants of concern. Where substitutes are not used, there will be incentive to reduce the use of hazardous substances or otherwise limit their concentrations in wastes, in order to keep concentrations of hazardous chemicals below regulatory levels.

Pollution prevention options range from simple good housekeeping practices, e.g., keeping solvents and oils separate to facilitate recycling of each, to more extensive process

reconfigurations and/or raw material substitutions. Even in cases where pollution prevention can not eliminate the need for treatment or disposal of hazardous wastes, it may reduce the generation of waste. For example, tank capacity is constrained by land area, engineering considerations, and cost. Managers of TC wastewaters that switch from surface impoundments to exempt tanks will almost certainly have to reduce volumes of hazardous waste generated, or segregate hazardous portions of their wastestreams.

In order to enhance the pollution prevention effects of this rule, EPA is incorporating pollution prevention into the communication strategy for the TC regulation. EPA will provide information targeted to small businesses specifically and industry in general through pamphlets, industry publications and conferences, on the mechanisms described above. We have found that many small businesses are turning to pollution prevention as a result of implementation of the small quantity generator regulations (see 51 FR 10146, March 24, 1986). For example, PPIC documents relate how one drycleaning operation reduced its solvent wastes to a level well below national industry standards by regularly checking for and sealing any system leaks, and installing a conditioning system and a carbon adsorption unit to recover additional solvent. With the new setup, the plant can clean four times as many clothes per drum of solvent. The Agency believes that other industries may have the potential to substitute less toxic source materials in their processes. EPA will consider whether any technical assistance could aid industry in these efforts. EPA would also be interested in suggestions from industries affected by the TC in ways that the Agency might facilitate these efforts. Inquiries should be directed to the Pollution Prevention Office, U.S. EPA, Washington, DC 20460.

In summary, the TC will alter the management of wastes that contain toxicant at hazardous levels by ending management in unregulated land-based units. As industries reassess their waste generation and management practices, many are likely to seriously consider pollution prevention options, and EPA will take steps to facilitate such efforts.

G. Summary of Final Rule

Today's rule retains many of the features of the June 1986 proposal: it replaces the EP with the TCLP; it adds 25 new organic constituents to the list of toxic constituents of concern; and it establishes regulatory levels for the organic constituents based on health-based concentration limits and a DAF

developed using the subsurface fate and transport model. In response to comments received on the proposed rule and related notices, the final rule incorporates a number of modifications to the list of constituents, the leaching procedure, the chronic toxicity reference levels, the subsurface fate and transport model, and the schedule for compliance with the TC rule.

With respect to the list of constituents, the final rule includes 25 of the 38 constituents proposed in 1986. One group that has been excluded in the final rule are constituents that appreciably hydrolyze. EPA has been able to develop scientifically valid DAFs for nondegrading constituents but is still improving its approach for developing DAFs for constituents that are expected to hydrolyze appreciably during transport. In particular, the Agency does not yet have a procedure to address toxic hydrolysis byproducts that may be formed.

Second, in response to comments, the Agency has also evaluated the applicability of the steady-state condition assumed in the subsurface fate and transport model, and has determined that the assumption is valid for most of the originally proposed constituents. However, several of the original proposed constituents have been deferred from the final rule while the Agency continues to evaluate the extent to which the steady-state solution is appropriate in determining their fate and transport.

As a result, all the constituents newly regulated under today's rule are nonhydrolyzing or minimally hydrolyzing constituents, and all are constituents for which the steady-state solution is appropriate. For all these constituents, EPA has determined, based on the results of its subsurface fate and transport model, that use of a DAF of 100 is appropriate for setting regulatory levels. This DAF is sufficient to capture only those wastes that are clearly hazardous. As a result of the Agency's decision to regulate only nonhydrolyzing or minimally hydrolyzing constituents and those for which the steady-state solution is appropriate, 25 additional constituents are being regulated rather than the originally proposed 38. Regulatory levels for hydrolyzing constituents, as well as those constituents for which there remain questions as to whether the steady-state solution is appropriate, will be discussed in future notices.

The list of constituents regulated in today's rule and their respective regulatory levels are presented in Table II.2. As in the proposed rule, where the

calculated regulatory level (i.e., the chronic toxicity reference level multiplied by the DAF) is below the analytical quantitation limit, the

quantitation limit is the final regulatory level. Note that the list of constituents in Table II.2 contains the 14 constituents currently regulated under the existing

EPTC. As specified in today's rule, these constituents will continue to be regulated at their current levels.

TABLE II.2.—TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS

EPA HW No. ¹	Constituent (mg/L)	CAS No. ²	Chronic toxicity reference level (mg/L)	Regulatory level (mg/L)
D004	Arsenic.....	7440-38-2	0.05	5.0
D005	Barium.....	7440-39-3	1.0	100.0
D018	Benzene.....	71-43-2	0.005	0.5
D006	Cadmium.....	7440-43-9	0.01	1.0
D019	Carbon tetrachloride.....	56-23-5	0.005	0.5
D020	Chlordane.....	57-74-9	0.0003	0.03
D021	Chlorobenzene.....	108-90-7	1	100.0
D022	Chloroform.....	67-66-3	0.06	6.0
D007	Chromium.....	7440-47-3	0.05	5.0
D023	o-Cresol.....	95-48-7	2	* 200.0
D024	m-Cresol.....	108-39-4	2	* 200.0
D025	p-Cresol.....	106-44-5	2	* 200.0
D026	Cresol.....		2	* 200.0
D016	2,4-D.....	94-75-7	0.1	10.0
D027	1,4-Dichlorobenzene.....	106-46-7	0.075	7.5
D028	1,2-Dichloroethane.....	107-06-2	0.005	0.5
D029	1,1-Dichloroethylene.....	75-35-4	0.007	0.7
D030	2,4-Dinitrotoluene.....	121-14-2	0.0005	* 0.13
D012	Endrin.....	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide).....	76-44-8	0.00008	0.008
D032	Hexachlorobenzene.....	118-74-1	0.0002	* 0.13
D033	Hexachloro-1,3-butadiene.....	87-68-3	0.005	0.5
D034	Hexachloroethane.....	67-72-1	0.03	3.0
D008	Lead.....	7439-92-1	0.05	5.0
D013	Lindane.....	58-89-9	0.004	0.4
D009	Mercury.....	7439-97-6	0.002	0.2
D014	Methoxychlor.....	72-43-5	0.1	10.0
D035	Methyl ethyl ketone.....	78-93-3	2	200.0
D036	Nitrobenzene.....	98-95-3	0.02	2.0
D037	Pentachlorophenol.....	87-86-5	1	100.0
D038	Pyridine.....	110-86-1	0.04	* 5.0
D010	Selenium.....	7782-49-2	0.01	1.0
D011	Silver.....	7440-22-4	0.05	5.0
D039	Tetrachloroethylene.....	127-18-4	0.007	0.7
D015	Toxaphene.....	8001-35-2	0.005	0.5
D040	Trichloroethylene.....	79-01-6	0.005	0.5
D041	2,4,5-Trichlorophenol.....	95-95-4	4	400.0
D042	2,4,6-Trichlorophenol.....	88-06-2	0.02	2.0
D017	2,4,5-TP (Silvex).....	93-72-1	0.01	1.0
D043	Vinyl chloride.....	75-01-4	0.002	0.2

¹ Hazardous waste number.

² Chemical abstracts service number.

³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

⁴ If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level for total cresol is 200 mg/l.

The regulatory levels reflect modifications to some chronic toxicity reference levels since the original proposal. EPA has revised some of the Maximum Contaminant Levels, Risk-Specific Doses, and Reference Doses to reflect new data and better methods. In response to comments received, EPA has decided not to apportion reference doses of noncarcinogens to account for multiple routes of exposure, as was originally proposed (51 FR 21648). See section III.C for further discussion of comments on apportionment and the Agency's reasons for not including apportionment of reference doses in the final rule. Today's rule also promulgates the TCLP to replace the EP. The TCLP represents an improvement over the EP in that it more accurately addresses

leaching potential for use in evaluating wastes containing organic constituents, and also corrects several minor technical deficiencies in the original EP. The version of the TCLP promulgated today reflects additional improvements and modifications made to the TCLP since the original proposal. The TCLP promulgated today will also replace the earlier version of the TCLP promulgated as part of the land disposal restrictions program.

Today's rule incorporates a schedule for compliance that classifies the universe of potentially affected TC waste handlers into two groups: (1) All generators of greater than 100 kg/month and less than 1,000 kg/month of hazardous waste (small-quantity generators) must come into compliance

with the subtitle C requirements for management of their TC waste within 1 year; and (2) all generators of 1,000 kg/month or more of hazardous waste are required to comply with all subtitle C requirements for TC wastes within 6 months. The phased schedule for compliance is further discussed in section V.

Wastes identified as hazardous under the Toxicity Characteristic will also become hazardous substances under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. Today's rule amends the list of reportable quantities (RQs) in 40 CFR part 302 by adding appropriate values for each of the new 25 TC toxicants. All of the newly-

designated TC toxicants are already listed as CERCLA hazardous substances. The RQs being promulgated are the same as those that already apply to all materials containing these hazardous substances.

Today's rule defers applicability of the TC to one type of waste and exempts another. First, the Agency is deferring the applicability of the TC to petroleum-contaminated media and debris at sites subject to the RCRA Underground Storage Tank (UST) cleanup regulations under part 260. (See section III.I.6.) Second, EPA has decided to exempt from today's rule certain polychlorinated biphenyl (PCB) wastes that are fully regulated under the Toxic Substances and Control Act (TSCA) and would be identified as hazardous because of today's rule (See section III.J.7.).

In portions of the existing codified waste regulation of title 40, chapter I, parts 261 through 265, the EPTC is named. Today's action of promulgating the TC necessitates amendment of these references to the EPTC. This amendment which replaces references to the EPTC with the words "Toxicity Characteristic" applies to the following sections of 40 CFR: 261.4(b)(6)(i) not (A)(B)(C); 261.4(b)(9), 264.301(e)(1), 265.221(d)(1) and 265.273(a).

In §§ 264.301(e)(1) and 265.221(d)(1), in addition to amending reference to the EPTC, the universe of constituents remains the same as the EPTC. To accomplish this, the constituents D00+D017, the EPTC constituents, are specifically named as those constituents which would not render the waste hazardous by the TC.

As discussed below, the Agency will continue to refine the TC in order to provide greater accuracy and comprehensiveness in identifying hazardous waste based on the waste's toxic constituents. However, the Agency believes that today's rule fulfills the statutory mandates under sections 3001(g) and 3001(h).

III. Response to Major Comments and Analysis of Issues

The Agency received many comments on the June 13, 1986 proposed rule and in response to subsequent notices. The Agency has carefully considered all comments in the preparation of this final rule. To facilitate the evaluation and response to comments, the Agency grouped the comments into ten categories. The categories are as follows:

- A. General Approach
- B. Constituents of Concern
- C. Chronic Toxicity Reference Levels
- D. Use of Generic DAFs

- E. Application of a Subsurface Fate and Transport Model
- F. The TCLP
- G. Testing and Recordkeeping Requirements
- H. Applicability to Wastes Managed in Surface Impoundments
- I. Relationship to Other RCRA Regulations
- J. Relationship to Other Regulatory Authorities

In this preamble, the Agency provides summaries of and responses to major comments. Readers are invited to refer to background documents (Refs. 1, 2, 3, and 4) for complete summaries and responses to all comments.

A. General Approach

1. Expanded Use of Hazardous Waste Characteristics.

The TC revisions specified in today's rule refine and expand the EPTC. Most commenters stated that increased reliance on hazardous waste characteristics is a reasonable approach to defining hazardous waste. Some commenters stated a preference for the hazardous waste characteristic mechanism over the alternative listing mechanism for identifying hazardous wastes. They noted that the characteristics are designed to measure directly the risks that subtitle C regulations are meant to control. Another advantage mentioned by commenters is that hazardous waste characteristics apply uniformly to all wastes, regardless of source.

A few commenters, however, objected to the expanded use of hazardous waste characteristics. Some of these commenters questioned the Agency's authority to develop the TC. One commenter asserted that RCRA section 3001(h) does not authorize EPA to take the action of adding the proposed organic constituents to the list of TC constituents. Another argued that the legislative history of HSWA indicates that changes in the leaching procedure should address the leaching of toxic metals only. This commenter claimed that the Agency had exceeded its statutory mandate by modifying the TC to include organics.

EPA strongly disagrees with those commenters who argued that the Agency lacks authority to expand the TC. The Agency's approach to identifying hazardous wastes through a self-implementing characteristics procedure was well established in 1984, when Congress passed HSWA. HSWA not only confirmed the validity of EPA's approach to identifying hazardous wastes by characteristics, but also directed the Agency to expand the scope

of the TC. RCRA section 3001(h) states " * * * the Administrator shall promulgate regulations under this section identifying additional characteristics of hazardous waste, including measures or indicators of toxicity." Thus, the plain language of the statute authorizes EPA to broaden the TC.

Other commenters acknowledged EPA's authority to expand the TC, but offered policy arguments against the use of this mechanism for identifying hazardous wastes. Most commenters who argued against expanded use of characteristics favored use of the listing mechanism instead of an expanded TC. Some of these commenters noted that listings do not present the same technical problems of precision and accuracy as the characteristics. Others stated that listings are more easily enforced since they are not dependent upon use of a leaching procedure. Finally, some commenters claimed that by expanding the toxicity characteristic instead of listing additional wastes, EPA is unfairly shifting the burden for identifying hazardous wastes onto the shoulders of the regulated community.

The Agency maintains that the expanded use of characteristics, in addition to being consistent with the statutory mandate, offers advantages over listing for identifying broad categories of clearly hazardous waste. Establishing a characteristic allows the Agency to identify through one rule those wastes which are reasonably certain to pose a threat to human health and the environment by virtue of an inherent characteristic without expending vast Federal resources to study, characterize, and list numerous individual wastestreams. Since the Agency sets regulatory levels high enough to assure that wastes exhibiting the characteristic are hazardous, the characteristic approach does not bring wastes into the subtitle C system which do not present a substantial present or potential hazard to human health and the environment. By contrast, a listing, since it applies to all wastes that meet a listing description, may capture some individual wastestreams that do not actually pose a threat to human health and the environment. Generators may petition for delisting if this occurs; however, the delisting process can be burdensome to the petitioner and to EPA.

The Agency believes that the characteristic approach has the following advantages. First, it is less burdensome for the regulated community because the characteristic approach limits over-inclusiveness.

Second, reducing the potential of including wastes that do not, in fact, present a threat conserves hazardous waste management capacity and Agency administrative and enforcement resources for waste management activities that warrant priority attention. Finally, if necessary, a characteristic can be adapted quickly to possible future changes in science or technology, such as lower quantitation limits.

EPA acknowledges that there are also some advantages in using the listing mechanism for identifying hazardous wastes, particularly with respect to ease of implementation; the Agency thus will retain the listing approach as an alternative mechanism for identifying hazardous wastes. The Agency continues to believe that both the characteristic and listing approaches are valid and useful tools in identifying hazardous wastes that are subject to subtitle C regulation.

Finally, the Agency disagrees with commenters who contend that characteristics impose an unfair burden on the regulated community. Since the establishment of the hazardous waste identification framework in 1980, EPA has recognized that the primary responsibility for determining whether wastes exhibit hazardous waste characteristics rests with generators. In accordance with this, one of two criteria for establishing new characteristics is that they must be measurable by standardized and available testing protocols or reasonably detected by generators through their knowledge of the waste (see 40 CFR 261.10). Further, the regulations do not require testing; a generator may apply knowledge of the waste to determine if it is hazardous (40 CFR 262.11).

2. Mismanagement Scenario

Hazardous waste characteristics are designed to identify solid wastes that pose a threat to human health and the environment when *improperly* managed (RCRA section 1004(5)). Therefore, in developing the TC, EPA's first task was to determine how wastes might plausibly be mismanaged. The mismanagement scenario that both was reasonably realistic and presented the greatest environmental risks could then be chosen as the reasonable worst-case scenario and used as the basis for the revised characteristic. Specifically, the characteristic would be designed to identify any wastes from which toxic constituents would be likely to pose a threat to human health and the environment when managed in accordance with the selected scenario. In this way, EPA ensured that wastes would be adequately controlled,

regardless of the manner in which they are actually managed.

In the June 13, 1986 proposal, EPA considered several alternative mismanagement scenarios for use in the development of the TC rule, including segregated management, co-disposal with municipal solid waste (the mismanagement scenario evaluated in the existing Toxicity Characteristic), co-disposal with industrial waste in a landfill subject to subtitle D requirements, and co-disposal with industrial waste in a landfill subject to subtitle C requirements that suffers some form of containment-system failure. The Agency rejected the subtitle C scenario as unrealistic because it is unlikely that waste generators would dispose of their wastes in the more expensive subtitle C landfills unless required to do so. Thus, it would not be a realistic scenario.

EPA determined that each of the remaining options was a plausible mismanagement scenario since most wastes are or may be managed in these types of land disposal facilities. The Agency rejected the segregated management or "monofill" scenario on the grounds that it did not represent a realistic worst-case practice. Facilities dedicated to the management of only one waste or the wastes of only one generator (i.e., a "monofill") are likely to pose less of a hazard than general municipal or industrial landfills because the design and operation problems for a monofill are simpler and the operators generally have considerably more information on the properties of the wastes that are managed. Also, industrial monofills generally do not generate organic acids that result in an aggressive leaching medium, as is the case for municipal landfills. Thus, industrial monofills pose less of a potential hazard than municipal solid waste (MSW) landfills. EPA also rejected the general (as opposed to "monofill") industrial landfill scenario on similar grounds (i.e., the generated leaching medium may not, in some cases, be as aggressive as in a municipal landfill). The Agency therefore retained the municipal landfill scenario as the reasonable worst-case mismanagement scenario for the revised TC.

a. Extent to Which Scenario is Reasonable. Several commenters challenged the municipal landfill scenario, claiming that it is based on an unreasonable assumption about the way in which industrial solid wastes are managed. These commenters claimed that industrial wastes are rarely disposed in MSW landfills. If landfilled at all, these wastes are more likely to be

disposed in industrial landfills. In addition, industrial wastes are frequently managed in ways other than landfill disposal (e.g., incineration, recycling, treatment on the land, or treatment in surface impoundments). Thus, commenters argued, it is inappropriate to base the TC on the municipal landfill scenario.

EPA fully recognizes that not all industrial wastes are managed in MSW landfills. Nevertheless, the Agency continues to believe that the MSW landfill scenario is reasonable because such landfills have traditionally accepted unregulated industrial wastes. It is for this reason that the MSW landfill scenario was originally established as the basis for the EPTC (see 45 FR 33112, May 19, 1980). Although fewer types of industrial wastes are being disposed in municipal landfills now as compared to a few years ago, EPA's information confirms the continued appropriateness of this scenario. The "State Subtitle D Regulations on Solid Waste Landfills" (Ref. 5), and the "National Survey of Solid Waste (Municipal) Landfill Facilities" (Ref. 6) indicate that most states impose few restrictions, if any, on the types of nonhazardous wastes accepted at these facilities; moreover, a substantial quantity of the wastes received (typically five to eight percent) are industrial wastes. Thus, EPA continues to believe that the municipal solid waste landfill scenario represents the most appropriate reasonable worst-case mismanagement scenario.

Many commenters suggested that EPA grant exceptions or variances for wastes that are not co-disposed with MSW. In this way, the TC would apply only to those wastes that are actually managed in accordance with the underlying mismanagement scenario. The commenters noted that EPA could separately develop alternative characteristics for wastes managed in other ways to ensure adequate protection of human health and the environment.

After careful consideration, EPA has decided not to adopt this suggestion for various reasons. Applying the TC only to wastes actually managed as suggested in the mismanagement scenario would involve the creation of a management-based approach to identifying hazardous wastes. EPA's current approach to establishing characteristics which identify certain wastes as hazardous is not contingent upon the way individual wastes are actually managed. Rather, consistent with the RCRA Section 1004(5) definition of hazardous waste, EPA is

2. The "physical property-based" approach, which would apply to those wastes having a certain physical property indicating that they are likely to be managed in surface impoundments (e.g., percent solids less than 5 percent); and

3. The "definition-based" approach, which would apply to those discharged wastewaters that are subject to regulation under either section 402 or section 307(b) of the Clean Water Act.

Commenters from various industries generally supported a separate mismanagement scenario because they do not believe that the landfill mismanagement scenario is appropriate for aqueous wastes managed in surface impoundments. Most of these commenters requested that EPA adopt either the management-based approach or the definition-based approach.

Other commenters, however, opposed a separate mismanagement scenario for wastes managed in surface impoundments. These commenters contended that the surface impoundment mismanagement scenario would not be a reasonable worst-case scenario, particularly if the scenario modeled biodegradation, because significant biodegradation does not occur in all impoundments. In addition, the commenters stated that if the development of a surface impoundment mismanagement scenario results in two sets of regulatory levels, requirements for storage, handling, and transportation of a waste would be based on the management practice that the generator assumes or expects will actually occur. These commenters were opposed to this result and noted that wastes may not always be ultimately disposed in the manner originally intended by the generator.

After receiving these comments, the Agency decided to revisit the issue of whether or not a separate mismanagement scenario is necessary for surface impoundments due to inappropriately low regulatory levels. As described in section III.E.2, the Agency believes that evaluation of the physical phenomena that affect dilution/attenuation factors (DAFs) indicates that the DAFs generated for landfills are similar, if not greater than, DAFs for surface impoundments (i.e., the regulatory levels for surface impoundments would be equal to or more stringent than those for landfills). To confirm this conclusion, EPA then investigated whether results from modeling a surface impoundment scenario would in fact be significantly different from modeling a landfill scenario. As described later in this preamble, for nondegrading constituents, EPA calculated the 85th

and 90th percentile DAFs for landfills (which ranged from 134 to 47) and the 85th and 90th percentile DAFs for surface impoundments (which ranged from 111 to 51). The surface impoundment results were obtained by using the updated model (EPACML) for the landfill scenario with leachate generation and environmental parameters (e.g., well distances, facility areas) derived from surface impoundment data.

As a result of this analysis, EPA is confident that the results from modeling of the landfill mismanagement scenario are also appropriate for wastes managed in surface impoundments (i.e., the DAFs are of the same order of magnitude). The Agency therefore does not plan to develop a separate surface impoundment mismanagement scenario at this time. Since the modeling results indicate that the dilution/attenuation factors for non- and minimally degrading constituents are all on the order of 100, the Agency has concluded that a single value of 100 is an appropriate choice for use in establishing the regulatory levels for all of the constituents addressed in today's rule. (See section III.E. of this preamble for an additional explanation of EPA's modeling efforts and choice of DAFs.)

3. Targeted Risks

Several commenters argued that, even if the co-disposal mismanagement scenario was appropriate, EPA improperly focused on a few selected risks from this scenario. Specifically, they claimed that the Agency restricted its consideration to human health risks resulting from ground water contamination. A number of commenters stated that the Agency should consider additional routes of human exposure, such as air volatilization, surface runoff, and direct contact. One commenter questioned why EPA was not employing the same multimedia risk and exposure models that were originally proposed for use in the land disposal restrictions program (see 51 FR 1602, January 14, 1986).

A few commenters further suggested that EPA take environmental risks (e.g., aquatic toxicity) into account, rather than concentrating exclusively on human health risks. They noted that RCRA section 3001(g), on which the TC rule is based, directs EPA to make changes in the EPTC so that it "accurately predicts the leaching potential of wastes which pose a threat to human health and the environment when mismanaged" (emphasis added).

EPA acknowledges that the characteristic being promulgated today focuses on human health risks from

ground water contamination. However, the Agency does not believe that a single characteristic is capable of identifying all wastes that present a threat to human health and the environment. The present TC revisions are only the first step in a long-term strategy to refine and expand the hazardous waste identification program. Future characteristics may address hazards other than human health risks resulting from ground water contamination. EPA continues to believe, however, that ground water contamination, as a route of human exposure, is a priority concern.

4. Accuracy

Several commenters asserted that the proposed TC revisions failed to fulfill the statutory mandate to improve the "accuracy" of the characteristic as a predictor of the leaching potential of solid wastes. Specifically, these commenters argued that, even if EPA selected the proper mismanagement scenario, the Agency failed to model the targeted risks in a reasonable or appropriate manner. (Many of the commenters addressing this issue also focused on the accuracy of individual elements of the characteristic, such as the TCLP, the subsurface fate and transport model, or the chronic toxicity reference levels. These specific concerns are considered in sections III.B through III.F of today's preamble.)

A number of the commenters on the issue of accuracy concentrated on the interrelationship between the various elements of the TC. These commenters pointed out that EPA had employed conservative assumptions at each step in the development of the revised characteristic. They argued that even if these assumptions were reasonable in isolation, they would not be reasonable in combination. According to these commenters, the effect of compounding multiple conservative assumptions would be a characteristic that is unreasonably conservative, thereby resulting in costly overregulation.

Other commenters maintained the opposite position and stated that EPA had employed non-conservative assumptions for many elements of the characteristic. These commenters believe that these assumptions result in a characteristic that is not conservative enough and, thus, not sufficiently protective of human health and the environment.

The Agency disagrees with commenters' assertions that the elements of the TC are either too conservative or not conservative enough. The TC, in particular the fate

identifying waste " . . . that may pose a substantial present or potential hazard to human health and the environment when improperly . . . managed" (emphasis added).

EPA has considered the possibility of developing management-based characteristics, i.e., different characteristics for categories of waste depending on how they are typically managed. However, the Agency believes that such an approach would present a number of difficulties. For instance, a management-based approach to hazardous waste identification could substantially complicate effective implementation of the RCRA regulations. In particular, it is not always possible to determine—at the point of generation, during transport, or even as a waste enters a treatment, storage, or disposal facility—how a solid waste will ultimately be managed. EPA believes that the most effective and appropriate approach is to identify hazardous waste characteristics, not according to the ways in which individual wastes are managed, but by identifying properties of wastes that would pose a threat to human health and the environment if improperly managed. The Agency maintains that co-disposal with MSW is a mismanagement scenario that is reasonably realistic for most industrial solid wastes.

Another group of commenters suggested that EPA exempt broad classes of wastes that, because of their volume or physical properties, cannot reasonably be placed in a municipal landfill. Commenters specifically mentioned wastewaters, mining wastes, and municipal waste combustion ash. They noted that separate characteristics could be developed for each class of wastes that is excluded from the TC, based on the most appropriate mismanagement scenario for each individual category of waste.

After careful consideration of these comments, the Agency agreed that one category of wastes, wastewaters, might warrant special consideration based on the fact that the mismanagement scenario may not be reasonably applicable. Thus, EPA published a Supplemental Notice of Proposed Rulemaking on May 18, 1987 (52 FR 18583), which asked for comment on the development of separate regulatory levels for wastewaters. EPA received considerable information in response to this notice, and reviewed additional information on management of wastewaters in surface impoundments. After analysis of the waste management techniques, attenuative mechanisms,

and hydrogeologic processes that govern constituent transport from surface impoundments, the Agency concluded that the DAFs for nondegrading constituents managed in surface impoundments were similar to those for the same constituents managed in landfills. Thus, for today's rule, the Agency determined that there is no technical basis for setting separate regulatory levels for wastewaters. This issue is discussed in more detail in subsection C, and further in sections III.E (Application of a Subsurface Fate and Transport Model) and III.H (Applicability to Wastes Managed in Surface Impoundments).

The Agency also does not agree that the mismanagement scenario is unreasonable for either non-exempt mineral processing wastes or municipal combustion ash. Although large volume wastes from the extraction, beneficiation and processing of ores and minerals are currently exempt from subtitle C regulation and will not be affected by the TC rule, small volume mineral processing wastes which may be subject to subtitle C regulation (see 54 FR 36592) can plausibly be disposed in municipal landfills. Municipal waste combustion ash can also be disposed in municipal landfills; in fact, the Agency estimates that only about 30 percent of municipal waste combustion facilities utilize ash monofills, and rely principally on municipal landfills for ash disposal. Issues related to the regulation of municipal waste combustion ash are discussed further in section III.I.5.

b. Worst-Case Scenario Selection. A few commenters agreed with EPA that the municipal landfill scenario is reasonable, but they claimed that the scenario does not represent a reasonable worst case. Most of these commenters asserted that co-disposal in a subtitle D industrial landfill poses more of a threat to human health and the environment than disposal in an MSW landfill. They pointed out, for example, that the regulatory standards for subtitle D industrial waste landfills are generally no more stringent than those for municipal landfills. The commenters further claimed that the leaching media in industrial landfills are frequently more aggressive than those in municipal landfills, especially when acids, bases, and solvents are present. Finally, the commenters noted that wastes placed in industrial landfills are not diluted with domestic wastes, as they are in a municipal landfill. The commenters concluded that because the TC proposal was based on a scenario that was less than worst-case, it would

not adequately protect human health and the environment.

The Agency believes that the leaching media in a subtitle D municipal landfill is typically more aggressive than leaching media generated in industrial landfills due to the formation of acids during decomposition of putrescible wastes. "State Subtitle D Regulations on Solid Waste Landfills" (Ref. 5) shows that putrescible wastes are accepted at most subtitle D municipal landfills, while "Summary of Data on Industrial Non-Hazardous Waste Disposal Practices" (Ref. 7) shows solvents, acids, and bases (which can also increase the aggressiveness of leachate) are generally not disposed of in subtitle D industrial landfills. The potential for the formation of acids from decomposition of putrescibles in a subtitle D municipal landfill is greater than the potential of acids, bases, or solvents being present in a subtitle D industrial landfill, therefore supporting the municipal landfill scenario as a reasonable worst-case.

EPA acknowledges that, in certain circumstances, industrial wastes may pose more of a threat when placed in a subtitle D industrial landfill than when placed in a subtitle D municipal landfill. However, EPA believes that this situation will only occur in certain circumstances and thus represents a *worst case* rather than a *reasonable worst case*. Should the occurrence of this situation increase in frequency, the Agency will reconsider its approach for regulating these wastes in the future.

c. Extent to Which the Mismanagement Scenario for Wastes Managed in Surface Impoundments is Appropriate. In the May 18, 1987 notice, the Agency stated that it is considering developing a separate mismanagement scenario applicable to wastes that are managed in unlined surface impoundments. Developing a surface impoundment scenario, in addition to the landfill scenario, would mean that the TC would have two different sets of regulatory levels. Waste generators would first have to determine which scenario is appropriate and then would be responsible for evaluating whether their waste exceeded the applicable regulatory levels.

In the notice, the Agency requested comments on the appropriate criteria to be used in determining whether the characteristic should apply to a particular waste. The Notice suggested three possible approaches:

1. The "management-based" approach, which would apply only to those wastes actually managed in impoundments;

and transport model used to establish the dilution/attenuation factors (DAFs), requires the selection of numerical values for many parameters. Rather than selecting values for each parameter based upon isolated judgments as to what constitutes a "reasonable worst case" value, the Agency used the full range and distribution of values for all parameters for which such data was available. By implementing these data sets through a monte carlo simulation, the model output (i.e., the frequency distribution of DAFs) is as realistic as possible and spans the range of all possible outcomes rather than representing only the "best case," "reasonable worst-case," etc. That is, the model output represents all cases, arrayed according to their frequency of occurrence, and does not reflect any qualitative judgement as to what constitutes a "reasonable worst case" or any other "case." Accordingly, the determination as to which DAF value represents any particular "case" is solely dependent upon the selection of the cumulative frequency level. The Agency's selection of the cumulative frequency level is discussed in section III.E.4.d.

EPA does agree with commenters who recommended that the originally proposed subsurface fate and transport model could be revised to more realistically represent land disposal settings. Accordingly, EPA has modified the original model (EPASMOD) and has collected and incorporated new data into the model. These modifications and data are described in greater detail below (section III.E). The reader is referred to the Response-to-Comments Background Document for the Subsurface Fate and Transport Module (Ref. 1), which presents in detail each of the technical issues raised by public comments on the model and the Agency's responses to these issues. EPA believes that with these changes, the final TC rule represents a reasonable approach to the identification of hazardous wastes.

5. Solvent Override

In the June 13, 1986 TC proposal, the Agency discussed the possibility of incorporating a solvent "override" criterion into the TC because the presence of large amounts of solvents in a waste may result in leachate from the waste mobilizing hazardous constituents from co-disposed nonhazardous waste. The Agency considered setting regulatory levels for solvents based on the total concentration of solvent found in the TCLP extract.

Many commenters claimed that mobilization of toxicants in municipal

landfills by industrial solvents is improbable. Commenters argued that there are no data to support the hypothesis that industrial solvents would alter the solubility of hazardous constituents in municipal waste. These commenters asserted that, at levels below their solubility in water, organic solvents exert very little influence on the solubility of other organics. Given the low concentrations of solvent wastes permitted for land disposal, the commenters contended that there is little probability that mobilization will occur. Commenters emphasized that, in general, subtitle D landfills do not accept organic solvents or liquids. Most industrial solvents already are listed hazardous wastes under 40 CFR 261.32 and 261.33 and will be managed in subtitle C hazardous waste facilities. Also, commenters contended that the contribution that industrial solvents will have on the solvent power of a solid-waste-landfill leachate is small compared to the contribution from solvents in household and small quantity generator waste.

Other commenters, however, expressed their support for EPA's proposal to characterize a waste by its ability to leach hazardous constituents from co-disposed wastes. They urged that a method be devised to monitor the influence that solvents have on the solubility of other waste constituents. One commenter suggested that the TCLP leachate could be tested for its ability to dissolve hazardous waste.

After careful consideration of the comments on this issue, EPA has decided not to include a solvent override in today's revision of the TC. EPA is not convinced by commenters who stated conclusively that mobilization of toxicants in municipal landfills by industrial solvents is improbable. EPA also is not convinced that the solvent contribution of industrial wastes at municipal landfills is small compared to that of household waste and small quantity generator waste. Moreover, the comparison to household waste and small quantity generator waste is not relevant to the issue of whether industrial wastes should be regulated based on solvent properties. However, the Agency does agree that there is insufficient data concerning the degree to which industrial solvents would mobilize other hazardous constituents and the amount of solvent wastes that are actually land disposed. Given this lack of data, a solvent override has not been included in today's rule. However, an override may be considered in future rulemakings if information becomes available that

indicates a characteristic based on solvent properties is warranted.

One commenter claimed that RCRA does not authorize the imposition of restrictions based on toxicity simply because a substance can mobilize other constituents. The commenter asserted that the authority may reside elsewhere in RCRA, but in that case, a separate rulemaking, not involving the TC, should take place.

EPA does not agree; RCRA clearly authorizes EPA to regulate a waste as hazardous on the basis of its ability to mobilize other constituents. Further, regulating a waste as hazardous based on its ability to mobilize other constituents could be appropriately achieved through the characteristic mechanism. A solid waste is defined as hazardous if its "physical" or "chemical" characteristics "may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed" (RCRA section 1004(5)). The capacity to mobilize toxic constituents falls within the definition of a physical or chemical characteristic of a waste which may pose a substantial environmental or health hazard. Thus, EPA may incorporate this approach into its characteristic waste identification scheme in the future.

Related to the issue of solubilization, another commenter asserted that if a chemical's capacity for mobilization is considered, treatment implemented to prevent mobilization (e.g., stabilization, containment, and chemical conversion) should be given equal consideration.

The TCLP does consider immobilization in the context of the co-disposal mismanagement scenario. The TCLP was developed to simulate leaching in a municipal landfill, addressing the degree of mobility (or, conversely, immobility) of both organic and inorganic compounds. Wastes that have been treated to prevent mobilization are less likely to leach toxic constituents. Such wastes may cease to exhibit the TC and would therefore no longer be considered hazardous wastes. Thus, the TCLP already accounts for immobilization of toxic constituents in a waste. However, if wastes that have been treated to prevent mobilization fail the TC, EPA believes that the wastes in question should be managed as hazardous wastes.

B. Constituents of Concern

As noted above, the proposed TC rule identified 52 constituents that, if present at specified levels in a waste extract,

would render the waste "hazardous" under RCRA subtitle C. Fourteen of the constituents were already encompassed by the existing EPTC. The selection of the remaining 38 constituents was based on the availability of adequate and verified data necessary for establishing (1) a chronic toxicity reference level and (2) a constituent-specific DAF. Thus, the Agency focused on those constituents for which there existed a promulgated or proposed Maximum Contaminant Level (MCL), a Reference Dose (RfD), or a Risk-Specific Dose (RSD), and for which there were sufficient data on environmental fate and transport processes to support modeling of a constituent-specific DAF. The June 13, 1986 proposal also announced EPA's intention to expand the list of TC constituents as additional data became available.

1. Final List of Constituents

The Agency is finalizing the regulatory levels for 25 of the proposed organic constituents (see Table B-1) that do not readily hydrolyze and for which a steady-state subsurface fate and transport model is appropriate. EPA may promulgate or repropose (as warranted) regulatory levels for the other organic constituents at a future date.

TABLE B-1.—LIST OF ORGANIC CONSTITUENTS INCLUDED IN THE EXPANDED TC RULE

Benzene	Hexachloro-1,3-butadiene
Carbon tetrachloride	Hexachlorobenzene
Chlordane	Hexachloroethane
Chlorobenzene	Methyl ethyl ketone
Chloroform	Nitrobenzene
m-Cresol	Pentachlorophenol
o-Cresol	Pyridine
p-Cresol	Tetrachloroethylene
1,4-Dichlorobenzene	Trichloroethylene
1,2-Dichloroethane	2,4,5-Trichlorophenol
1,1-Dichloroethylene	2,4,6-Trichlorophenol
2,4-Dinitrotoluene	Vinyl chloride
Heptachlor (and its hydroxide)	

Constituents with regulatory levels established under the EPTC will continue to be regulated at previously established levels, but will require application of the new TCLP instead of the EP.

2. Toxicants Versus Indicator Parameters

A few commenters recommended that EPA abandon its current focus on individual toxicants and rely instead on such indicator parameters as total organic carbon or total organic halogens. The commenters argued that such an approach would broaden the

effective scope of the rule and reduce the burdens associated with making hazardous waste determinations.

The Agency does not believe it would be appropriate to use indicators as part of the TC. Indicators generally are used as screening levels or to set priorities for further investigations. They do not achieve sufficient specificity for the regulatory purposes of the TC. For instance, the two indicators suggested by the commenters do not in any way reflect differences in toxicities among organic constituents. Consequently, use of these indicators could lead to both nonhazardous wastes registering as hazardous and wastes that are clearly hazardous registering as nonhazardous.

3. Method for Selecting Constituents

Several commenters questioned the manner in which EPA selected toxicants for inclusion in the TC proposal. Some of these commenters charged that the Agency's choice of toxicants was entirely arbitrary. Others claimed that EPA had based its selections solely on the availability of toxicologic and hydrogeologic data, without considering the magnitude of the hazards presented by the constituents.

The commenters, in general, encouraged EPA to develop specific procedures and criteria for deciding which constituents should be included in the TC. A few commenters offered particular suggestions for the types of factors that might be considered in evaluating toxicants. The recommended factors included (1) the mobility and persistence of the constituents, (2) the frequency with which particular constituents have been found in industrial wastes or leachates from such wastes, and (3) the extent to which various constituents have been detected in ground water supplies in concentrations capable of posing a threat to human health and the environment.

EPA believes that its method for selecting TC constituents is both rational and consistent with the statutory mandate. While selection of constituents in today's rule is in part based on available toxicologic data, it should be noted that both the fate and transport of constituents and the magnitude of hazards posed were also given consideration. The toxicants for which regulatory levels are being promulgated today are persistent and can represent a substantial threat to human health and the environment. Because of the lack of reliable data on the frequency with which certain toxic pollutants are found in leachates or ground water, an approach relying on such information would not provide an

accurate and valid basis for selecting constituents. Further, where data do exist concerning the frequency at which certain constituents are found in the environment, accompanying information about risk posed in the environment is often absent.

Although the Agency proposed levels only for toxicants for which it has adequate and verified data, generally these data are available because these toxicants do represent a substantial threat to human health and the environment. The Agency will consider adding constituents as additional toxicological data and other supporting data become available; in making such decisions, the Agency will consider the factors identified by the commenters. Until such data are available, there is no technical basis to determine at what level a waste is hazardous under the TC.

A number of commenters argued that EPA was needlessly "cluttering" the characteristic with low-priority constituents that are either not being produced in the United States or are primarily found in wastes that are already subject to regulation.

The Agency does not agree that a substance no longer manufactured in the U.S. will not pose a threat from waste disposal. Some such substances may be contained in products imported into the U.S. Also, wastes generated during cleanup at Superfund sites or RCRA corrective action sites may exhibit the TC due to the presence of these constituents in wastes disposed at some time in the past. Further, the constituents could be manufactured again in the future.

Several of the toxicants listed in today's rule also appear among the list of discarded commercial chemical products, off-specification products, and container and spill residues, as listed in 40 CFR 261.33. A group of commenters argued that it would be redundant to establish regulatory levels for these toxicants because they are already regulated as listed hazardous wastes. Similarly, several commenters argued that some other listed wastes are regulated as hazardous wastes primarily because they contain constituents that will be regulated under the new TC.

EPA does not agree that setting levels for the selected toxicants would be redundant. While it is true that many of the newly designated TC constituents are constituents in wastes that are specifically listed as RCRA hazardous wastes, the current listings do not cover all of the wastestreams that may contain the TC constituents. For example, the commercial chemical product listings in 40 CFR 261.33 primarily encompass

unused products and off-specification variants of products that are generically identified using the name of a single toxic constituent; however, the listings would not cover other wastestreams containing the same constituent. The listings in 40 CFR 261.32 specify only a limited number of wastestreams that contain TC constituents. As another example, the spent solvent listings in 40 CFR 261.31 cover only those solvents that are used for their "solvent" properties (i.e., to solubilize or mobilize other constituents). The current listings do not encompass process wastes where solvent constituents are used as reactants or ingredients in the formulation of commercial chemical products. The Agency has previously stated that it is expanding the TC to bring these wastestreams into the hazardous waste management system (see 50 FR 53317, December 31, 1985). Thus, the Agency is appropriately promulgating TC regulatory levels for some constituents that have been used as the basis for listings.

One commenter argued that EPA's approach in selecting TC constituents was too restrictive, ensuring that many toxic constituents may never be regulated. The commenter emphasized that reliance on MCLs, RfDs, and RSDs does not provide a comprehensive list of constituents for which reliable toxicological data exist. In addition, the commenter noted that reliance on human health data does not necessarily address hazards to the environment.

EPA disagrees with the commenter's first point. Reliance on MCLs, RfDs, and RSDs uses the most sound toxicologic data base available to the Agency. At present, there are more than 365 constituents with verified toxicity levels available for EPA use. In regard to the second point, the Agency recognizes that factors other than human health effects are also important to the overall protection of the environment, but points out that the purpose of this characteristic is to identify wastes that pose hazards to human health via a ground water contamination route. In regard to the other factors, the Agency is supporting a research effort focusing on the determination of action levels for ecological effects and evaluating appropriate exposure assessment tools. When sufficient information concerning these ecological risks is available, the Agency will compare the ecological-risk-based levels to the TC regulatory levels to determine whether further revisions to these levels, based on ecological risk, are necessary.

4. Specific Organic Constituents

Many commenters expressed concern over several of the specific organic constituents that EPA proposed to include in the TC. The comments focusing on specific toxicants are discussed below.

a. Vinyl Chloride. A few commenters objected to the inclusion of vinyl chloride in the TC. They suggested that the constituent is already adequately regulated under the Clean Air Act, the Safe Drinking Water Act, the Toxic Substances Control Act, and the Food, Drug, and Cosmetic Act (for food contact applications).

The commenters are correct in stating that vinyl chloride and polyvinyl chloride are already regulated under other environmental health and safety statutes. However, none of these other regulatory authorities address the specific problem of ensuring against releases of vinyl chloride caused by the improper management of solid wastes containing this constituent. Most importantly, none of the authorities directly protect ground water supplies from vinyl chloride contamination. Because vinyl chloride is known to be toxic to humans and has been detected in ground water supplies, EPA believes that regulating the constituent under RCRA will add significantly to the protection of human health and the environment. An analysis completed as part of the Regulatory Impact Analysis (Ref. 8) of this regulation indicates that large quantities of wastes currently not regulated as hazardous contain concentrations of vinyl chloride above the regulatory levels. Therefore, the Agency believes that RCRA regulation under the TC is an important expansion of the overall regulatory coverage of this constituent which poses a threat to human health and the environment.

b. Bis(2-chloroethyl) Ether. One commenter questioned whether incorporating bis(2-chloroethyl) ether into the TC is appropriate, since only an extremely limited quantity of the constituent could potentially be released into the environment. The commenter noted that the constituent is used almost exclusively as an intermediate in the production of ionene polymers. Moreover, it is handled primarily by a single facility, which either recycles the material or destroys it by biodegradation prior to discharge under a National Pollutant Discharge Elimination System (NPDES) permit.

The Agency is not promulgating standards for bis(2-chloroethyl) ether today. As discussed in section III.E.2.a.7, bis(2-chloroethyl ether) is expected to hydrolyze significantly during transport.

EPA does not have sufficient data to address the formation and toxicity of hydrolysis products. Thus, the Agency expects to address appropriate regulatory action for this constituent, along with the other hydrolyzing constituents, in a future Federal Register notice.

c. Toxaphene. One commenter questioned the need to include toxaphene in the list of TC analytes. The commenter argued that toxaphene has not been produced in the United States for several years and that generators should not be required to test their wastes for "phantom" constituents that are unlikely to be present.

EPA recognizes that toxaphene is no longer produced domestically. However, because previously generated toxaphene wastes are still being managed in treatment, storage, and disposal facilities there is still a potential threat to human health and the environment from improper management of wastes containing this constituent. Thus, wastes containing toxaphene above the regulatory level should be managed as hazardous wastes.

Moreover, toxaphene has been regulated as an EP constituent since 1980 and today's rule retains the existing regulatory level. Thus, today's rule does not alter any regulatory requirements with respect to toxaphene. The Agency does not believe that maintaining toxaphene as a TC constituent is unnecessarily burdensome to the regulated community. The final TC rule does not require solid waste generators to test their wastes. Instead, generators may continue to determine whether their wastes exhibit the hazardous waste characteristics by relying on their knowledge of the materials and processes that they employ (see 40 CFR 262.11(c)(2)). Accordingly, generators who have reason to believe that their wastes contain no toxaphene are not specifically required to test for that constituent.

d. Phenol. One commenter urged EPA to delete phenol from the list of TC constituents of concern because phenol biodegrades under both aerobic and anaerobic conditions.

The Agency is not including phenol in today's rule because the steady-state assumption used in the model to calculate DAFs in this final rule may not be appropriate for phenol. The Agency will promulgate a TC regulatory level for phenol at a later date.

The issue of biodegradation is discussed in section III.E.2.a.9 as it pertains to phenol and other constituents.

e. Pentachlorophenol. The Agency is considering revisions to the regulatory level for pentachlorophenol (PCP) because new health data indicate that PCP is more toxic than originally assumed. Two studies of different grades of PCP material were conducted by the National Toxicology Program, and the new data indicate that PCP is carcinogenic in male and female mice under the conditions of the bioassay. These studies were used to support the proposal to list additional wastes from the wood preserving industry (53 FR 53282, December 30, 1988).

The Agency is today finalizing the higher regulatory level for PCP although the Agency expects that the regulatory level will decrease in the future. EPA has determined that it is more prudent to effect control at a higher level during the period necessary to take comment on the appropriateness of modifying the TC level.

5. Specific Inorganic Constituents

As noted earlier, EPA did not propose to add any new inorganic TC constituents in the June 13, 1986 proposal. Nevertheless, the Agency received a large number of comments addressing the eight metallic species that were already covered by the EPTC. The Agency also received many comments on the possibility of proposing TC regulatory levels for nickel and thallium (mentioned in the June 13 proposal). The principal comments are discussed below.

a. Silver. A number of commenters urged EPA to delete silver from the list of TC constituents of concern. They pointed out that a variety of studies have demonstrated that the chief effect of silver on humans is argyria, a blue-gray discoloration of the skin and internal organs. The commenters also stated that argyria is generally considered a cosmetic effect, rather than a health effect, because it does not impair the functioning of the body. While the commenters acknowledged that free silver ions may be toxic to aquatic life, they claimed that such ions are rarely discharged into the environment. Moreover, they argued that even if such ions were discharged, they would quickly be converted into insoluble salts, such as chlorides, sulfides, and phosphates. Finally, the commenters asserted that deleting silver from the TC list would be consistent with current EPA policy. They pointed out that the Agency has not proposed a Recommended Maximum Contaminant Level (RMCL) for silver in drinking water, on the grounds that silver does not cause adverse health effects.

EPA acknowledges that an RMCL (now referred to as a Maximum Contaminant Level Goal, or MCLG) has not been proposed for silver because the only known adverse effect from exposure to silver is argyria. However, the Agency has specifically requested comments on whether it is appropriate to consider argyria a cosmetic effect as opposed to a health effect (see 50 FR 40979, November 13, 1985). EPA believes it would be inappropriate to remove silver from the list of TC constituents until this issue is resolved. If EPA determines, within the scope of the Safe Drinking Water Act rulemaking, that silver does not pose a threat to human health and the environment, the Agency will consider proposing the deletion of silver from the list of TC constituents.

b. Chromium. Several commenters objected to the inclusion of total chromium as a TC constituent of concern. They argued that only hexavalent chromium (Cr(VI)) has been demonstrated to pose a threat to human health and the environment. Although they acknowledged that trivalent chromium (Cr(III)) can be oxidized to hexavalent chromium under certain conditions, they contend that such conversion is unlikely to occur in ground water environments. The commenters, in fact, claimed that iron-bearing soils are likely to effect the opposite transformation, from Cr(VI) to Cr(III). Finally, they stated that even if the oxidation reaction did occur, the resulting Cr(VI) concentrations would be so low as not to present a significant danger to human health and the environment.

EPA continues to believe that total chromium concentrations should be considered in determining whether solid wastes qualify as characteristic hazardous wastes. The Agency has long been aware of the fact that trivalent chromium is less toxic than hexavalent chromium. Nevertheless, the Agency also has been concerned that trivalent chromium could be converted to the hexavalent form under certain plausible mismanagement conditions. It is for this reason as well as the fact that the NIPDWS was developed for total chromium that the regulatory level for chromium in the EPTC was originally established on the basis of total chromium concentrations (see 45 FR 33084, May 19, 1980).

The Agency later proposed to amend the EPTC so that it would apply to hexavalent chromium rather than total chromium (45 FR 72029, October 30, 1980; see also 48 FR 22170, May 17, 1983). This proposal was based on the fact that trivalent chromium has

significantly lower migratory potential than hexavalent chromium and is less mobile if it does migrate from a waste matrix. At that time, the Agency also believed that there was little likelihood that Cr(III) could oxidize to Cr(VI) under most plausible types of improper waste management.

More recent evidence, however, suggests that the conversion from trivalent to hexavalent chromium may occur in a number of environmental situations (see 51 FR 26420, July 23, 1986, fn. 6). For example, Cr(III) has been found to oxidize readily to Cr(VI) under conditions found in many field soils. This reaction is catalyzed by manganese dioxide, which is commonly present in both soils and sediments. Moreover, it has been shown that water treatment involving chlorination will effectively transform Cr(III) to Cr(VI). The normal presence of residual oxidizing capacity in treated water is capable of maintaining dissolved chromium in the higher valence state (50 FR 46966, November 13, 1985). Thus, if trivalent chromium is present in high concentrations in well water, chlorination can result in correspondingly high concentrations of hexavalent chromium at the point of exposure (i.e., at the tap).

For these reasons, EPA's original concerns regarding the potential for trivalent chromium to be converted to hexavalent chromium remain. Thus, the Agency believes that the prudent course is to regulate total chromium concentrations under the TC. It should be noted that because of this, the Agency is considering proposing the deletion of the exclusion for specific chromium wastes that contain virtually no hexavalent chromium [see 40 CFR 261.4(b)(6)(i)]. Such a change would affect certain wastes from the leather tanning and finishing industry (as well as certain sludges from the production of TiO₂ pigment using chromium-bearing ores by the chloride process).

c. Nickel and Thallium. Several commenters expressed support for incorporating nickel and thallium into the list of TC analytes. One commenter emphasized that unless such a step is taken, a major inequity will continue to exist in the regulation of listed and unlisted wastes that contain comparable levels of nickel. Many other commenters, however, objected to the inclusion of nickel and thallium in the TC. Most of these commenters doubted whether either element poses a threat to human health and the environment, noting that neither one is on the Primary or Secondary Drinking Water Standards list.

EPA has decided not to add more metals to the TC constituent list at this time because technical issues remain as to their subsurface fate and transport. The regulatory levels for the toxicity characteristic metals are not changed in this rule (i.e., EPA is retaining the regulatory levels set under the previous EP) pending further Agency validation and study of the fate and transport of metals. These validation and study efforts are focusing on the development of the metal speciation model (MINTEQ).

The Agency is developing MINTEQ for the evaluation of the mobility of arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, silver, and thallium in ground water. A modified version of MINTEQ will be used in combination with a set of generic ground water specifications and subsurface conditions to determine metal solubility limitations. EPA will then use these results, in conjunction with the subsurface fate and transport model, to estimate dilution during transport to the down-gradient exposure point. (See discussion of the development of the subsurface fate and transport of metals at 51 FR 1853, January 14, 1986.) The Agency is not specifically proposing an approach for evaluating the fate and transport of metals in today's rule, but does expect to propose, at a later time, DAFs specific to metals, including nickel and thallium, and will address comments relating to the toxicity of nickel and thallium at that time.

C. Chronic Toxicity Reference Levels. The Agency proposed to use chronic toxicity reference levels (combined with DAFs) to calculate leachate concentration limits for individual constituents; a waste containing constituents equal to or above those levels would be a hazardous waste under the TC. Specifically, EPA proposed to use the MCLs promulgated as part of the National Interim Primary Drinking Water Standard (NIPDWS), where available, as the starting point for establishing the regulatory levels for each of the constituents. For those constituents for which no MCLs had been promulgated, the Agency proposed to use oral Reference Doses (RfDs) and Risk-Specific Doses (RSDs) to develop chronic toxicity reference levels for the noncarcinogens and carcinogens, respectively. Because exposure to toxic constituents can occur by multiple pathways, the Agency also proposed to apportion the acceptable health risk level of each noncarcinogenic constituent among the various possible routes of exposure. The Agency solicited

public comment on: (1) Whether RfDs and RSDs are appropriate to use when MCLs are available; (2) the health levels proposed for RfDs and RSDs; (3) the associated risk levels; and (4) the assumptions used to apportion exposure to the different possible routes. The Agency's decisions regarding the health-related issues for which it solicited comments are presented below.

1. Maximum Contaminant Levels

The original toxicity characteristic—the EPTC (40 CFR 261.24)—used the NIPDWS developed under the Safe Drinking Water Act as the toxicity levels to derive the regulatory levels for the eight metals, four insecticides, and two herbicides then regulated. (For ease of discussion, the acronym "MCLs" will be used in subsequent sections to refer collectively to both MCLs and the existing NIPDWS.) EPA plans to continue this approach in the expanded TC for those constituents for which MCLs are available.

A number of commenters expressed support for the use of MCLs, when they exist, as the starting point for calculating regulatory levels for the TC. Most of these commenters argued that the MCLs provide adequate protection of human health. These commenters stated that MCLs are reliable, scientifically defensible, and recognized and understood by the general public.

Several commenters supported the use of MCLs because factors relating to cost and available treatment technology may be considered along with health effects in the development of the standards. These commenters asserted that MCLs represent a reasonable balance among the factors EPA must consider, while RfDs and RSDs are more limited. A number of commenters also felt that the use of MCLs provides a level of protection consistent with other regulatory programs.

In contrast, other commenters supported the use of RfDs and RSDs as the basis for the chronic toxicity reference levels even when MCLs are available for those constituents. These commenters stated that health-based levels are an appropriate starting point for the regulation. Because the MCLs consider other factors relating to technical and economic feasibility in addition to toxicity, they contend that the RfDs and RSDs are preferable. Many of these commenters also supported a consistent approach for all constituents regulated by the TC, rather than using MCLs for some and RfDs and RSDs for others.

Several commenters asserted that because the MCLs were developed for the purpose of regulating the

concentrations of constituents in treated water "at the tap," it is not appropriate to use the same standards for defining hazardous wastes. Several commenters also expressed concern that the MCLs developed under the Safe Drinking Water Act are potentially more stringent than RfDs and RSDs. This concern was most strongly expressed regarding carcinogens, for which Maximum Contaminant Level Goals (MCLGs), previously referred to as Recommended Maximum Contaminant Levels (RMCLs), are set at zero, and MCLs are set at technically achievable levels that most closely approach this zero goal.

EPA maintains that the MCLs, when they exist, are the most appropriate health criterion to use as the starting point for developing the regulatory levels. The exposure scenario developed for the TC is based on ingesting contaminated drinking water, and because MCLs are developed for regulation of drinking water, they clearly are relevant. In addition, the development of the MCLs follows a rigorous methodology in which all available health information is evaluated in establishing the MCLGs. The MCLs are set as close to the MCLGs as is feasible, and the Agency believes that MCLs are protective of human health.

It should be noted that EPA evaluates the health risks that are associated with various contaminant levels in order to insure that the MCL adequately protects the public health. For drinking water contaminants, EPA sets a reference risk range for carcinogens at 10^{-4} to 10^{-6} excess individual risk from lifetime exposure. Most regulatory actions in a variety of EPA programs have generally targeted this range using conservative models which are not likely to underestimate the risk. Since the underlying goal of the Safe Drinking Water Act is to protect the public from adverse effects due to drinking water contaminants, EPA seeks to insure that the health risks associated with MCLs for carcinogenic contaminants are in the general range of 10^{-4} to 10^{-6} .

EPA acknowledges that use of MCLs will, in some cases, result in chronic toxicity reference levels that are lower than those that would be calculated using the RfD methodology. For example, many of the non-carcinogenic compounds have MCLs which are approximately 10 to 20 percent of their respective RfDs because exposure sources other than contaminated drinking water are considered in setting the MCLs. On the other hand, the MCLs for some of the constituents addressed in the proposal are higher than the

levels that would be calculated using the RSD methodology. An example of this situation arises when the health criteria are at such low levels that analytical methods are not available to measure these levels. In cases where the MCL is higher than a purely health-based level, the Agency notes that use of the MCL is not inconsistent with today's rule since the purpose of the rule is to identify wastes that clearly pose hazards, not to identify the lowest level of hazard.

However, regardless of whether they are higher or lower than the levels calculated using the RfD or RSD methodologies, EPA believes that MCLs are the appropriate starting point for developing regulatory levels for the TC.

For the constituents lacking MCLs, EPA must rely on the available methodologies to provide chronic toxicity reference levels that are scientifically defensible and protective of human health. EPA believes that the RfD and RSD methodologies meet these two criteria. EPA also realizes that inconsistencies will exist when different methodologies are employed for developing regulatory levels. The Agency intends to evaluate newly promulgated MCLs to determine on a case-by-case basis whether the TC regulatory level will change significantly if the new MCL is used, and to revise the regulatory levels, as appropriate. In the long run, this should provide internal consistency for the TC, as well as consistency with other regulatory programs.

Some commenters supported the use of MCLGs as the basis for chronic toxicity reference levels under the TC because the MCLGs are based on health effects alone, whereas the MCLs consider other factors as well, such as economic and technical feasibility.

EPA disagrees with the commenters who stated that MCLGs are more appropriate than MCLs for use in the TC. MCLGs are nonenforceable health goals for drinking water, which are to be set at levels that would result in no known or anticipated adverse health effects with an adequate margin of safety. The Agency has adopted the policy of setting the MCLGs for probable human carcinogens (Group A and B carcinogens) at zero. If the Agency were to use MCLGs rather than MCLs in the TC, the regulatory levels for defining a waste as hazardous would be based on health criteria that, at least for carcinogens, are more stringent than the criteria used to set concentrations acceptable for direct human ingestion of drinking water. In addition, the regulatory levels would be virtually impossible to detect analytically. This

would mean that any waste that contains detectable levels of carcinogens would be hazardous regardless of the potency of the carcinogen or the risk presented by that waste. EPA believes that this is an inappropriate approach for the TC because it would result in the regulation of wastes which are not necessarily hazardous.

2. Risk-Specific Doses for Carcinogenic Constituents

For constituents for which no MCLs have been established, EPA uses oral RSDs to develop chronic toxicity reference levels for carcinogens. The RSD is an upper-bound estimate of the average daily dose of a carcinogenic substance that corresponds to a specified excess cancer risk for lifetime exposure. A predetermined risk level and the oral carcinogenic slope factor estimated by EPA's Carcinogen Risk Assessment Verification Endeavor (CRAVE) Workgroup or Carcinogen Assessment Group (CAG) are used to calculate the RSD.

The Agency proposed a risk level of concern based on the weight of evidence regarding carcinogenicity of each constituent. Constituents classified as known or probable human carcinogens (Group A or B) were assigned a risk level of 1 in 100,000 (i.e., 10^{-5}), while constituents classified as possible human carcinogens (Group C) were assigned a risk level of 1 in 10,000 (i.e., 10^{-4}).

The Agency received comments regarding both the weight-of-evidence approach for establishing risk levels and the risk levels selected. In particular, one commenter supported the Agency's proposal, stating that a single risk level is not appropriate for all constituents, and that use of the weight-of-evidence approach avoids making regulatory decisions based on insufficient data. Another commenter also supported the use of weight-of-evidence to assign risk levels, but stated that it is inappropriate to regulate both known and probable human carcinogens at the same level of risk. Alternatively, a third commenter asserted that the weight-of-evidence approach is inappropriate because (1) new information is constantly being developed on the health effects of toxic constituents, so the weight of evidence is constantly changing, and (2) the classification scheme does not take into account the potency of the carcinogenic risk.

The Agency also received specific comments regarding both the weight-of-evidence approach and the selection of specific risk levels. Several commenters addressed the risk level at which the

Agency proposed to regulate carcinogens. Some commenters specifically expressed support for EPA's proposal to regulate Class A and B constituents at a 10^{-5} risk level and Class C constituents at a 10^{-4} risk level. One commenter stated that because the procedure for developing risk estimates is extremely conservative, the proposed risk levels would not adversely affect human health and the environment. Another commenter noted that the stated risk levels are estimates of the upper confidence bound of risk and not the maximum likelihood estimate; thus, the actual risk to the public would be less than the stated level.

Other commenters supported the use of a 10^{-6} risk level for all carcinogens. These commenters argued that the use of the proposed risk levels represents a serious weakening in EPA's regulation of carcinogens and is inconsistent with other policies in effect in other EPA programs.

With respect to the weight-of-evidence approach, the Agency has decided to establish a single risk level of concern for all potential carcinogens (i.e., the Agency will not assign a specific risk level to a specific weight-of-evidence carcinogenicity classification for this rulemaking). The weight-of-evidence approach for classifying a constituent as carcinogenic is based primarily on the amount and quality of data that are available rather than the strength of the toxic response in animals or humans. In effect, it is a qualitative assessment that takes into account the uncertainty in the data for determining whether an agent is carcinogenic to humans. This means that the actual quantitative difference in risk between an "A" and "B" carcinogen as classified by the weight of evidence may either be zero or may be orders of magnitude. Thus, EPA believes that both the weight-of-evidence and the strength of the toxic response (i.e., potency) should be considered in making regulatory decisions within the context of the TC.

With regard to the specific risk level chosen, the Agency has decided to set the level for carcinogens (Groups A, B, and C) at 1 in 100,000 (i.e., 10^{-5}) for the final rulemaking. Characteristics are established at levels at which the Agency has a very high level of certainty that a waste which exhibits these properties needs to be managed in a controlled manner (i.e., as a hazardous waste). The Agency realizes that not all wastes which exhibit properties at concentrations below the regulatory levels are necessarily safe for disposal as nonhazardous wastes. Rather, those wastes having properties lower than the

regulatory levels and which are demonstrated to pose a hazard to human health or the environment still remain subject to waste-specific evaluations under the hazardous waste listing program. Wastes which are determined to require controlled management after consideration of the factors identified in 40 CFR 261.11(a)(3) (e.g., the nature of the toxic constituents, toxicant mobility under various environmental management scenarios, volume of waste generated and potential method of management) are then specifically listed as hazardous wastes and subjected to the appropriate RCRA management controls. This reflects EPA's philosophy, first articulated in May of 1980, that the characteristic defines broad classes of wastes that are clearly hazardous, while the listing process defines some wastes that may not exhibit the characteristics but are nonetheless hazardous wastes (45 FR 33111, May 19, 1980).

The chosen risk level of 10^{-5} is at the midpoint of the reference risk range for carcinogens (10^{-4} to 10^{-6}) targeted in setting MCLs. This risk level also lies within the reference risk range (10^{-4} to 10^{-6}) generally used to evaluate CERCLA actions. Furthermore, by setting the risk level at 10^{-5} for TC carcinogens, EPA believes that this is the highest risk level that is likely to be experienced, and most if not all risk will be below this level due to the generally conservative nature of the exposure scenario and the underlying health criteria. For these reasons, the Agency regards a 10^{-5} risk level for Group A, B, and C carcinogens as adequate to delineate, under the TC, wastes that clearly pose a hazard when mismanaged.

3. Apportionment of Health Limits

EPA proposed to account for potential exposure from sources other than the TC scenario by apportioning the RfD-based chronic toxicity reference levels. The apportionment scheme effectively reduced each such chronic toxicity reference level to 50 percent of its original value, (i.e., 50 percent of the RfD). The Agency also proposed to estimate environmental partitioning of the apportioned health limits in air and water according to a simplified fractionation scheme using Henry's Law Constants (H_c) and octanol-water coefficients (K_{ow}) for individual constituents. The Agency did not propose to apportion the chronic toxicity reference levels based on RSDs or MCLs.

Several commenters addressed the Agency's proposal to apportion the RfDs. Commenters that criticized the

Agency's proposed apportionment scheme argued that it was arbitrary, overly conservative, and unnecessary. Several commenters recommended that EPA either use more realistic estimates of exposure based on the available constituent-specific data or not apportion at all.

After a review of comments on the proposed regulation and consideration of the available data, the Agency has decided not to apportion in this rulemaking. Although the concept of apportionment has some scientific basis in that individuals are exposed to many of the chemicals of concern through more than one route of exposure and from more than one source, the implementation of the concept is very difficult when adequate data on the amount of exposure and/or health effects from all routes of exposure do not exist. Thus, due to the lack of sufficient data to determine an appropriate apportionment factor for the various constituents, the Agency now concludes that its proposed apportionment scheme cannot be supported at the present time. Of course, the proposed apportionment would deal with uncertainty by erring on the side of safety; nevertheless the Agency believes that the conservative approach used to deal with uncertainty in the development of the RfD is sufficiently stringent to define those wastes that clearly pose hazards. This approach is in accordance with the Agency's treatment of noncarcinogens. The Agency therefore will not apportion the RfDs for this rulemaking.

A few commenters criticized the Agency's proposed method for fractionating the apportioned RfD between air and water. These commenters questioned the technical basis of the Agency's approach and/or recommended alternative schemes. The Agency agrees with commenters that the technical basis for supporting fractionation as proposed is inadequate to predict media-specific concentrations. The Agency is exploring the development of an appropriate model. Thus, EPA has decided not to apportion the RfD and not to fractionate the RfD between air and water in this rulemaking.

Other commenters addressed the apportionment of RSDs for carcinogenic constituents. Several of these commenters agreed with EPA's decision not to apportion RSDs, stating that doing so would result in very low regulatory thresholds for some constituents. The commenters also pointed out that many conservative assumptions are already incorporated into the development of the

RSDs for carcinogens. Others commented that RSDs should be apportioned because humans are exposed to these constituents by multiple routes.

The Agency continues to believe that it is not appropriate to apportion the RSDs for carcinogenic constituents. RSDs are estimated by a procedure that must deal with unavoidable uncertainties and is therefore intentionally conservative. The Agency stated in the preamble to the proposed rule that a difference in dose of a factor of 2 is still well within the margin of uncertainty of the estimated RSD (51 FR 21667, June 13, 1986).

Table C-1 presents chronic toxicity reference levels for the constituents in today's rule. The Agency received a number of comments on specific chronic toxicity reference levels. In some cases, EPA responded to these comments in the notice of proposed changes to the health levels on May 19, 1988 (53 FR 18024). Other chemical specific comments are addressed in the background document (Ref. 3).

TABLE C-1.—CHRONIC TOXICITY
REFERENCE LEVELS

Constituent	Chronic toxicity reference level (mg/L)	Basis
Arsenic	0.05	MCL
Barium	1.0	MCL
Benzene	0.005	MCL
Cadmium	0.01	MCL
Carbon tetrachloride	0.005	MCL
Chlordane	0.0003	RSD
Chlorobenzene	1	RfD
Chloroform	0.06	RSD
Chromium	0.05	MCL
o-Cresol	2	RfD
m-Cresol	2	RfD
p-Cresol	2	RfD
2,4-D	0.1	MCL
1,4-Dichlorobenzene	0.075	MCL
1,2-Dichloroethane	0.005	MCL
1,1-Dichloroethylene	0.007	MCL
2,4-Dinitrotoluene	0.0005	RSD
Endrin	0.0002	MCL
Heptachlor (and its hydroxide)	0.00008	RSD
Hexachlorobenzene	0.0002	RSD
Hexachloro-1,3-butadiene	0.005	RSD
Hexachlorocyclohexane	0.03	RSD
Lead	0.05	MCL
Lindane	0.004	MCL
Mercury	0.002	MCL
Methoxychlor	0.1	MCL
Methyl ethyl ketone	2	RfD
Nitrobenzene	0.02	RfD
Pentachlorophenol	1	RfD
Pyridine	0.04	RfD
Selenium	0.01	MCL
Silver	0.05	MCL
Tetrachloroethylene	0.007	RSD
Toxaphene	0.005	MCL
Trichloroethylene	0.005	MCL
2,4,5-Trichlorophenol	4	RfD
2,4,6-Trichlorophenol	0.02	RSD
2,4,5-TP acid (Silvex)	0.01	MCL

TABLE C-1.—CHRONIC TOXICITY
REFERENCE LEVELS—Continued

Constituent	Chronic toxicity reference level (mg/L)	Basis
Vinyl chloride.....	0.002	MCL

All RSDs are calculated at the 10⁻⁵ risk level.

D. Use of Generic Dilution/Attenuation Factors (DAFs)

In the May 19, 1988 supplemental proposal, EPA requested comment on an alternative strategy for setting DAFs in the TC. The alternative involved setting DAFs for these constituents in two phases. The first phase would use a generic DAF in a manner similar to the existing EPTC, which uses a DAF of 100 for all EP constituents. In the second phase, the Agency would further address the manner in which the DAFs are calculated and would either: (1) Continue to use generic DAFs, (2) employ a subsurface fate and transport model to develop constituent-specific DAFs, or (3) use some combination of the two approaches. The Agency also specifically solicited comment on the use of a generic DAF of 100 or 500 in the first phase.

Many commenters recognized the need to expeditiously promulgate the TC; however, most opposed the two-phased approach, arguing that it would cause undue economic burden by: (1) Forcing industries to design new treatment programs for one group of wastes at certain regulatory levels, and a few years later to redesign in order to accommodate new levels and wastes, and (2) over-regulating certain chemical substances under the first generic-DAF phase that may then not be regulated under the second phase. Some commenters were concerned, on the other hand, that EPA would set the generic DAFs so high (to avoid

overregulation) that some substances would be under-regulated.

Most commenters opposed the use of generic DAFs and urged EPA to retain the constituent-specific modeling approach. These commenters argued that a generic DAF would be arbitrary and not scientifically defensible; that use of the generic DAFs would violate the statutory requirements to develop a process that accurately assesses leaching ability and differentiates between hazardous and nonhazardous wastes; and that the diversity in dilution and attenuation attributes across the constituents would cause any generic DAF to either severely under-regulate or severely overregulate a large number of the constituents. Even those few commenters who supported the two-phased approach recommended that the Agency move rapidly to the second phase and employ the modeling approach to set DAFs.

EPA acknowledges that the problems noted by the commenters are important ones. The Agency requested comment on the generic DAF approach because of the likelihood that the issues surrounding the proposed fate and transport model for establishing constituent-specific DAFs would not be resolved in a timely manner. Since the Agency has been able to address the concerns regarding the subsurface fate and transport model for the constituents identified in today's regulation, the Agency has decided to use the model to develop DAFs. Consequently, the DAFs set in today's rule for nonhydrolyzing constituents for which the steady-state solution is appropriate are not viewed by EPA as interim and are supported by the subsurface fate and transport model. The Agency intends to establish DAFs for constituents not addressed in today's rule on a constituent-specific basis, and regulatory levels for those constituents will be proposed or promulgated (as warranted) at a later date.

E. Application of a Subsurface Fate and Transport Model

1. Introduction

On June 13, 1986, EPA proposed an approach (see 51 FR 21648) for estimating regulatory concentration levels in a waste leachate using chronic toxicity reference levels, combined with constituent-specific dilution/attenuation factors (DAFs) derived from the application of a subsurface fate and transport model. The model (EPASMOD) was first described for public comment on January 14, 1986 (51 FR 1602).

A DAF represents a reduction in the concentration of a constituent expected to occur during transport through ground water from the bottom of a disposal unit to a drinking-water source. In response to the proposal and supplemental notices (see Section II, Table II.1), the Agency received numerous comments on the subsurface fate and transport model used for the calculation of DAFs. This section describes the different proposals related to the use of the subsurface fate and transport model, the modifications to the model in response to public comments, and the results obtained with the use of the modified model.

a. *June 13, 1986 Proposed Rule (51 FR 21648).* The Agency's June 13, 1986 proposal used a subsurface fate and transport model (EPASMOD) to calculate specific DAFs for each of the 44 organic hazardous constituents (see Table E-1). The DAFs for each constituent were calculated using the model, incorporating compound-specific hydrolysis and soil adsorption data coupled with parameters describing the subsurface environment (e.g., ground water flow rate, hydraulic conductivity of the aquifer, ground water pH, etc.). The Agency proposed modeling a scenario of waste mismanagement at a subtitle D municipal landfill. Data were incorporated in the model using a monte carlo simulation.

TABLE E-1.—DILUTION ATTENUATION FACTORS FOR TOXICITY CHARACTERISTIC ORGANIC CONSTITUENTS

Constituent	LOG K _{ow} ¹	K _a ²	K _b ²	K _n ²	D/A factor ³
Acrylonitrile.....	0.07	> 1/yr.....	> 1/yr.....	> 1/yr.....	14.4
Benzene.....	2.13	NHYF ⁴	NHYF.....	NHYF.....	14.4
Bis(2-chloroethyl)ether.....	1.04	NH ⁵	NH.....	8E-5/hr.....	14.4
Carbon disulfide.....	2.16	NH.....	> 10/yr.....	NH.....	14.4
Carbon tetrachloride.....	2.36	NH.....	NH.....	NH.....	14.4
Chloroethane.....	5.48	NH.....	> 10/yr.....	NH.....	14.4
Chlorobenzene.....	2.87	NH.....	1E-6/hr.....	NH.....	14.4
Chloroform.....	1.96	NH.....	0.23/hr.....	3E-9/hr.....	14.4
o-Cresol.....	2.15	NHYF.....	NHYF.....	NHYF.....	14.4
m-Cresol.....	2.15	NHYF.....	NHYF.....	NHYF.....	14.4
p-Cresol.....	2.15	NHYF.....	NHYF.....	NHYF.....	14.4
2,4-D.....	2.70	NHYF.....	NHYF.....	NHYF.....	14.4
1,2-Dichlorobenzene.....	3.56	NH.....	1E-5/hr.....	NH.....	14.4

TABLE E-1.—DILUTION ATTENUATION FACTORS FOR TOXICITY CHARACTERISTIC ORGANIC CONSTITUENTS—Continued

Constituent	LOG K _{ow} ¹	K _a ²	K _b ²	K _n ²	D/A factor ³
1,4-Dichlorobenzene	3.56	NLFG ⁴	NLFG	NLFG	14.4
1,2-Dichloroethane	1.40	NH	NH	7.2E-5/hr	75.0
1,1-Dichloroethylene	2.13	NLFG	NLFG	NLFG	14.4
2,4-Dinitrotoluene	2.30	NLFG	NLFG	NLFG	14.4
Endrin	[†] 3.54	> 1/yr	> 1/yr	> 1/yr	14.4
Heptachlor (and its hydroxide)	[†] 4.61	NLFG	NLFG	NLFG	14.4
Hexachlorobenzene	6.42	< 1/yr	< 1/yr	< 1/yr	14.4
Hexachlorobutadiene	4.24	NLFG	NLFG	NLFG	14.4
Hexachloroethane	4.22	> 1/yr	> 1/yr	> 1/yr	14.4
Isobutanol	0.74	> 1/yr	> 1/yr	> 1/yr	14.4
Lindane	3.40	> 1/yr	> 1/yr	> 1/yr	14.4
Methoxychlor	[†] 4.30	NH	1.4/hr	7.5E-5/hr	14.4
Methylene chloride	1.26	NH	NH	1.18E-8/hr	14.4
Methyl ethyl ketone	0.30	NLFG	NLFG	NLFG	14.4
Nitrobenzene	1.90	NLFG	NLFG	NLFG	14.4
Pentachlorophenol	5.06	NH	> 1E-4/hr	NH	14.4
Phenol	1.49	NHYF	NHYF	NHYF	14.4
Pyridine	0.68	NLFG	NLFG	NLFG	14.4
1,1,1,2-Tetrachloroethane	2.81	NH	1.3/hr	2.2E-7/hr	14.4
1,1,2,2-Tetrachloroethane	2.42	NH	2.6E+3/hr	NH	65.0
Tetrachloroethylene	3.03	NLFG	NLFG	NLFG	14.4
2,3,4,6-Tetrachlorophenol	4.33	NH	1E-5/hr	NH	14.4
Toluene	2.82	NHYF	NHYF	NHYF	14.4
Toxaphene	[†] 5.30	NH	> 10/yr	NH	14.4
1,1,1-Trichloroethane	2.50	NH	NH	1.1E-4/hr	150.0
1,1,2-Trichloroethane	1.91	NH	13/hr	4.3E-7/hr	20.0
Trichloroethylene	2.28	NLFG	NLFG	NLFG	14.4
2,4,5-Trichlorophenol	3.86	NH	1E-5/hr	NH	14.4
2,4,6-Trichlorophenol	3.58	NH	1E-5/hr	NH	14.4
2,4,5-TP (Silvex)	3.45	NLFG	NLFG	NLFG	14.4
Vinyl chloride	1.38	NH	1E-5/hr	1E-7/hr	14.4

¹ Logarithm of the octanol/water partition coefficient.² Acid, base and neutral hydrolysis rate constants.³ Dilution/attenuation factor derived from ground water transport system.⁴ NHYF = No Hydrolyzable Functional Group.⁵ NH = Negligible Hydrolysis.⁶ NLFG = No Liable Functional Group.[†] Estimated value.

In the monte carlo simulation, values for each parameter are based upon the frequency distribution for each parameter (where such data exists) rather than the selection of a single value for each parameter. The model is then run a sufficient number of times (typically several thousand) to produce the frequency distribution of the model's output. This overall frequency distribution is, effectively, a combination of the frequency distributions for each individual parameter. This approach avoids the compounding effects of conservatism inherent in choosing single, reasonable-worst-case values for each parameter. Monte carlo simulation was chosen as the preferred method to analyze the full range of possible environmental conditions for the land disposal scenario. The wide range of environmental conditions (e.g., ground water velocities, pH, temperatures, exposure point locations) that can exist in locations across the nation where the wastes in question may be disposed precludes *a priori* specification of a reasonable worst case for these parameters. Another important reason to use the monte carlo method is the

very complex manner in which the many model variables and parameters interact. Unless many (hundreds to thousands) combinations of variables are investigated, it is simply not possible to anticipate those physical settings that lead to unacceptably high exposure levels. Accordingly, the monte carlo method was chosen to ensure that a conservative but not physically unrealistic or impossible analysis was completed.

The EPASMOD, as described in the proposed rule, was based on a number of key assumptions pertaining to the features of ground water flow, properties of the porous medium, and the behavior of hazardous wastes in ground water. These assumptions included the following:

- Saturated soil conditions (no attenuation of chemicals in the unsaturated zone);
- Flow regions of infinite extent in the longitudinal direction, semi-infinite extent in the lateral direction, and finite in the vertical direction;
- Aquifer can be characterized by homogeneous and isotropic properties and the aquifer thickness is constant;

- Ground water flow is uniform and continuous in direction and velocity;
- Degradation is limited to hydrolysis and the by-products of hydrolysis are assumed to be nonhazardous;
- Contaminants follow a linear equilibrium adsorption isotherm;
- An infinite source supplies a constant mass flux of chemical into the aquifer;
- Recharge due to precipitation supplies water to the disposal unit and the aquifer;
- The ground water upstream of the disposal site is initially free of contamination;
- The receptor well is directly in line with the source and the ground water flow direction;
- The receptor well is located 500 feet from the unit; and
- Hydraulic conductivity does not vary with temperature.

In the June proposed rule, the Agency also proposed using the 85th cumulative percentile level of the back-calculated dilution attenuation factors obtained using the monte carlo simulation technique as an appropriate regulatory level for the TC. Selection of this level means that downgradient

concentrations will not exceed the allowable health-based concentrations in more than 15 percent of all possible analyzed settings of subtitle D disposal units. (This proposal referenced other proposals dealing with the ground water transport model, such as the January 14, 1986 Land Disposal Restrictions notice, and notices published by the delisting program; relevant comments received in response to those notices are also discussed in this rulemaking.)

b. *August 1, 1988 Notice of Data Availability and Request for Comments; Supplement to Proposed Rule (52 FR 28892).* On August 1, 1988, the Agency presented new data related to subtitle D municipal landfills, soil characteristics, and chemical-specific hydrolysis rates to be used with the subsurface fate and transport model to calculate DAFs for each of the organic constituents in the TC. These new data became available to the Agency after the June 13, 1986 proposal. The August 1, 1988 Notice also requested comments on several major revisions to EPASMOD that were being considered by the Agency, subsequently referred to as EPA's Composite Model for Landfills (EPACML). As a result of comments received on the January 14, 1986, and June 13, 1986 proposals, as well as the August 1, 1988 Notice, the Agency has used EPACML to support the choice of appropriate DAFs for this rulemaking.

These modifications and data are described in greater detail below (section III.E.2). The reader is referred to the Response-to-Comments Background Document for the Subsurface Fate and Transport Module (Ref. 1), which presents, in detail, each of the technical issues addressed in the public comments on the model and the Agency's response to these issues.

2. Modifications of the Subsurface Fate and Transport Model (EPASMOD) in Response to Comments

In today's rule, the Agency has used EPACML to estimate the attenuation and dilution of specific constituents during their migration through the unsaturated zone beneath a municipal landfill and their transport through the saturated zone to a potential drinking water source (exposure point). EPACML accounts for dispersion in the longitudinal, lateral, and vertical directions; one-dimensional steady and uniform advective flow; sorption; and chemical degradation from hydrolysis. The major enhancements that were made to EPASMOD to produce EPACML, the substantive comments that led to these changes, and important assumptions made to develop analytical

solutions are described in subsection (a) below.

In addition, the Agency used the EPACML model to corroborate its conclusions on dilution/attenuation factors for surface impoundments. For this exercise, data inputs typical of surface impoundments rather than landfills were used. These procedures are described in subsection (b) below.

a. *General Modifications—i. Unsaturated Zone.* The EPASMOD model discussed in the June 13, 1986 proposal assumed that there was no unsaturated zone (i.e., the bottom of the landfill is directly connected to the top of the aquifer). Several commenters stated that the assumption that the facility is located directly at the top of the saturated zone is unrealistic because an unsaturated zone usually exists above the aquifer and that retardation, dilution, and degradation effects in the unsaturated zone should be considered. The commenters also suggested that, when incorporating the unsaturated zone, the depth to the water table should be incorporated as part of the monte carlo analysis.

The Agency is in agreement with the commenters and has now included an unsaturated zone as part of the subsurface model. The Agency believes that this modification to the model is reasonable, based in part on a survey of existing municipal landfills that indicated that an unsaturated zone exists beneath 95 percent of the surveyed landfills. Incorporating an unsaturated zone into the model accounts for any retardation and degradation of chemicals in the unsaturated zone and provides a more realistic scenario.

To account for the unsaturated zone, the Agency developed unsaturated zone flow and transport modules and implemented them using the monte carlo (probabilistic) framework that has already been used in conjunction with the saturated zone modeling approach in EPASMOD; these unsaturated zone modules are incorporated into EPACML. The input concentration to the unsaturated zone transport module of EPACML corresponds to the leachate concentration at the bottom of the landfill.

The unsaturated zone model was reviewed by EPA's Science Advisory Board (SAB). The SAB endorsed the use of the model for applications for the development of regulations; however, the SAB recommended that it not be used for site-specific applications because the model has limitations imposed by the simplifying assumptions (those necessary for regulatory use), and

the limitations of the use of site-specific data. The unsaturated zone model consists of two modules: a flow component and solute transport component. These two components were developed in a form to allow for their incorporation in the monte carlo simulation. The major assumptions and consequences of the flow module are:

- *Flow is steady in the vertical direction, and lateral and transverse movement of the leachate is negligible.* Because there is little or no lateral flow in the unsaturated zone, these assumptions are appropriate. In any case, this procedure will tend to maximize the concentration of leachate leaving the unsaturated zone and therefore represents a conservative assumption.

- *No vapor phase or immiscible liquid flow occurs, and the water phase is the only flowing material.* EPA acknowledges that some constituents in some situations may undergo phase shifts and be emitted in vapors. Because this rule is essentially directed to risks from drinking water and because of the uncertainties in accurately computing emissions and their relationship to the currently available leaching tests, this conservative assumption was adopted. Under certain conditions, particularly very high constituent concentrations, immiscible liquid flow can occur. For such situations, the model's inability to account for the immiscible flow condition may lead to higher downgradient concentrations (i.e., the model would underestimate the receptor well concentrations).

- *Flow is isothermal (not affected by temperature variations).* In reality, temperature variations at any given site are not dramatic because the source of infiltrating liquid is precipitation. Thus, this assumption is not expected to influence the results to any appreciable degree.

- *Effects of variations in the unsaturated zone hydraulic properties caused by alternating moisture conditions are negligible (i.e., hysteresis effects).* Many soils, especially the more porous ones for which infiltration rates are high, do not present important hysteresis effects. In other cases, little and often no data are available to characterize the effects. Failure to include hysteresis is not expected to affect the results to any appreciable extent.

- *The flow field is uniform and continuous in direction and velocity.* Precipitation-driven infiltration can be a dynamic process where much of the vertical movement occurs during relatively short periods of time. Time-

averaged values of infiltration derived from dynamic water balance calculations (as described in the Background Technical Support Document) are often used to enable solution of analytical, steady-flow models. The unsteady-flow conditions could lead to higher downgradient concentrations than predicted by EPACML. However, the effect is expected to be significant only for rapidly degrading constituents. For the constituents regulated in this rule, no appreciable impact is expected because none of the constituents are expected to hydrolyze to any significant extent during transport.

- *The unsaturated zone is homogeneous and isotropic.* This assumption is typically required to enable mathematical solutions amenable to exhaustive sensitivity analyses and monte carlo implementation. In any one application (one model run) of this assumption, the result can either under- or over-predict downgradient concentrations. The monte carlo implementation, however, results in a very wide range of possible conditions, and thus the total analysis, when taken together, accounts for a wide variety of unsaturated zone conditions.

The major assumptions and consequences of the unsaturated zone transport module are:

- *Chemical transport is vertical; lateral and transverse movement of the chemical is negligible.* This follows from the first assumption for the flow module described above.

- *Chemical sorption is modeled as a reversible, linear equilibrium process.* This is a standard modeling assumption which is accurate for systems having relatively low solute concentrations, and conservative at higher concentrations.

- *Degradation is limited to hydrolysis.* This assumption was made to be consistent with the similar approach adopted for the saturated zone. Thus, the model includes only those degradation mechanisms that can be reliably characterized in laboratory studies of each individual constituent. This assumption remains a major conservative component of the overall model.

- *Chemical transport in the vapor phase has been assumed to be negligible.* This follows from the second assumption for the flow module described above.

- *The unsaturated zone transport model is solved for the steady-state condition.* This is a conservative assumption that has been investigated for its impact on all the originally proposed constituents. The extent to

which this assumption is appropriate is discussed in section III.E.4(b)(iii).

The details of the unsaturated zone module are provided in the background documents (Ref. 1, 9), which also describe the data sources and analyses that were performed to obtain the data distributions.

- ii. *Source Characterization.* In EPASMOD, the input leachate to the saturated zone was assumed to be instantaneously mixed in the vertical direction over a pre-specified depth of source penetration, and the concentration in the leachate was equal to the maximum source contaminant concentration in the saturated zone below the facility. Mass balance considerations required that the lateral extent of the leachate directly underneath the facility be adjusted to ensure that leachate was neither gained nor lost in the transition from the facility (or unsaturated zone) to the aquifer. A number of commenters criticized the treatment of the source. A major concern was that the method was inadequate because of an overly conservative assumption, which equated the concentration of the contaminant in the saturated zone to the landfill leachate concentration. Thus, commenters argued that EPA had not given adequate consideration to mixing and dispersion under the landfill. The commenters also pointed out that this treatment of the source could result in modeling physically unrealistic boundary conditions (e.g., by modeling a source of small cross-sectional area with a very large width of the Gaussian source, and vice versa).

The Agency agrees with the commenters that the method used to characterize the source-boundary conditions for the saturated zone transport needed to be improved. Thus, the method has been revised to consider the mass balance requirements, geometrical configurations, and physical processes that are occurring in the mixing zone below the facility and within the saturated zone. An important characteristic of the revised method is the plume restriction in the lateral extent. That is, the method no longer permits physically unrealistic situations where the plume source width exceeds the facility width. In addition, the current method of computing the source-boundary conditions represents the mixing and dilution effect on the leachate below the source and ensures that the concentration of the contaminant in the saturated zone will be less than or equal to the landfill leachate concentration.

- iii. *Treatment of Dilution from Recharge.* In EPASMOD, the dilution

effect of ground water recharge on contaminant transport in the saturated zone was taken into account by including recharge as a dilution term in the governing equation. Dilution of leachate concentrations from recharge was calculated by dividing the infiltration (recharge) rate by the source penetration depth. A number of commenters were concerned that the influence of recharge on the ground water flow field had not been properly accounted for in the model. In addition, several commenters alerted the Agency to an error in the equation used to evaluate the recharge dilution parameter.

In response to these comments, the Agency has modified the model to calculate dilution from recharge by dividing the recharge rate by the total saturated thickness of the aquifer, the aquifer porosity, and the effective retardation factor in this zone. This revision represents a more realistic assessment of the dilution potential of recharge by considering changes in the entire volume of water in the contaminated aquifer and the effectiveness of contaminant and recharge flow and mixing in the aquifer.

The Agency recognizes that recharge effects on ground water flow fields are not rigorously considered in the model and that the assumption of uniform, constant, horizontal ground water velocity neglects the possible effects of local mounding of the water table underneath the land disposal unit. However, the constant velocity assumption can be interpreted as an averaging of the velocity field over the spatial area affected by recharge; in addition, the uniform, horizontal flow assumption was necessary to make the three-dimensional transport equation analytically solvable. The effect of recharge on ground water velocity is difficult to account for directly in the model. To assist in the analysis, EPA has conducted a sensitivity analysis comparing EPACML results with recharge effects as predicted by a two-dimensional numerical model that rigorously accounts for recharge. The results (which can be found in Ref. 9) indicated that as long as recharge values are significantly less than the natural flow velocity, there was no major effect on the ground water flow fields. Based on this analysis, and on evidence of typically low rates of ground water recharge, the Agency believes that the revised treatment of the dilution effect from recharge is reasonable. In addition, the error, as pointed out by several commenters, in the equation used to evaluate the recharge dilution

parameters was corrected, and the correction is included in EPACML.

iv. Location of the Receptor Well. In EPASMOD, the receptor well was assumed to be located downgradient from the landfill along the centerline of the plume (direction of ground water-flow) at a fixed distance of 500 feet (152.4 m). In addition, the receptor well was assumed to be tapping water from the top of the aquifer, and no mixing of water in the well or effects of drawdown in the well were considered in EPASMOD.

Many commenters argued that the assumptions concerning the location of the receptor well were too conservative and suggested that well locations should

be considered in a probabilistic manner as part of the monte carlo simulation in the model. These commenters noted that well locations other than on the centerline should be considered. Several commenters also stated that the well locations should not be restricted to lying within the areal extent of the plume and suggested that wells located outside of the plume should be considered in the calculation of the dilution/attenuation factors.

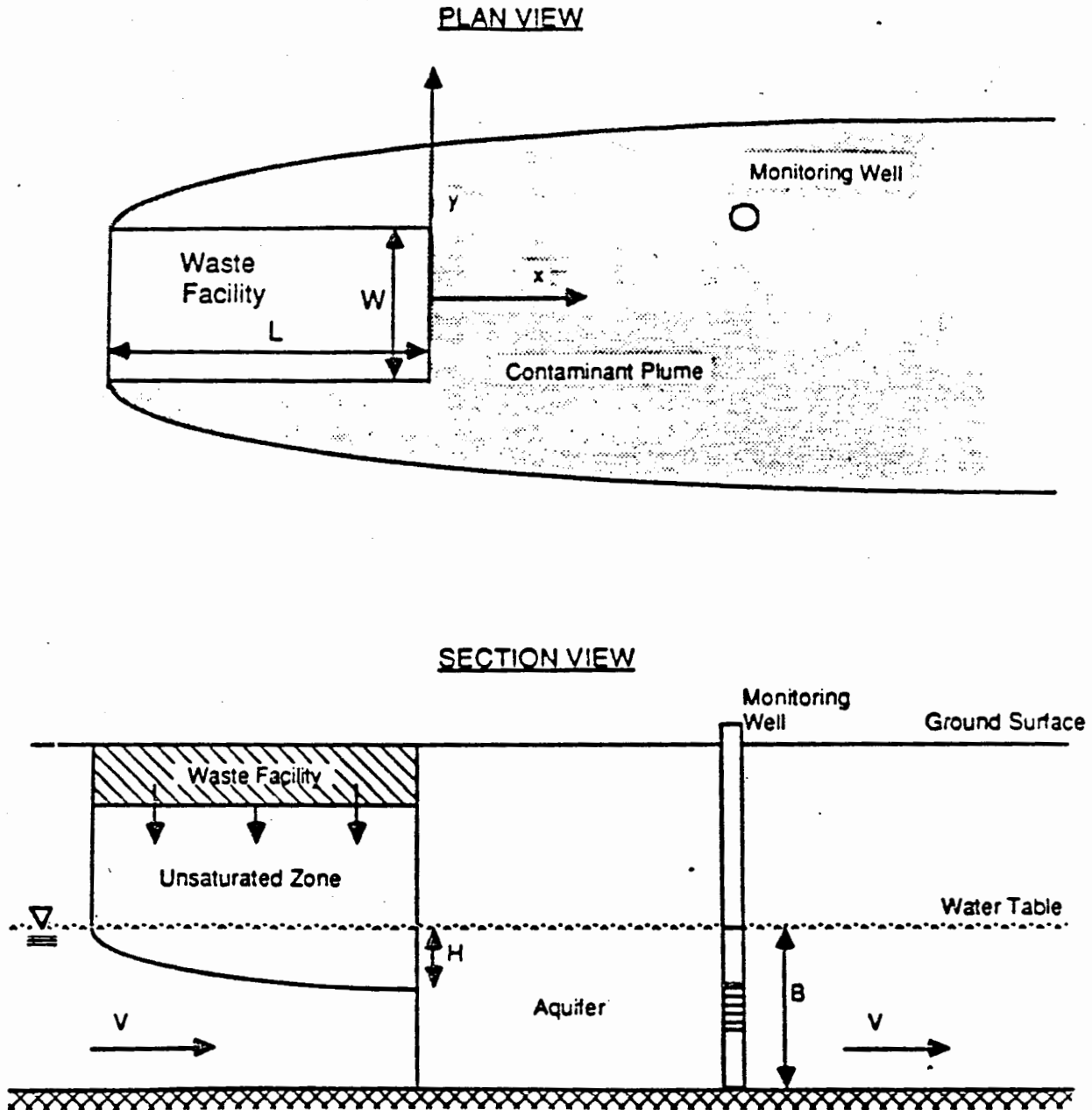
The Agency agrees that the proposed location of the well was unrealistic and that affected wells located at points other than on the centerline should be considered. Therefore, the model now considers well locations anywhere

within the areal extent of the contaminant plume. In order to incorporate these locations, a distribution of distances to downgradient wells was developed based upon a subtitle D municipal landfill survey (Ref. 6). These distances were used as part of the monte carlo analysis. Also, to incorporate locations other than on the centerline, the Y values (see Figure 1) were selected randomly over a 180° domain but the X-Y pairs were constrained to values that were located within the areal extent of the plume.

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FIGURE 1

**A SCHEMATIC OF THE WASTE FACILITY SOURCE BOUNDARY
CONDITION AND LEACHATE MIGRATION THROUGH THE
UNSATURATED AND SATURATED ZONE**



The Agency disagrees with those commenters who stated that well locations outside of the areal extent of the plume should be considered. The purpose of the Toxicity Characteristic is to answer the question "if the management of this waste continues to be uncontrolled, what are the consequences in terms of human exposure via ingestion of contaminated drinking water?" In performing the exposure assessment to answer this question, the Agency believes it appropriate to consider only wells that could be affected by the disposal of the waste. Wells that could not be affected by the migration of constituents from the wastes are obviously irrelevant to the exposure assessment and, thus, not considered.

Commenters also stated that it was unrealistic to assume that the well tapped water from only the uppermost point of the aquifer. These commenters stated that, in practice, the intake portion of a well is located below the top of the water table and that mixing and drawdown will occur.

The Agency agrees that the proposed well intake location was unrealistic and that it ignored the effects of vertical mixing and the possibility that the well intake would likely be at some point other than the top of the aquifer. In response, the assumption has been modified to consider well intake at any point throughout the depth of the aquifer. This modification largely takes into account the above-described mixing and drawdown effects.

In determining how to account for well drawdown more realistically in the model, the Agency considered the mechanics of well construction. Generally, wells are screened from near the top of the aquifer to a sufficient depth (into the aquifer) to allow delivery of the needed water supply. Thus, the ranges of values for the length of the screens and their locations relative to the top of the aquifer are very large. In recognition of this variability, especially in screen length, the Agency has employed a simplifying assumption that the concentrations of constituents at various depths of the aquifer represent the concentrations at the exposure point. That is, the concentration of constituents in the water drawn from the well is assumed to be equal to the concentration of the constituents at the depth which is selected in the monte carlo simulation. (The well depth is randomly selected from all points within the vertical range of the aquifer's thickness.)

To evaluate the model's sensitivity to this assumption, the Agency evaluated the case in which wells were assumed to

be screened from the top of the aquifer to the monte-carlo-selected depth. The exposure point concentration was then calculated as the average concentration over the screened depth. This case is considered to be more representative of the most likely well design, although in many cases the well will not extend to the bottom of the aquifer nor will it always be constrained to intersect the plume as is implemented in the monte carlo simulation. This scenario is considered to be more conservative (i.e., resulting in lower DAFs) than the EPACML-as-implemented scenario. When one considers other possibilities like well location factors up gradient and outside the plume, the range of DAFs from the two scenarios can be expected to bound the actual exposures.

In evaluating the model predictions over the range of cumulative frequency values considered in interpreting the model's results in today's rule (see Section III.E.4—DAF Evaluation), the dilution/attenuation factors for the two scenarios are not sufficiently different to warrant separate conclusions regarding the appropriate value for use in today's rule. (Model results for the two scenarios are compared in the background document for the model—Ref. 9.)

v. Dispersivity Values. Dispersivity controls the degree of spreading of dissolved contaminants in the subsurface. The saturated-zone fate and transport model includes dispersion in the longitudinal, transverse (horizontal), and vertical directions. The model thus requires values of the longitudinal, transverse, and vertical dispersivities in the saturated zone. In EPASMOD, the distance x from the downgradient edge of the landfill to the receptor well was assumed to be fixed at 152 m (500 feet). Consequently, fixed values of the longitudinal and transverse dispersivities were used in the model. The values of vertical dispersivity were assumed to vary uniformly.

Several commenters criticized the assumption that dispersivity values did not vary and reflected only the fixed distance selected in the model. They also suggested that the ratio of longitudinal to transverse dispersivity used in the model was too low. The basis of their comments is that field values of dispersivities have been shown to depend on, and usually increase with, the travel distance.

The Agency agrees with the commenters and now calculates the three components of dispersivity based on a detailed analysis of data gathered from field tests (the model background document [Ref. 9] presents a detailed discussion on dispersivity values and

provides references to the field data). The Agency believes that the revised approach, reflecting the distance-dependent nature of the dispersivity values and different relationships between the dimensional dispersivities, is more realistic and consistent with the available data.

EPACML also requires the specification of a dispersivity parameter for transport in the unsaturated zone. Since the transport equation in the unsaturated zone is one-dimensional, only the longitudinal (vertical) dispersivity value is required and is calculated as a function of the distance (i.e., the depth to water table) traveled in the unsaturated zone.

vi. Hydraulic Conductivity. In EPASMOD, the value of hydraulic conductivity in the saturated zone was estimated using the Kozeny-Carmen (Ref. 9) expression, which relates hydraulic conductivity to porosity, the mean particle diameter of the aquifer material, and the fluid properties (density and viscosity). This relationship was based on an assumed ground water temperature of 15 degrees C and did not reflect changes in the fluid properties with temperature.

Commenters expressed concern with this assumption because ground water temperature is known to typically range in temperature from 4 degrees C to 30 degrees C. A few commenters also expressed concern regarding the validity of using this empirical relationship.

In response to these comments, the Agency generalized the expression to include the effects of changes in temperature on fluid viscosity and fluid density. That is, the fluid viscosity and density are now considered as functions of temperature rather than as constants. The Agency realizes that the hydraulic conductivity also depends on physical properties, such as grain shape, grain size distribution, packing, and tortuosity of the porous media. Porosity measurements reflect the composite result of these textural characteristics on the structural arrangement of the porous media. The range of porosity values derived in EPACML indirectly reflect the impact of these properties. Therefore, in view of the Agency's objective to represent the wide variations expected from site to site, the Agency decided to retain the Kozeny-Carmen equation, except for the modification described above.

vii. Hydrolysis. As already discussed in section III.E.2., the EPACML model accounts for reduction in constituent concentrations due to hydrolysis. This results in higher DAFs for constituents that hydrolyze during transport than for

constituents that do not. The DAF predicted by the model for some of these constituents ranges up to one million. Thus, in some cases, wastes would not be considered hazardous unless they contain large amounts of these toxicants; still, in other cases, no amount of toxicant in the waste would define it as hazardous under this scenario. Therefore, the Agency did not believe it appropriate to include these constituents in the TC (see Table E-2 for list of constituents that appreciably hydrolyze). Furthermore, the model does not account for the degradation products that are produced as the original constituents hydrolyze. That is, while the decrease in the concentration of the original constituent is accounted for, the resultant increase in concentration of the hydrolysis products is not. Several commenters stated that the toxicity and transport of the potential hydrolysis products should be considered to fully assess the hazards posed by the constituents that hydrolyze.

The Agency agrees with the commenters and is (1) determining which byproducts result from hydrolysis and (2) developing an appropriate protocol for predicting the concentration of hydrolysis byproducts (see Table E-2). Once this protocol is developed, the Agency will determine whether any of these toxicants should be added to the list of constituents. While the Agency considered including these constituents at a higher dilution and attenuation factor until this work was completed, the Agency does not have sufficient information at this time to determine which of the constituents listed in Table E-2 will eventually be added to the TC and at what level.

TABLE E-2—HYDROLYZING CONSTITUENTS LISTED IN THE JUNE 13, 1986 PROPOSED RULE

Acrylonitrile
Bis(2-chloroethyl) ether
Methylene chloride
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane

viii. Steady-State Assumption. As implemented for today's rule, EPACML was solved for the steady-state condition. Thus, the solution represents the case where leaching has occurred for a period of time that is sufficiently long to allow the concentration at the receptor well to become constant. Several commenters noted that, in certain circumstances, use of the steady-state solution would lead to unreasonably low DAFs. In particular, in

situations where the mass of a constituent is relatively low in the source facility (i.e., the landfill has a very limited quantity of the constituent available to contaminate leachate), the steady-state model will continue to assume the existence of a very large quantity of the constituent and, hence, over-predict the resulting concentration at the downgradient well. Under such circumstances, the commenters argue, the Agency should accommodate this phenomenon by using a transient solution in deriving appropriate DAFs.

The Agency agrees with the commenters and has initiated a study to thoroughly investigate the problem described above. Based upon preliminary investigations already complete, however, the Agency continues to believe that application of the steady-state model to many constituents is appropriate and is promulgating regulatory levels for those constituents based upon the results of the steady-state model. The preliminary investigations have also led to a decision to postpone the promulgation of regulatory levels for constituents that are believed to be more appropriately evaluated with a transient solution. The Agency is continuing to refine the approach required to implement the transient solution but results to date suggest that this latter group of constituents require unreasonably large quantities in the source facility to insure that the steady-state solution is appropriate. For example, under some conditions even when the constituents exist at concentrations in excess of 1000 ppm of the solid waste within the entire volume of the landfill, the steady-state condition is not realized. Therefore, based upon the preliminary analysis, regulation of these constituents based upon the DAFs predicted by the steady-state model may not be appropriate.

Preliminary investigation of this condition was completed for all of the originally proposed constituents. All constituents were assumed to exist in the "tested" waste at 1000 ppm. Furthermore, the "tested" waste was assumed to occupy 100% of the available facility capacity (i.e., the "tested" waste is the only solid waste in the facility). As a reasonable worst case scenario, the DAF was derived by the transient model for each constituent under these conditions. Because the above assumptions are very conservative, most of the DAFs derived for the constituents were found to coincide with the steady-state values. That is, sufficient mass was available to insure that steady-state conditions were reached. Accordingly, regulatory levels for these constituents

are being promulgated in this rule. For the following constituents, however, the steady-state condition was not achieved under this scenario:

phenol
1,2-dichlorobenzene
carbon disulfide
isobutanol
2,3,4,6-tetrachlorophenol
toluene

Accordingly, the Agency is postponing the promulgation of regulatory levels for these six constituents until such time as the investigations are complete. Once these investigations are completed, the Agency will take the appropriate action.

ix. Biodegradation. The subsurface fate and transport model does not account for biodegradation processes in the subsurface environment. EPA recognizes, however, that biodegradation is an important process that can reduce concentrations under either aerobic or anaerobic conditions. Accordingly, the EPA has constructed the model so that it can theoretically be modified to include these processes for experimentally derived biodegradation rates. Biodegradation processes have not been included because the data bases to support this portion of the model are currently insufficient.

The first major data deficiency is that the model incorporates many diverse subsurface environmental conditions where as constituent-specific biodegradation rate data typically exist for only a few (if any) subsurface environments. EPA also recognizes that although the kinetic equations describing the degradation of hazardous organic chemicals in many environments are available, these equations have not been sufficiently evaluated in the subsurface environment (Ref. 10, 11, 12). Second, the Agency considers data on the formation of transformation products to be insufficient. Third, the key processes that can affect the subsurface biodegradation rate are not well understood. These processes include sorption, pH, temperature, nutrient availability, toxicity, and others. For example, while nutrient levels in the environment are generally considered sufficient for low populations of microorganisms, the microorganic population at which the nutrient availability in the environment becomes a limiting factor is not known. Additionally, while sorption is well understood for hydrophobic compounds at low concentrations (Ref. 13), at concentrations where the compounds can form small droplets or become entrained in the micropores of the

subsurface matrix, sorption effects are not well understood. The effects of temperature have been characterized in innumerable studies of isolated microorganisms, but the kinetics of these effects have only recently been investigated in environmental samples (Ref. 14). Finally, the toxicity of hazardous chemicals to the microorganisms themselves is only now being investigated (Ref. 15).

Accordingly, the Agency is continuing to gather data to refine the modeling of biodegradation, but has not been able to include biodegradation in the ground water transport model at this time. In this regard, EPA has published guidelines for developing anaerobic microbiological biodegradation rate data for chemicals in the subsurface environment (see 40 CFR 795.54). Results developed under these guidelines will provide data on kinetic rates of degradation, and to a lesser extent, on the effects of pH and temperature on these rates. Similar guidelines have not been developed for aerobic systems at this time. Data developed under 40 CFR 795.54 may be considered for use in the model at some future time.

x. Summary of General Modifications. The Technical Background Document (Ref. 9) describes in detail the model revisions, including options developed but not implemented for the purposes of establishing the regulatory levels for today's rule. A summary of the major model options and procedures implemented for the rule follows:

- The model was run for the steady-state case. The initial condition was a constant concentration. The equations were solved for infinite time.
- The unsaturated zone module was included in the analysis.
- Concentrations can be predicted at wells placed at any position. The wells can be allowed to draw from any selected depth.
- The updated method of computing dispersivities as a function of random longitudinal well locations was used (designated in the model as the "Gelhar procedure").
- The option implemented for setting the boundary conditions between the unsaturated zone and the aquifer was the one that limits the lateral extent of the plume to the downgradient facility width, computes vertical mixing and dispersion underneath the facility, and estimates the maximum source concentration within the plume based on mass balance requirements. Any combination of conditions that violated these requirements and, thus is not physically realistic, was rejected.

The above options and additional options are listed in the background

document for the model (Ref. 9). Specifically, the model input and control variables, as required and accepted by the computer code, are listed for each computer run used to set regulatory levels in today's rule.

By incorporating these modifications, the EPACML, as applied to landfills, models the following basic features:

- The landfills are filled to capacity and covered with native soil.
- Caps are characterized as being in a failed or deteriorated state. Thus, permeabilities are set to be higher than would be typical of landfills with an undamaged cap. It is assumed that liners are not present.
- All wells (exposure points) are considered to be downgradient in every model run. The longitudinal distance parallel to the direction of ground water flow is determined from data described later in section III.E.3.
- Lateral well location is determined by allowing the position to uniformly vary at random within the plume width and with the additional constraint that the location also must be within an area defined by lines at 90-degree angles from the direction of ground water flow at the midpoint of the downgradient boundary of the facility.
- Vertical well location is determined by allowing the position of the well intake point to uniformly vary at random over the entire aquifer depth.
- The landfill storage capacity is assumed to be sufficient to accommodate sufficient mass of each constituent to allow a steady-state condition to exist. This produces an infinite source initial condition.
- Constituents contained within the landfill do not degrade.
- Infiltration rates are represented as annually averaged flows based on 20-year climatic records and concomitant water balance calculations.

b. Use of the EPACML for Surface Impoundments. Because some wastes are managed in surface impoundments rather than landfills, several commenters indicated the need to analyze and include the results obtained by considering a surface impoundment mismanagement scenario. They argued that dilution/attenuation factors (DAFs) generated by modeling a landfill scenario would be too stringent for wastes managed in surface impoundments. Based upon these comments, the Agency decided to investigate whether surface impoundment DAFs would be significantly different from landfill DAFs. EPA requested comment on the use of this data in the August 1, 1988 notice.

Based upon this investigation, the Agency has concluded that the use of DAFs based on a landfill scenario is appropriate in establishing the regulatory levels for wastes managed in surface impoundments. EPA used the EPACML model to confirm this analysis by modeling a surface impoundment mismanagement scenario.

This conclusion is based on the Agency's evaluation of the physical parameters that would lead to different DAFs for surface impoundments than for landfills. A key factor that could lead to differences in the DAFs from these two types of management units (surface impoundments and landfills) is the difference in total leachate infiltration rates. The infiltration rate is equal to the product of the leachate mass flux (mass per unit area per unit time) and the area of the management unit. For surface impoundments, the mass flux can be considerably greater than for landfills. However, to the extent that the area of surface impoundments is typically smaller than the area of landfills (although some atypical surface impoundments can be as large, if not larger than landfills), the effects of the greater leachate flux are somewhat offset. That is, while the flux is greater, the area is smaller, resulting in relatively similar leachate infiltration rates.

A second factor that affects the DAFs is the situation in which the leachate flux is large and the ground water velocity is relatively small. In these situations, a ground water mound may form below the management unit. This effect is more typically associated with surface impoundments because of their higher leachate fluxes; this effect should result in smaller DAFs (and, thus, more stringent regulatory levels) than would be predicted if the mounding did not occur. As a result of these factors, the Agency concluded that DAFs from a surface impoundment scenario would be equivalent to or less than DAFs from a landfill scenario.

To confirm this conclusion, EPA used EPACML to evaluate a surface impoundment scenario. The main features of the surface impoundment scenario, as simulated using EPACML, are as follows:

- The surface impoundments are filled to their fluid capacity and are assumed to operate on a continuous basis.
- Bottom layers are characterized as being in a more permeable state (typically ten times greater) than those found in field studies.
- Location rules for downgradient well positions and lateral and vertical

locations are identical to landfills. The data base for longitudinal distances is different, however.

- The operating life of the surface impoundment is assumed to be sufficient to accommodate a sufficient mass of constituent to allow a steady-state condition to exist. This assumption produces an infinite source initial condition.

- The leaching rate from a surface impoundment depends on, among other factors, the ponding depth in the impoundment and the characteristics of the bottom materials. The Hydrologic Evaluation of Landfill Performance (HELP) model used in evaluating the landfill data is inadequate to determine the leaching rates from surface impoundments. Therefore, the leaching rates from subtitle D surface impoundments were estimated by considering the relationship between the velocity in the vertical direction and the substrate's porosity and permeability and the solution of the nonlinear steady state flow problem. To be conservative, the Agency used a permeability value ten times higher than the value typically reported in field studies as an input for calculating leaching rates (the source of these data are discussed below).

- The Agency has not yet conducted a detailed survey for subtitle D surface impoundments, but the Agency conducted a review and analysis of data on subtitle D units in RCRA Facility Assessment (RFA) Reports (Ref 16). A set of data on subtitle D surface impoundments was obtained from this analysis and used as inputs to the EPACML. Additional data were compiled from aerial photographs by EPA's Environmental Photographic Interpretation Center (EPIC).

- The data extracted from RFSs included the area of the surface impoundments and the distance to downgradient drinking water wells as determined by EPIC.

- The ponding depth data for the subtitle D surface impoundments were reported by E. C. Jordan (Ref. 9). The hydraulic conductivity of the bottom materials was chosen as 1.0 E-6 cm/sec . This value reflects the effect of gradual settlement and compaction of sediments at the bottom, because surface impoundments tend to fill up with sediments over a period of about 20 years or so. The Agency believes that the hydraulic conductivity value of 1.0 E-6 cm/sec represents a reasonable worst-case value. These values were used in conjunction with EPACML to estimate DAFs for the surface impoundment data.

As expected, DAFs predicted for surface impoundments are somewhat

smaller than the corresponding values for landfills (see section III.E.4). However, because the EPACML does not incorporate the mounding effect, the surface impoundment evaluation was restricted to include only those cases where mounding would be minimal and, thus, reasonably ignored. As a consequence of limiting the evaluation to these cases, the modeling results tend to omit some worst case scenarios. That is, if all possible cases were included, rather than just the "no mounding" cases, the DAFs for surface impoundments could be somewhat lower and, thus, the downgradient concentrations may be higher than those estimated by the EPACML model. The Agency thus believes that the omitted surface impoundment conditions should be further investigated and may result in more stringent regulatory levels. The Agency believes, however, that the DAFs produced by the EPACML analysis properly delineate wastes that are clearly hazardous wastes.

3. Newly Acquired Data

As previously described, the DAFs proposed on June 13, 1986, were calculated based on the subtitle D landfill scenario. However, subtitle D landfill data were not available to the Agency at that time, and instead, subtitle C landfill data were used.

Several commenters criticized the use of subtitle C (hazardous waste) landfill data. The Agency agreed with the commenters and has based the final rule on data from a survey of solid waste subtitle D landfills.

a. Landfill Data. The Agency conducted a survey of municipal solid waste landfills in the U.S. (Ref. 6). The survey used a stratified design based on facility size. The results were tabulated based on 1,102 completed questionnaires. The survey yielded data on area of landfills, distance to the nearest downgradient drinking water wells, and thickness of the unsaturated zone. These data are site-specific, corresponding to individual solid waste landfills located throughout the United States. The survey data were analyzed to develop distributions of these site-specific parameters and used as inputs to EPACML, as described in the model background document (Ref. 9). The input frequency distributions are also presented in the background document.

EPA also collected additional data on leachate generation at municipal landfills. EPASMOD requires, as input, the leachate distribution from the bottom of the landfill. The leaching rate distributions for the June 13, 1986, proposal were based on the use of a single soil type, loam, as the cover soil

for the landfill. These distributions were estimated using climatologic data for a total of 30 cities nationwide, representing the median range for each of 18 climatological conditions or zones identified in the 48 contiguous states.

The assumptions of a single soil type and 18 climatic zones were criticized as not being realistic and resulting in an overly optimistic cap performance. The commenters suggested enhancing the data base by including simulation of different soil covers.

In response to these comments, the Agency has implemented a number of changes. The Agency believes that these modifications significantly improve the validity of the leachate flux distribution and make it more realistic.

Soil Type

The Soil Conservation Service (SCS) has a county-by-county soil mapping program underway. More than 50 percent of the land area in the U.S. has been mapped, and soil data representing approximately 51 percent of the total land area in the U.S. have been entered into a computer data base. Using this data base, the soil classifications were grouped according to the U.S. Department of Agriculture's definitions of coarse, medium, and fine textures. These three categories are represented in EPACML by soils equivalent in properties to sandy loam, silt loam, and silty clay loam for the landfill cover materials. The latest results show that coarse grained soils, medium grained soils, and fine grained soils represent 15.4, 56.6, and 28.0 percent, respectively, of the soils that have been mapped thus far.

Climatic Zones

The number of cities representing climatic variations that were used to develop frequency distributions for the leachate generation has been increased from 30 to 100. The reason for this change was to reduce the chance that any one city would provide an unrepresentative percolation rate in its climatic range.

The climatic data base used in EPACML was enhanced to include six precipitation ranges and five ranges of pan evaporation rates, thereby resulting in 30 climatic ranges as opposed to the 18 described in the earlier proposal. For the climatic ranges so defined, the percentage of the area of the 48 states represented by each range was calculated, and the percent areal average was used to weight the percolation (recharge and/or infiltration) rate estimated for the selected cities in each range according

to probable relative occurrence in the U.S. The effect of these changes is to provide more representative values of the overall national distribution of the leachate flux.

After the percolation data for the landfill were calculated using the HELP model (Ref. 9), the climatic ranges were further subdivided to account for wide variations in percolation within a range. This resulted in separate subranges being established for some California cities (Los Angeles, Sacramento, San Diego, and Santa Maria), and two Oregon cities (Medford and Astoria).

Percolation rates for each of the selected cities in the 48 contiguous states were determined using silt loam, sandy loam, and silty clay loam cover soils. These soils, based on data obtained from the SCS, appear to represent the most common soil types in the U.S., and thus the most common soil to be used as covers for landfills. They also span the range of likely cover soils, from fine-grained to coarse-grained, or from low to high percolation rates. Simulations were performed for each of these soil types, and the results weighted according to the frequency of occurrence for each type.

The leaching rate flux was determined by using the average, weighted percolation rate from the cities in each climatic range. The model background document (Ref. 9) presents the data used and the accompanying changes to the June 13, 1986 proposal runs.

b. Chemical-Specific Parameters. In the EPASMOD proposal, chemical parameters, such as hydrolysis rates, were used to calculate the relative retardation factors and degradation rates for selected compounds. Some of the chemical-specific parameters used in that model were estimated based on a brief review of the existing chemical data. Some commenters criticized some of the parameter values selected and used for that proposal as being nonrepresentative of the range of parameter values.

The Agency has an ongoing program for the measurement of constituent-specific parameters and for the review of new constituent-specific data as reported in the current scientific literature. Some hydrolysis rate constants and octanol-water partition coefficients used in the proposal have been revised to reflect the most recent laboratory measurements and recent values reported in the literature. The updated parameter values are given in the background document (Ref. 9) and represent either measured or best available values.

4. DAF Evaluation

a. Selection of an Appropriate Percentile. As described earlier, the EPACML was used to investigate the expected range of DAFs associated with mismanagement of solid wastes. As generated by EPACML, the DAF represents the expected reduction in the concentration of a constituent during transport through soil and ground water from the leachate release point (bottom of the waste management unit) to an exposure point (a well serving as a drinking-water supply). The wide range of possible environmental settings (e.g., ground water velocities, pH, temperatures, etc.) and the multitude of possible scenario configurations (e.g., facility area, distance to downgradient wells, etc.) result in an extremely wide range of DAFs. Monte carlo simulation was used to implement EPACML, and the resulting cumulative frequency distribution can be viewed as a ranked order of increasingly higher downgradient concentrations expected from the "best-case" situations (large DAFs) to the "worst-case" situations (small DAFs) for the scenario being investigated.

The Agency's proposed approach was to define DAFs representative of reasonable worst-case conditions as those corresponding to the 85th percentile of the cumulative frequency distribution. The Agency received numerous comments on the selection of the 85th percentile, which are addressed in Section d, following.

b. Resulting DAFs for Landfills. The DAF values corresponding to various cumulative frequency levels for landfills are as follows:

Percentile	80	85	90	95
All nondegrading constituents	328	134	47	12
Chloroform ¹	385	152	52	14

¹The DAFs for chloroform are slightly higher than for the other nondegrading constituents because chloroform is expected to hydrolyze slightly during transport.

The similar DAF values for nondegrading constituents and chloroform arises because all these constituents either do not degrade at all or only degrade slightly.

c. Resulting DAFs for Surface Impoundments. The DAF values corresponding to various cumulative frequency levels for the surface impoundment investigations described in E.2.b of this section are as follows:

Percentile	80	85	90	95
All nondegrading constituents	226	111	51	19
Chloroform	227	111	52	19

As with the landfills, the constant DAF for all constituents reflects the fact that nondegraders and very slow degraders have virtually identical environmental fate for the scenario investigated. As the resulting numbers indicate, within a reasonable degree of accuracy, the DAFs for waste managed in surface impoundments are equivalent to the corresponding landfill DAFs.

d. Final DAF Selection. The Agency's purpose in developing dilution/attenuation factors (DAFs) is to identify wastes whose leaching behavior indicates that they may pose a hazard to human health unless they are controlled under subtitle C management standards. Thus, the Agency developed a subsurface fate and transport model that simulates a subtitle D management unit (i.e., a municipal landfill) and the subsurface environment that would be encountered by toxic constituents as they migrate from the management unit to a drinking-water well. In order to make the model's output (DAFs) as realistic as possible, the Agency implemented the model using real-world distributions for parameter values (e.g., areas of landfills, properties of the subsurface environment, etc.) whenever possible. The monte carlo structure of the simulation allowed the modeling results to be presented as a cumulative frequency distribution or probability. That is, the model expresses the probability that a toxic constituent disposed of in a municipal solid waste landfill will undergo certain dilution/attenuation as it moves through a subsurface environment to an exposure point. Thus, there is a different DAF for each selected probability.

In its June 13, 1986 proposal notice, the Agency proposed the use of the DAF corresponding to the 85th percentile cumulative frequency level and requested comment on the use of other percentile levels. Comments were received urging the use of both higher and lower levels. Recommendations for using the 80th percentile cumulative frequency were justified by assertions that the assumptions used in the model were already unduly conservative. One commenter noted that EPA could still rely on the listing program to regulate wastes whose leachate concentrations would not exceed the regulatory levels derived from the lower percentile DAF but that are still considered hazardous.

Other commenters argued that the 85th percentile was not adequately protective of human health and the environment. One commenter, claiming that assumptions in the model were not conservative enough, recommended that the 95th percentile be used.

In selecting the appropriate level, the Agency recognizes that there is no consensus "correct" level for interpreting modeling results. This has resulted in a particular challenge in developing today's rule, wherein a quantitative approach is being used for guidance in answering what is a partly qualitative question—namely, "what is the human health impact of unregulated management of certain types of wastes in a 'reasonable worst-case' disposal scenario?" While the Agency believes that the 85th percentile is an appropriate choice to represent a reasonable worst-case result, consideration of the relationship of the 85th percentile DAF to other percentile DAFs is also appropriate. That is, the Agency believes that the behavior, or shape, of the upper portion of the cumulative frequency distribution curve should also be evaluated in order to determine how critical the selection of a particular frequency level is to the DAF.

Another consideration in determining the appropriate DAF value, independent of the selected cumulative frequency level, is the accuracy inherent in the data set used. Given that there is some uncertainty associated with any data set used to represent possible values for any parameter, and that the model requires values for many parameters, the Agency believes that the selected DAF value should not imply an undue degree of accuracy.

After considering the above factors, the Agency has concluded that a DAF value of 100 is appropriate for establishing the regulatory levels for the constituents included in today's rule.¹ First, the Agency believes that, considering the number of parameters for which distributions of values were established (in order to represent a "generalized" scenario), a DAF with an order-of-magnitude precision is

appropriate.² Second, in selecting this DAF value of 100, the Agency noted that the 80th and 90th percentile DAFs, as well as the 85th percentile DAFs, indicate that constituents migrating in the modeled disposal scenario will be diluted by approximately two orders of magnitude. This is also true of the predicted DAFs from the data used for surface impoundments. Thus, EPA believes that a DAF data used for indicating dilution by two orders of magnitude (i.e. 100) is appropriate. Moreover, as the data indicate, on an order-of-magnitude scale, the predicted DAF is not extremely sensitive to the exact cumulative frequency value that was selected.

The Agency points out that the considerations leading to the use of 100 to represent the model-predicted dilution/attenuation factors are unique to today's promulgation. In other cases, different conclusions may be more appropriate. For example, when parameter values can be more narrowly defined (as in site-specific evaluations), the higher degree of precision may be appropriately ascribed to the model-predicted DAFs. Likewise, where the program goals are different (i.e. other than to identify levels that are indicative of wastes that clearly are hazardous), the selection of a value that represents a cumulative frequency value other than the 85th percentile may be warranted.

F. Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311)

1. Introduction

The development of the TCLP and the role of the test in identifying a waste as hazardous were discussed at length in the June 1986 proposal (51 FR 21648). Today, EPA is promulgating the TCLP, with some improvements and modifications, as a replacement to the EP for use in the identification of hazardous waste. (The revised TCLP is promulgated in Appendix II to 40 CFR part 261 and has been designated as EPA Method 1311 and will be incorporated in "Test Methods for Evaluating Solid Waste Physical/Chemical Methods—SW-846".)

The Agency received numerous comments in response to the Federal Register notices (51 FR 1602, 51 FR 21648, 51 FR 24856, 51 FR 33297, 51 FR 40593, 51 FR 40643 and 53 FR 18792) related to the TCLP procedure. In particular, EPA received close to 140 comments on the application of the TCLP in response to the June 1986

proposal. The comments covered general issues such as the relationship to the EP, the adequacy of research supporting TCLP development and specifically, the statistical treatment of data. Commenters also addressed technical issues including the suitability of the zero head space extraction (ZHE) vessel; the types of filters, reagents, and leaching media; the quality assurance requirements; and the multiple extraction and oily waste extraction procedures. In addition, comments were received on the use of quantitation limits for establishing regulatory levels. All the comments were categorized and summarized by issue and are presented in the technical background document along with the Agency's response to these comments (Ref. 4).

In this preamble, only certain comments are discussed, which include (a) the applicability of the TCLP to specific types of waste (i.e., solidified wastes); (b) the analytical difficulties encountered during the analysis of the TCLP extract for phenolic compounds and phenoxy acid herbicides; and (c) the use of quantitation limits. The first two comment issues are presented below while the last comment and the Agency's response is given in section IV.C. of this preamble.

2. Adoption in the LDR Rulemaking and Modification from the Proposed Rule

The TCLP was promulgated in Appendix I to 40 CFR part 268 on November 7, 1986 (51 FR 40593), as part of the Land Disposal Restrictions Rule for Solvents and Dioxins. The TCLP is used in the Land Disposal Restrictions (LDR) program to determine whether certain wastes require treatment prior to land disposal and to determine whether certain treated wastes meet the applicable treatment standards. In today's rule, the Agency has incorporated two other clarifications to the TCLP as proposed on May 24, 1988 (53 FR 18792) for use in both the LDR and the TC programs.

The Agency modified the proposed TCLP as a result of the Agency's own research and comments received on the January 14, 1986 (51 FR 1602) proposal for the LDR program and the June 13, 1986 (51 FR 21648) proposal for the TC. These modifications to the TCLP were promulgated on November 7, 1986 for the LDR program. On May 24, 1988, the Agency proposed additional modifications to the TCLP for both the LDR and the TC. In today's rule, the Agency has adopted two of these proposed changes, and is promulgating the revised TCLP for use in both the LDR and TC programs.

¹ As explained previously, the Agency is not, in today's rule, promulgating regulatory levels for several of the constituents for which regulatory levels were proposed. These constituents include those that are expected to hydrolyze appreciably and those for which it has not yet been determined whether the steady-state solution to the subsurface fate and transport model is appropriate. Once the issues associated with these constituents are resolved, the Agency will promulgate or repropose (as warranted) regulatory levels for these constituents. For cases where regulatory levels are repropose, they may incorporate dilution/attenuation factors other than 100.

² The health data is only valid to one order of magnitude precision and thus may control the total number of significant figures.

The first change is the insertion of a more detailed method flow chart to explain how analysts are to perform the test. Comments expressed confusion regarding the original flow chart (e.g., that it was difficult to follow), so the Agency has added this new chart to eliminate confusion. The second change is the addition of new equipment suppliers to provide more information on the availability of suitable testing equipment. The new equipment suppliers include two manufacturers of rotary agitation devices, Environmental Machine and Design, Inc., of Lynchburg, VA, and Millipore Corporation of Bedford, MA; two manufacturers of a zero-headspace extractor (ZHE) vessel, Lars Lande of Whitmore Lake, MI and Environmental Machine and Design, Inc., of Lynchburg, VA; and three manufacturers of filter media, Millipore Corporation of Bedford, MA; Nucleopore Corporation of Pleasanton, CA; and Micro Filtration Systems of Dublin, CA. These manufacturers are listed in Tables 2, 3, and 5, respectively, of the method (i.e., Appendix II of 40 CFR 261), along with company telephone numbers and equipment model numbers.

Another more substantial proposed modification, the addition of a stainless steel cage insert to the bottle extractor, will not be added by the Agency at this time for the reasons discussed below. The Agency had proposed this modification to eliminate the requirement for particle size reduction for certain types of wastes (e.g., solidified materials).

3. Applicability of TCLP to Solidified Wastes

Some commenters expressed reservations regarding the applicability of the TCLP to specific types of wastes. The wastes of concern were solidified wastes. Numerous commenters supported the reinstatement of the structural integrity procedure (SIP) or some other stability criterion for solidified wastes. They argued that particle size reduction (i.e., "grinding") would be inappropriate in those instances where solidification of the waste is needed to meet the best demonstrated available technology (BDAT) provisions of the law and that grinding may not adequately represent the weathering process or the effect of vehicular traffic. Commenters recommended that the Agency retain the SIP. Others agreed that particle size reduction is inappropriate for stabilized monolithic wastes and produces unrepresentative results. Specifically, commenters stated that particle size reduction alters the physical character of many solidified wastes by destroying

the cementitious property of these wastes in such a way that the leaching rate increases unrealistically. By increasing the surface area that is available to attack by a leaching medium, the amount and rate at which substances may be leached increases. Inasmuch as waste grinding is not normally employed in municipal landfills, particle size reduction renders the TCLP a less accurate model of leaching in a municipal landfill environment.

Since the June 13, 1986, proposal, the Agency has reviewed the use of the SIP, which uses a drop-hammer to test the integrity of the waste and to reduce its size if it fractures. The Agency found that although the SIP may simulate the potential of a monolithic waste to be degraded by vehicular traffic on a landfill, it cannot address certain other stresses acting on the waste (e.g., wet-dry and freeze-thaw cycles). In addition, the SIP can only be used for wastes that can be prepared in a sample of specified dimensions.

While evaluating the use of the SIP, the Agency found that dense, hard materials would occasionally break the glass extractor bottle. To prevent breakage of the bottles, the Agency developed a cage insert for the extractor bottle. The cage, which is designed to prevent contact between the hard sample and the sides of the bottle, is constructed of 0.25-inch stainless steel woven mesh. Experiments have shown that the use of the cage prevents bottle breakage.

While evaluating the utility of the cage, the Agency noticed that wastes that were believed to be well-solidified retained their monolithic nature in the cage during extraction, whereas wastes that were believed to be less well-stabilized (even though some of them had passed the SIP) were broken into small pieces during the extraction. Thus, these experiments led to the proposed use of the stainless steel wire cage in the extraction apparatus (53 FR 28792, May 24, 1988). The use of this device, the Agency believed, tested the physical integrity of the sample and reduces particle size appropriately.

Commenters expressed support for the cage modification—that it is a step in the appropriate direction toward a more realistic assessment of the environmental leaching potential of a solidified waste. However, commenters also had concerns that the cage was proposed prematurely—that not enough evaluation of waste samples using the cage had been done. Specifically, commenters argued that the cage could possibly leach significant quantities of

nickel and chromium to contaminate metals analysis; that it would be difficult to collect representative samples in some cases; that there were problems with the configuration of the cage so that it could not be accommodated to fit a large array of bottles; that the cage's construction provided numerous crevices and a significant amount of surface area for waste residue to collect, making effective cage cleaning difficult; and that solidified samples could be molded into a shape that would cause less material to be sloughed off during extraction, leading to a less aggressive test. The Agency agrees with these commenters and has decided not to go forward with the cage modification at this time. The Agency currently has work underway to evaluate all these concerns, and will continue to evaluate modifications of the TCLP and will propose further improvements as they are developed.

4. Analytical Methods

Several comments addressed the analytical difficulties of analyzing the TCLP extract for phenolic compounds and phenoxy acid herbicides by gas chromatography/mass spectroscopy, SW-846 Method 8250 (GC/MS). These analytical difficulties include the interference of the acetate ion in the TCLP leach fluid with the column packing material of Method 8250. Removal of the acetate ion is often difficult, and equipment damage may result if the acetate is not removed (i.e., the acetate ion can destroy the column packing material).

The Agency agrees that analysis for acidic compounds by GC methods may be difficult, but not impossible. The Agency suggests the use of a bonded-phase capillary column (Method 8270) to reduce the interference from acetate. In addition, the Agency is investigating other methods for removal of the acetate ion from the extract before analysis for the phenolics and herbicide and welcomes alternative suggestions, especially when accompanied by supporting data.

The Agency had suggested the use of HPLC as an alternative to GC/MS analysis of phenolics and phenoxy acid herbicides. However, several commenters believed that an HPLC method is generally regarded as more expensive and not as readily available as GC/MS. In addition, some commenters indicated that GC/MS is a better method analytically than HPLC, and that HPLC would be more difficult to implement. The commenters expressed that, at the very least, a lengthy verification process would be

required to determine an HPLC method's ruggedness and reproducibility and to determine the most effective cleanup steps. The commenters further suggested that even if an effective HPLC cleanup procedure is developed and approved by the Agency, it is bound to increase the analytical costs and slow down the analytical throughput. Even without considering this restriction, the procedure of leaching the organics into an aqueous medium, followed by extraction, recovery, and concentration, is bound to require more manpower and thus more money than a more direct solvent extraction of the solid itself. The commenters indicated that methods for analyzing solid waste for semi-volatile organics and phenoxy acid herbicides are already described in SW-846 and should be the preferred methods, both for practicality and as a way of providing a reliable test.

The Agency agrees that the GC/MS or GC/electron capture (GC/EC) analysis is more advantageous for the analysis of phenolics and phenoxy acid herbicides because the equipment is more readily and widely available than HPLC, despite the associated difficulties. HPLC methods for phenolic compounds are not included in the third edition of SW-846 because of a lack of validation data. The Agency will allow only the use of the GC/MS method until such time that the Agency proposes an HPLC method.

G. Testing and Recordkeeping Requirements

1. Existing Requirements for Generators

Under existing regulations, persons who generate solid waste are not specifically required to test their wastes to determine whether they exhibit the characteristic of EP toxicity or any other characteristic. Instead, solid waste generators are required to make a determination as to whether or not their wastes are hazardous (40 CFR 262.11).

If a waste is found to be excluded from regulation under § 261.4, or if it is found to be a listed hazardous waste under subpart D of 40 CFR part 261, no further determination of hazardosity is necessary. On the other hand, if a waste is neither excluded nor listed, the solid waste generator must determine whether it exhibits any of the hazardous waste characteristics in subpart C of 40 CFR part 261. This determination may be made by either testing the waste or applying knowledge of the waste, the raw materials, and the processes used in its generation.

If a waste is determined to be hazardous, the generator must keep records establishing the basis for that determination (40 CFR 262.40(c)). These

records must be maintained for at least 3 years after the generator no longer handles the waste in question. Neither of these recordkeeping requirements, however, applies to solid waste generators who do not generate hazardous wastes.

Other provisions in the hazardous waste regulations make generators responsible for knowing the properties of their wastes and for documenting that knowledge. For example, generators who declare that their wastes are hazardous must nevertheless have sufficient knowledge of their wastes to complete the Uniform Hazardous Waste Manifest, to use proper labels, containers, and placards, and to satisfy all applicable reporting and recordkeeping requirements (see 45 FR 12728, February 26, 1980). In addition, all generators of hazardous waste are required under 40 CFR part 268 to determine whether their wastes are restricted from land disposal.

2. Changes Considered

In the June 13, 1986 proposal, EPA expressed concern that the current system for determining whether a solid waste is hazardous may be inadequate to ensure that wastes are characterized properly as hazardous or nonhazardous. Because of the importance of accurate hazard determinations to the RCRA subtitle C program, the Agency discussed the possibility of requiring solid waste generators to test their wastes periodically.

In the proposed rule, EPA identified three general approaches that might be adopted in the TC final rule. In the first approach, the Agency would retain the current approach, allowing generators to rely on their knowledge of materials and processes used in generating wastes as a basis for their determination. In the second approach, EPA would require the testing of wastes, at a frequency specified by regulation. Finally, in the third approach, the Agency would require testing but without specifying a particular testing frequency. Under this third approach, generators would be required to develop an appropriate testing frequency, based on Agency guidance, and to document the basis for their choice.

Commenters were heavily divided on the issue of testing and recordkeeping requirements. Many commenters, including waste management firms and a few generators, favored mandatory testing of solid wastes. Most of these commenters argued that generators typically lack sufficient information to determine accurately the composition of their wastes without testing. Indeed, one commenter claimed that with 52

constituents regulated at the part-per-million level or lower, a generator could never be sure whether a waste exhibits the TC without performing the TCLP test. The commenters concluded that testing is the only reliable method for ensuring that potentially hazardous wastes are properly identified and managed.

A few commenters offered somewhat different reasons for supporting testing requirements. For example, some commenters pointed out that mandatory testing would facilitate EPA enforcement efforts. Others claimed that mandatory testing would reduce uncertainty by making it clear to generators precisely what EPA expects of them with respect to performing hazardous waste determinations.

Another group of commenters, however, opposed the imposition of a formal testing requirement. These commenters argued that mandatory testing would place an inordinate burden on the regulated community without providing significant benefit for human health and the environment. In particular, the commenters claimed that mandatory testing is unlikely to identify wastes that were improperly characterized as nonhazardous when generators relied exclusively on their knowledge. According to these commenters, generators rely on their knowledge only when the wastes they produce are clearly hazardous or clearly nonhazardous. Wherever uncertainty exists, these commenters stated, generators either declare their wastes hazardous or perform appropriate tests. The commenters emphasized that this cautioned response results from generators' liability for making incorrect determinations, regardless of whether they test their wastes. The commenters concluded that requiring testing of all wastes would deplete resources and place a strain on limited laboratory capacity.

The Agency recognizes that there are many difficult issues related to the imposition of a testing requirement, both for the Toxicity Characteristic and the other hazardous waste characteristics. While the Agency believes that a testing requirement could improve the Agency's enforcement tools, the Agency believes that the current requirements for hazardous waste determinations are not ineffective because many generators do have sufficient knowledge to make a determination without a test. The Agency further believes that liability for incorrect determinations provides a strong incentive for not misclassifying hazardous wastes as non-hazardous. Although EPA thinks that the current

system set forth in 40 CFR 262.11 is effective, the Agency believes that imposing a testing requirement does have some merit, in that it could increase the accuracy of determinations, could clarify the responsibilities of generators, and could facilitate compliance monitoring.

The Agency will continue to evaluate the comments on this issue as well as explore other options for a testing requirement. At present, however, the Agency is not yet ready to go forward with a testing requirement based on any of the options it has evaluated thus far. Should the Agency decide that an appropriate approach is available, it will propose and solicit comment upon the details of that approach in a separate rulemaking. In the meantime, the Agency believes that the existing determination requirement (as specified at 40 CFR 262.11), as well as the liability for incorrect determinations, is effective and practical.

H. Applicability to Wastes Managed in Surface Impoundments

As discussed above, in response to the proposed TC, EPA received many comments questioning the validity of applying the TC to wastes, including wastewaters, likely to be managed in surface impoundments. In response to commenters' concerns, on May 18, 1987, EPA published a Supplemental Notice of Proposed Rulemaking in the Federal Register, which requested comments and data on several issues related to the regulation of wastes managed in surface impoundments under the TC rule. The Agency also requested comment (assuming such an approach) on: (1) The criteria to be used to determine whether the surface impoundment scenario should apply to a particular waste, (2) the point at which concentration measurements should be made (e.g., at the point of generation or within the impoundment), and (3) how multiple surface impoundments should be handled under the TC rule.

Comments received in response to the notice concerning the surface impoundment management scenario are summarized and addressed in section III.A.2.c. Comments received in response to the notice, which addressed sampling point and multiple impoundment issues, are discussed below.

1. Sampling Point

In the May 18, 1987 notice, EPA requested comments on whether evaluations of wastes managed in surface impoundments should be based on measurements of the concentration in the impoundment or at the inlet to the impoundment. In response, some

commenters supported sampling at the inlet to the impoundment and stated that sampling the waste within the impoundment is not only contrary to Congressional intent, but conflicts with EPA's own regulations that require the determination of hazard to be made at the point of generation.

Other commenters, however, argued that wastes should be sampled within the impoundment or that the impoundment effluent should be sampled. Many of these commenters argued that measuring the concentrations in the impoundment more accurately represents the concentrations of hazardous constituents that pose a threat to ground water. Some commenters argued that evaluation of hazard should be based on impoundment effluent because concentrations of the wastewaters within the impoundment are approximately the same as the concentrations in the impoundment effluent.

If the Agency were to allow persons to make their determinations on the waste in the impoundment, it would raise questions that the Agency has not yet evaluated completely nor taken comment on. For example, in this situation, should the Agency actually require testing; if so, how often and what should be tested? Would such a result allow persons to land dispose of wastes that (but for the point of hazard determination) would be hazardous, contrary to Congressional intent? Would such a result allow persons to treat wastes without a permit and thus be inconsistent with Congressional intent? EPA concedes that, for some activities (e.g., closure), leachate quality may be more appropriately assessed by measuring concentrations at multiple sites within the impoundment.

The current rules require that the determination of whether a waste is hazardous be made at the point of generation (i.e., when the waste becomes a solid waste). (A waste must be a solid waste before it can be classified as a hazardous waste under RCRA.) EPA believes that determination of the regulatory status of a waste at the point of generation continues to be appropriate, especially since the Agency is not developing a separate mismanagement scenario or set of regulatory levels for wastewaters. To be consistent with other hazardous waste regulations and until the Agency addresses the above questions, EPA is retaining the existing approach of requiring sampling at the point of generation.

2. Multiple Surface Impoundments

In the May 18, 1987 notice, EPA requested comment on how multiple surface impoundments or "treatment trains" should be handled under the TC rule. Some commenters favored regulating all surface impoundments in a treatment train as a single unit—if the first impoundment treats a hazardous waste, all impoundments would be required to comply with the RCRA regulations for hazardous waste treatment facilities. Other commenters, however, suggested that each impoundment should be regulated individually. Still other commenters stated that owners and operators should be required to determine whether the most upstream surface impoundment is treating wastes that exhibit the TC, but they should only be required to evaluate downstream impoundments if an upstream impoundment exhibits the TC.

As discussed above, the Agency has decided not to develop a separate regulatory scheme for surface impoundments. Thus, the Agency will continue to regulate all surface impoundments as individual units and will not pursue any of the other options discussed by commenters. Currently, under 40 CFR part 261, each surface impoundment in a series of multiple surface impoundments is regulated separately. If a surface impoundment receives or generates a hazardous waste, the owner or operator of the impoundment is required to comply with the RCRA regulations governing hazardous waste treatment, storage, and disposal facilities. On the other hand, if a downstream impoundment is not treating or generating a characteristically hazardous waste and upstream units have not managed, listed wastes, then the downstream unit is not subject to RCRA subtitle C requirements.

I. Relationship to Other RCRA Regulations

1. Hazardous Waste Identification Regulations

a. Hazardous Waste Listings. Under the June 13, 1986, proposal, the hazardous waste listings in subpart D of 40 CFR part 261 would not be affected. All the listings would remain in effect, including those listings that were based on the presence of TC constituents. It is EPA's intention that the hazardous waste listings would continue to complement the revised TC as they had the EPTC.

A number of commenters, however, argued that the TC should supersede certain hazardous waste listings. In

particular, they suggested that the TC should be the only basis for regulating wastes that have been identified as hazardous solely because of the presence of a TC constituent. Such an approach, according to the commenters, would establish a more rational basis for identifying hazardous wastes. Wastes failing the TC test would be regulated as hazardous wastes, whether or not they have previously been listed, because they have demonstrated the potential to pose a threat to human health and the environment. Wastes passing the TC test, in contrast, would not be subject to subtitle C regulation. The commenters claimed that, by definition, if the extract from a waste that was listed because of the presence of a TC constituent does not contain the constituent in a concentration greater than or equal to the regulatory level, the waste can safely be managed at a subtitle D facility.

EPA does not agree that the TC revisions justify elimination of any of the hazardous waste listings. The Agency has consistently maintained that individual waste streams may be listed regardless of whether the waste is defined as hazardous by the TC. Exhibiting a characteristic can constitute the basis for listing a waste. In fact, prior to today's action, approximately 25 listings were based on the presence of metals or pesticides covered by the EPTC.

There are a number of reasons for continuing this approach. First, listed wastes frequently contain hazardous constituents other than the ones cited in Appendix VII of 40 CFR part 261 as the basis for the listings. It is for this reason that Congress directed EPA, in evaluating delisting petitions, to consider constituents other than those for which the wastes were listed, assuming that there is a reasonable basis to believe that such constituents might render the wastes hazardous (see RCRA section 3001(f)). In many cases, the additional hazardous constituents that are present in a waste may not be on the list of TC constituents. The listings may therefore serve to identify wastes that pass the TC test but are nevertheless hazardous. Removing wastes from a hazardous waste listing without an evaluation of additional constituents would appear to be inconsistent with the intent of section 3001(f).

Another reason for retaining the hazardous waste listings is that TC constituents may continue to pose a threat to human health and the environment even when they are present in concentrations lower than the

regulatory levels. The regulatory levels have not been designed to address the problems of phytotoxicity, aquatic toxicity, or bioaccumulation potential. Moreover, they have not been designed to identify the full range of wastes that may be toxic to human beings. Instead, the characteristic levels have been established at concentrations where there is a high degree of certainty that any wastes with constituents at levels equal to or exceeding the regulatory levels pose a potential threat to human health. Individual wastes may continue to be hazardous, despite the fact that they may contain TC constituents in concentrations below the regulatory levels. This is particularly true for wastes that have the potential to be exposed to more aggressive leaching conditions than those modeled in the TCLP. As a result, EPA believes that wastes previously listed as hazardous should continue to be considered hazardous, whether or not they exhibit the characteristic.

b. "Mixture" and "Derived From" Rules. Because the TC will not supersede the listings for hazardous wastes, it also will not affect the regulatory status of wastes that are hazardous by virtue of the "mixture" rule of 40 CFR 262.3(a)(2)(iv) or the "derived from" rule of 40 CFR 261.3(c). The "mixture" rule provides that any mixture of a listed hazardous waste and a solid waste is itself a RCRA hazardous waste.³ The "derived from" rule states that any waste derived from the treatment, storage, or disposal of a listed hazardous waste is hazardous.

Several commenters contended that the current regulatory scheme encompasses wastes that contain *de minimis* quantities of leachable organic chemicals. The commenters acknowledged that mixtures and treatment residues posing insignificant threats to human health and the environment may be excluded from regulation through the delisting process. However, they claimed that delisting is unduly expensive, time-consuming, and, in some cases, impractical. The commenters suggested as an alternative that mixtures and treatment residues from listed wastes containing TCLP constituents not be considered hazardous unless they fail the TC test. They contended that this approach would adequately protect human health and the environment. Moreover, it

would be "self-implementing," in the sense that it would eliminate the need for the current process of petitions and Agency review for delisting.

EPA recognizes that the "mixture" and "derived from" rules may create some inequities by including wastes that contain very small amounts of hazardous wastes that have been mixed so as to render them nonhazardous. However, the Agency has consistently maintained that the mixture and derived from rules are an appropriate regulatory approach for dealing with waste mixtures and treatment residues.

When the rules were promulgated in 1980, EPA stated that it was essential to regulate waste mixtures to prevent generators from evading subtitle C requirements by simply co-mingling listed wastes with nonhazardous wastes. The Agency also determined that because of the infinite potential combinations of listed wastes and other wastes, it was unable at that time to devise any workable, broadly applicable formula that was capable of distinguishing between hazardous and nonhazardous mixtures. The Agency acknowledged that the "mixture" rule might be overly broad, but noted that generators could avoid any inequities either by segregating their wastes or by obtaining a waste-specific exclusion under the delisting program (see 45 FR 33095, May 19, 1980).

EPA also believed that it was important to regulate wastes from the treatment, storage, or disposal of listed hazardous wastes on the basis that these "derived from" wastes might themselves be hazardous. Once again, however, the Agency found that because of the large number of listed wastes and treatment processes (some of which introduce new hazardous constituents into the treatment residues), it was unable to prescribe standards that could properly distinguish between hazardous and nonhazardous residues. (It should be noted that the definition of treatment is not confined to rendering a waste non-hazardous, but also includes any method designed to change the nature of a waste to render the waste (1) less hazardous; (2) safer to transport, store, or dispose; (3) amenable for recovery; or (4) reduced in volume (see 40 CFR 260.10).) Therefore, the Agency concluded that wastes generated during the treatment of listed wastes should be presumed to be hazardous. Delisting was provided as the mechanism for excluding these wastes from subtitle C regulation (45 FR 33096, May 19, 1980).

EPA is sympathetic to the commenters' concerns regarding use of delisting to exclude wastes that are

³ The exception to this rule is a mixture of solid waste and a waste that is listed solely because it exhibits a characteristic of hazardous waste. If such a mixture does not exhibit any characteristic of hazardous waste, the mixture is not defined as hazardous [40 CFR 261.3(a)(2)(iii)].

hazardous under the "mixture" and "derived from" rules. The Agency does not believe, however, that the alternative suggested by the commenters (i.e., relying on the TC to regulate mixtures and treatment residues) would adequately protect human health and the environment. As noted above, wastes that pass the characteristic test may nevertheless be hazardous, either because they contain listed constituents at concentrations below the TC regulatory levels but at levels and under circumstances that nevertheless render the waste hazardous or because they contain hazardous constituents that are not covered by the TC rule. As noted above, the TC regulatory levels are not threshold levels defining all hazardous waste, but are levels that are set to clearly define hazardous waste. Wastes containing constituents falling below these levels may still present a hazard in more limited situations.

Nevertheless, the Agency recognizes that some inequities may result by the application of the "mixture" and "derived from" rules to certain dilute listed wastes. The Agency therefore is considering proposing an amendment to the definition of hazardous waste which would establish self-implementing *de minimis* exemption levels for hazardous constituents found in listed wastes. Listed wastes that meet these exemption levels would no longer be listed hazardous wastes and thus would not need to be managed as hazardous wastes unless they exhibit a hazardous waste characteristic.

c. Mixture Rule Exemption. The mixture rule under 40 CFR 261.3(a)(2)(iv) provides an exemption from RCRA subtitle C regulation for mixtures of wastewaters and certain listed spent solvents. The mixture rule exemption is applicable only if the maximum weekly usage of the solvents (other than solvents that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater does not exceed specified values. The mixture rule exemption does not apply to wastewaters that exhibit a characteristic of hazardous waste or to wastewaters that contain listed hazardous wastes not specified in the mixture rule exemption.

A number of commenters claimed that the proposed TC conflicts with the mixture rule exemption. The commenters noted that the mixture rule exemption levels are higher than the corresponding TC regulatory levels for solvent constituents. Because of this difference in regulatory levels, the commenters stated that the proposed TC

rule will bring large quantities of currently exempted wastewaters into the hazardous waste management system. In effect, the commenters argued that the TC rule will revoke the mixture rule exemption. Commenters disapproved of this result, stating that the mixture rule exemption was promulgated in recognition that small amounts of certain spent solvents are often most efficiently managed by being discharged to a plant's wastewater treatment system and that this method of management does not pose risks to human health and the environment.

EPA acknowledges that the TC rule may bring some currently exempted wastewaters into the subtitle C regulatory system; however, the mixture rule exemption is an exemption from the hazardous waste listings, not the characteristics. Thus, there is no inconsistency between this rule and the mixture rule exemption. In addition, it should be noted that the TC regulatory levels are based on state-of-the-art toxicological data and risk assessment methodologies. Consequently, EPA believes that the TC regulatory levels are the best measures available to identify wastewater mixtures that pose a threat to human health and the environment. In contrast, the mixture rule exemption levels are based upon less current risk information.

Even though some wastewaters presently covered by the mixture rule exemption will become hazardous wastes as a result of the TC rule, EPA believes that the exemption will continue to serve an important purpose by ensuring that mixtures of wastewaters and certain listed spent solvents will not be considered hazardous unless they exhibit a characteristic of hazardous waste. To clarify the mixture rule exemption and make it more consistent with current risk information, EPA is considering proposing in the future that the mixture rule exemption levels be reduced so that they are equivalent to the TC regulatory levels.

d. Delisting. While the June 13, 1988 proposal did not specifically address the effect that the TC might have on the hazardous waste delisting program under 40 CFR 260.22, a number of comments were received claiming that the TC rule would be inconsistent with existing EPA policies regarding case-by-case exclusions. In the August 1, 1988 proposal, however, the Agency solicited comment on the use of the EPACML model in the delisting program.

The commenters noted that each major element of the delisting program is different from the corresponding

element in the original TC proposal. For example, the chronic toxicity reference levels that are used to establish "no hazard" levels under the delisting program appear to differ from the levels that were used to establish the proposed TC regulatory standards. In addition, the delisting program uses (as appropriate) a different ground water transport model (i.e., the Vertical and Horizontal Spread (VHS) Model), which generates generic DAFs rather than compound-specific factors. Finally, the delisting program employs (as appropriate) the Organic Leachate Model (OLM) rather than the EP or the TCLP to determine the degree to which various organic constituents are likely to leach from solid wastes. The commenters urged the Agency to use the same reference levels, DAFs, and leaching procedures in both the characteristic and delisting programs. A few commenters expressed a particular preference for adopting the delisting elements as part of the revised TC.

There were a number of differences between the various elements of the proposed TC and the corresponding elements in the delisting program. However, regarding Chronic Toxicity Reference Levels, the only difference between the levels used in the delisting program and those in the TC final rule is the use of different risk levels for the carcinogens (i.e., delisting uses a more conservative risk factor of 10^{-6} for carcinogens, compared to the use of a 10^{-5} risk factor in the TC rule). Many of the differences between the chronic toxicity reference levels used in the TC rule and those in the delisting program have been eliminated as a result of decisions concerning risk levels and apportionment. Furthermore, the health-based levels used in the delisting program and in the TC rule have been updated to incorporate recent Agency evaluations (see 53 FR 18024).

EPA believes that the risk factors being used for each program are appropriate, and does not think that risk levels used to set regulatory levels should necessarily be the same in the two programs because each serves a separate purpose. Delisting evaluates the hazard posed by specific individual wastestreams that have been listed as hazardous. Characteristics identify broad classes of clearly hazardous wastes; specific wastes that may pose a substantial identified hazard in a lower risk range may be listed as hazardous. As discussed below, EPA believes it is appropriate that the delisting program is, in certain cases, more stringent than the characteristic program.

A number of commenters focused on the overall stringency of the characteristic and delisting programs. In particular, the commenters stated that the proposed TC regulatory levels were sometimes greater than and sometimes less than the concentration standards used by the Agency's delisting program in determining when listed wastes may properly be managed in subtitle D facilities. Most of the commenters argued that EPA, in the interest of consistency, should adopt the same concentration standards under the characteristic and delisting programs. Other commenters, however, urged the Agency to establish higher concentration standards under the revised characteristic. The latter group of commenters noted that characteristics are designed to identify broad classes of solid wastes that are "clearly" hazardous, while listings are designed to identify wastes that may not exhibit a characteristic, yet are nevertheless hazardous. The commenters concluded that, in light of the different functions of listings and characteristics, it should be more difficult for a waste to pass the delisting standards (i.e., to be eligible for delisting) than for the same waste to pass the characteristic test.

EPA does not agree with those commenters who argued that the Agency must use the same concentration standards in the characteristic and delisting programs or, that the concentration standards for characteristics must be higher than those for delisting. These programs have very different purposes. While hazardous waste characteristic levels are those equal to or above which a waste is clearly hazardous due to a particular property, delisting levels are those below which a waste is not hazardous. Thus, it is reasonable that these two levels may or may not coincide. Delisting decisions are based on an extensive evaluation of a particular waste which requires specific information on the waste. The characteristics approach to defining a hazardous waste is much more broad. Only one mismanagement scenario is used and it is based on "reasonable worst-case" assumptions resulting in a "generic" regulatory level to be applied to all solid waste. And, of course, section 260.22 of the RCRA regulations specifies that a waste may not be delisted if it exhibits a characteristic of hazardous waste (e.g., the characteristic of EP toxicity). Thus, the delisting program could never be less stringent than the characteristic program.

In regard to the use of different models in the delisting and

characteristic programs, in the August 1, 1988 Federal Register notice, the Agency specifically solicited comment on the use of the Toxicity Characteristics model (EPACML) in place of the model currently used in the delisting program (the VHS model). All of the commenters supported the use of EPACML instead of the VHS model in the delisting program, although one commenter supported this only if it would not add complexity and thereby increase the time required for delisting petition evaluation. Another commenter stated that the EPACML model should be used in the delisting program but that petition evaluations should not be restricted to the use of any single specific model. Finally, several of the commenters stated that the Agency should present details as to how the EPACML model would be used for delisting in a separate Federal Register notice.

In response to these comments, the Agency will use the EPACML model and the TCLP in the delisting program. Also, as suggested, the Agency will explain how the model and the TCLP will be used in a future Federal Register notice.

A few commenters expressed concern about the applicability of the TC to wastes that have previously been delisted. The commenters argued that once EPA has ruled (through the waste-specific delisting process) that a particular waste stream poses no threat to human health and the environment, the Agency should be barred from using a generic rule to declare the same waste as being "clearly" hazardous. One commenter claimed that it would be especially unfair to alter the regulatory status of a waste stream after the person managing it has been granted an exclusion and has acted in reliance on that exclusion (e.g., by changing the production process or waste management practices).

EPA has consistently maintained that wastes "excluded" from subtitle C regulation under the delisting program may nevertheless be hazardous if they exhibit a characteristic of hazardous waste (see 40 CFR 260.22). While the TC rule will apply to previously delisted waste, EPA does not, in general, expect that such wastes will become hazardous because of application of the revised TC. The Agency believes that, because delisting levels are more stringent than the final TC levels, the impact of the TC rule on previously delisted wastes will be minimal. Nevertheless, if a previously delisted waste exhibits the TC, it will again be subject to subtitle C requirements (i.e., delisted wastes are treated no differently than any other solid waste).

2. Land Disposal Restrictions

a. Risk Levels and Frequency Interval.

The approach used to develop regulatory levels in the proposed TC rule was similar to the original approach suggested for developing treatment standards in the proposed Land Disposal Restrictions (LDR) rule (51 FR 1602, January 14, 1986). Both proposals began with health-based concentration thresholds at the point of exposure and used subsurface fate and transport models to back-calculate allowable constituent concentrations in the leachate. In the June 13, 1986 TC proposal, the Agency requested comments on whether the risk levels and cumulative frequency level used in the TC should be the same as those used to develop the treatment standards in the proposed LDR rule.

Several commenters supported the use of different risk levels and cumulative frequency levels in the two proposals. These commenters stressed that different statutory mandates for the two rules and the entirely different functions of the TC regulatory levels and the LDR treatment standards warranted different approaches. However, other commenters contended that the frequency level and risk levels in the TC rule should be the same as or more stringent than those used in the LDR proposal. Some of these commenters argued that the more stringent risk levels and frequency level in the LDR proposal provided a more appropriate degree of protection for human health and the environment than the corresponding levels and frequency interval in the TC proposal.

The issue of consistency of risk levels and frequency level for the TC and the LDR program is now moot. The LDR final rule (51 FR 40572, November 7, 1986) abandoned the use of screening levels based on risk methodology and subsurface fate and transport modeling, and promulgated an approach to establishing treatment standards based entirely on technology-based standards expressed as Best Demonstrated Available Technology (BDAT). Today's rule continues to be based upon health-based concentration levels and dilution/attenuation factors, the values for which are based upon the predictions of a subsurface fate and transport model.

b. Treatment Standards for TC Wastes.

Under RCRA section 3004(g)(4), EPA is required to make an LDR determination for all TC wastes within 6 months of today's action, as discussed in the following section. Several commenters were concerned that the LDR treatment standards that will

eventually be established for the TC wastes may be inconsistent with TC regulatory levels. Some of these commenters noted that the proposed LDR treatment standards for listed spent solvents were in many cases lower than the proposed TC regulatory levels for the identical constituents in unlisted characteristic wastes. The commenters feared that if LDR treatment standards are applied to unlisted TC wastes in the same manner as they are applied to similar listed wastes, the characteristic wastes may require treatment to below the TC level before subtitle C land disposal is permissible. This means that unlisted wastes no longer exhibiting the TC must continue to be managed as hazardous wastes. Some commenters who voiced concerns over potential differences between TC regulatory levels and LDR treatment standards suggested that there should be a clear continuum of regulatory levels, with the higher standards being those that deem a waste hazardous in the first place (i.e., the TC regulatory levels).

Wastes deemed hazardous under the TC will not immediately become subject to the LDR program on the effective date of the TC rule, except perhaps by operation of the California List restrictions (i.e., halogenated organic compounds are subject to the LDR if they exhibit a characteristic, see 52 FR 25770, July 8, 1987). However, the Agency has not yet determined whether the existing LDR California List restrictions should be applicable to newly identified TC wastes. The Agency specifically requested comment on the appropriateness of applying the California List prohibitions to newly identified hazardous wastes in the November 22, 1989 proposed rule for the "Third Third" of scheduled wastes (54 FR 48499). The Agency will fully address this issue as part of the "Third Third" final rule.

Since the Agency is not today proposing LDR treatment standards for the TC wastes, the Agency believes that it is more appropriate to address these comments when the LDR treatment standards are proposed. However, in response to comments that proposed treatment standards for listed solvents were lower than proposed TC levels, the Agency would like to point out that the treatment standards for TC wastes will not necessarily be the same as the corresponding LDR treatment standards for spent solvents. Indeed, if the TC wastes belong to a different treatability group, one can expect that the treatment standards will be different.

c. Schedule for LDR Determinations. For wastes already listed or identified at

the time of enactment of HSWA, the Agency must make LDR determinations according to the schedule set forth in RCRA section 3004(g)(4). If EPA fails to make the determinations by the established schedule, the wastes are automatically subject to the land disposal restrictions on the scheduled date. EPA must also make LDR determinations for all wastes that are identified or listed as hazardous after November 1984 (when HSWA was enacted) within six months after the wastes are identified or listed.

On November 22, 1989 (54 FR 48372), EPA proposed treatment standards for those wastes that exhibit the EPTC, as well as any of the other characteristics. Upon the effective date of today's rule, the TC will include the 14 EPTC constituents in addition to the 25 organics, and the TCLP will replace the EP. EPA proposed that the BDAT levels for wastes that exhibit the EPTC for the 14 constituents remain the same when the TC becomes effective. By May 8, 1990 the Agency will establish the final BDAT levels for the 14 constituent currently identified by the EPTC. Newly identified TC wastes are subject to the six-month listing deadline. However, wastes are not automatically prohibited from land disposal if EPA fails to make this required determination within six months.

Some commenters argued that the six-month deadline would accelerate the LDR determinations for listed wastes that contain TC constituents. For example, some commercial chemical products are currently scheduled to be reviewed by May 8, 1990 (51 FR 19300, May 28, 1986). However, these wastes also may exhibit the TC. Commenters were concerned that these wastes may be subject to the six-month deadline and claimed that this would effectively accelerate the determinations in a manner that would be contrary to Congressional intent.

Wastes that are newly identified as hazardous by today's rule will be subject to the six-month deadline for LDR determinations. However, even if EPA were to complete LDR determinations for TC wastes before May, 1990, the Agency disagrees with commenters that this has the potential to accelerate the determinations in a manner that would be contrary to Congressional intent. The dates set forth in RCRA section 3004(g)(4) are deadlines by which EPA must make LDR determinations or the wastes are automatically restricted from land disposal. EPA is in no way prevented or discouraged by the statute from making LDR determinations before any of its

deadlines (RCRA section 3004(g)(5), "Not later than * * *"). Indeed, other determinations are being made ahead of schedule; the final rule for restricting "second third" wastes includes treatment standards and prohibitions for some "third third" wastes (54 FR 26594).

3. RCRA Corrective Action and Closure Requirements

Today's rule will have no direct effect on either the action levels of RCRA corrective action or the cleanup standards of RCRA closure requirements. However, to the extent that the TC brings more facilities under the RCRA program as hazardous waste management facilities, additional facilities will be newly subject to the subtitle C corrective action and closure requirements.

Although the corrective action program under subtitle C addresses remediation of releases of hazardous constituents from waste at facilities subject to RCRA permitting, the TC levels will be neither action levels (i.e., concentrations that, if exceeded, signal the need for corrective action) nor cleanup standards. Rather, corrective action, as a process, encompasses trigger levels and cleanup standards that are developed from site-specific information gathered during the investigatory and evaluative phases of the process (i.e., the RCRA Facility Investigation and the Corrective Measures Study).

Thus, the levels or concentrations associated with today's TC rule are largely independent from levels associated with corrective action. Similarly, the closure requirements are unaffected by today's rule. The TC is not used to determine whether a facility has met the requirements for clean closure. However, it must be noted that solid wastes generated as a result of remediation of releases or in pursuance of closure requirements that exhibit the TC must be handled as a hazardous waste.

4. Minimum Technology Requirements

a. Applicability. HSWA added section 3004(o) to RCRA which imposes minimum technology requirements on owners and operators of certain landfills and surface impoundments seeking permits. HSWA also added a new section 3015 imposing similar requirements on certain interim status waste piles, landfills, and surface impoundments. Finally, HSWA section 3005(j) requires surface impoundments to be retrofitted to meet minimum technology requirements. EPA codified the statutory language in the Agency's

Codification Rule promulgated on July 25, 1985 (50 FR 28705). Facilities that will face new RCRA regulation following the promulgation of the TC will need to comply with the minimum technology requirements in order to remain in operation.

b. Scope of Minimum Technology Requirements—1. Permitted Facilities. Section 3004(o)(1)(A) requires that after November 8, 1984, certain landfills and surface impoundments must meet minimum technology requirements. The minimum technology requirements for landfills and surface impoundments appear in 40 CFR 264.301(c) and 264.221(c), respectively. They require the owner or operator of each new unit and each replacement unit or lateral expansion of an existing unit to install two or more liners and a leachate collection system between and, for landfills, above the liners.

2. Interim Status Facilities. Section 3015 of RCRA requires that certain waste piles, landfills, and surface impoundments meet minimum technology requirements. The minimum technology requirements for interim status waste piles, landfills, and surface impoundments appear in 40 CFR 265.254, 265.301, and 265.221, respectively. They require that the owner or operator of each new unit, replacement of an existing unit, or lateral expansion of an existing unit that is within the area identified in the part A permit application install liners and a leachate collection system or equivalent protection. Existing surface impoundments (i.e., surface impoundments regulated under subtitle C prior to November 8, 1984) had to be retrofitted to meet the minimum technology requirements by November 8, 1988.

c. Compliance with Minimum Technology Requirements. Facilities or units newly regulated as a result of the TC will have to meet the minimum technology requirements of sections 3004(o) and 3015 if and when they add a new unit, replace an existing unit, or laterally expand an existing unit. Surface impoundments must comply with the retrofitting requirement in section 3005(j)(6)(A), which requires the owner or operator of a newly-regulated surface impoundment to retrofit that impoundment 4 years from the date of promulgation of the additional listings or characteristics, that made it subject to regulation. Thus, surface impoundments that become regulated under subtitle C because of the TC will need to meet the minimum technology requirements on March 29, 1994. (However, retrofitting may be expedited due to the minimum

technology requirements imposed under the capacity variance for land disposal under section 3004.) This extension applies only to those impoundments that contain solely the newly listed/characteristic wastes. Any impoundments that already contained listed/characteristic wastes currently are subject to RCRA regulations, including the minimum technology requirements. Other existing land disposal units (besides surface impoundments) that already contained wastes that exhibit the TC will not require retrofitting unless they are expanded or are replacement units.

5. RCRA Subtitle D (Solid Wastes)

a. Municipal Waste Combustion Ash. Several commenters requested that ash from municipal waste combustion (MWC) units be exempt from regulation under the TC. Many of these commenters argued that the regulation of MWC ash would be in direct conflict with RCRA section 3001(i), which provides that resource recovery facilities engaging in MWC "shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous wastes." Other commenters indicated that the high costs associated with subtitle C regulation would discourage the recovery of energy values from MSW. They claimed that this result would run counter to the clear Congressional intent to encourage resource recovery as a beneficial alternative to the landfilling of MSW.

EPA articulated its position on the scope of section 3001(i) when the Agency codified the 1984 HSWA (see 50 FR 28725, July 15, 1985). However, two recent Court decisions have rejected EPA's 1985 interpretation. *EDF v. City of Chicago*, No. 88C769 (N.D. Ill.) (slip op. Nov. 29, 1989) and *EDF v. Wheelabrator Technologies Inc.*, No. 88Civ.0560 (S.D. N.Y.) (slip op. Nov. 21, 1989). The Agency is considering the appropriate response to these two decisions.

b. Impact on Wastes Excluded from Subtitle C Regulation. Another group of commenters asked for assurances that the TC rule would not affect the existing exclusions for specific wastes under 40 CFR 261.4(b). One commenter expressed particular concern about the exclusion for mixtures of household and other nonhazardous solid wastes. Another commenter raised questions about applying the TC to wastes that are usually considered to be non-hazardous solid wastes. Other commenters focused on the exemptions for "special wastes," primarily mining and mineral processing wastes and oil and gas production wastes. A utility company consortium addressed the exemption for wood

treated with arsenic, commonly used as a fungicide for utility poles. The commenter noted that cresols and pentachlorophenol, also used as fungicides for wood, are proposed as TC constituents; the commenter asserted that the exemption for arsenic-treated wood should be extended to creosote- and pentachlorophenol-treated wood as well.

The TC rule will not apply to wastes that are already excluded from subtitle C regulation under § 261.4(b). These wastes will continue to be exempt from regulation as hazardous wastes, even if they would exhibit the TC. Likewise, the TC rule does not add any exclusions to the applicability of previously promulgated hazardous waste characteristics. With respect to the issue of creosote- and pentachlorophenol-treated wood, EPA does not at this time intend to expand the list of exemptions under § 261.4(b) to include these wastes. This is discussed further in section III.J.4.b.

It should be noted, however, that the special waste exclusions are currently being reevaluated in accordance with the criteria and procedures mandated by Congress. After completing the studies required by RCRA section 8002, EPA may determine that one or more special wastes should be regulated under RCRA subtitle C (see RCRA section 3001(b)). Such wastes would then be listed or the generators required to determine whether the wastes exhibit a hazardous waste characteristic.

A few commenters argued that even if special wastes are brought into the subtitle C system, they should not be subject to the TC. These commenters claimed that codisposal of special wastes with MSW is implausible because special wastes, by definition, are generated in very large quantities. The commenters recommended that EPA develop a separate mismanagement scenario and leaching procedure for special wastes.

At this time, the Agency cannot agree that the TC should not be applicable to special wastes; rather, the applicability to these wastes will be determined on a case-by-case basis. If EPA makes a determination that any special wastes should be regulated under RCRA subtitle C, the Agency will at that time make a separate determination concerning the applicability of the TC to such wastes.

6. RCRA Subtitle I (Underground Storage Tanks)

a. Scope of the Underground Storage Tank Program. Subtitle I of RCRA provides for the establishment of a

regulatory program for underground storage tanks containing "regulated substances." Regulated substances are defined under RCRA section 9001(2) as (1) petroleum and (2) hazardous substances listed under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), excluding hazardous wastes regulated under subtitle C of RCRA.

Except as discussed below, today's action will change the regulatory status of TC wastes that were previously subject to RCRA subtitle I. Because these wastes will be RCRA hazardous wastes, they are excluded from regulation under subtitle I (see 40 CFR part 280.10(b)(1)). For this reason, underground storage tanks that contain TC wastes will be subject to the subtitle C tank requirements rather than those promulgated under subtitle I.

b. Deferral for Petroleum-Contaminated Media and Debris Subject to Part 280 Corrective Action Requirements. As part of its underground storage tank (UST) program, the Agency has recently promulgated regulations which address releases from USTs containing petroleum (see 53 FR 37082, September 23, 1988 and 53 FR 43322, October 26, 1988). Among other requirements, these rules require petroleum UST owners and operators to install leak detection, to report leaks from their tanks and piping, to undertake corrective action to address such releases, and to demonstrate financial assurance for corrective action and third party liability resulting from such releases. These requirements started going into effect in December, 1988, and the Agency estimates that over the next few years more than 300,000 petroleum UST releases will be discovered and be subject to the subtitle I corrective action requirements. In addition, the Agency has, through cooperative agreements, provided funding to states from the Leaking Underground Storage Tank (LUST) Trust Fund under RCRA to undertake the necessary response actions where petroleum UST owners and operators are unable or unwilling to do so. Hundreds of petroleum UST cleanups have been initiated to date under this program.

As noted in the preamble to the final UST rules, due to the large regulated community affected by the UST regulations, the UST program is based on self-implementing requirements and is highly dependent upon voluntary compliance to attain the environmental performance objectives of the program. However, because petroleum contains

several of the hazardous constituents for which regulatory levels are being established today (e.g., benzene) some of the petroleum-contaminated media and debris may exhibit the Toxicity Characteristic under today's rule. While the amount and type of media and debris that may exhibit the characteristic at any particular UST site will depend upon the petroleum product, soil type, and the size of the release, it is likely that many sites where petroleum UST releases have occurred will contain some media that exhibits the Toxicity Characteristic. The management of any such media and debris would be subject to subtitle C requirements for hazardous waste management.

The Agency has insufficient information concerning the full impact of this rule on UST cleanups, but the information available to date suggests that the impact may be severe in terms of the administrative feasibility of both the subtitle C and subtitle I programs. Thus, the Agency has decided to defer a final decision on the application of the TC to media and debris contaminated with petroleum from USTs subject to the part 280 requirements. The application of today's rule to these cleanups will be delayed while the Agency evaluates the extent and nature of this impact and alternative administrative mechanisms for implementing the UST cleanups in accordance with subtitle C requirements. The Agency believes that the UST regulations governing cleanups at these sites will be adequate in the interim to protect human health and the environment.

The deferral of a final decision concerning application of this rule to UST cleanups is necessary for several reasons. First, while the actual number of sites and amount of media and debris at each site that would exhibit the toxicity characteristic under today's rule is unclear, based on a preliminary assessment, the number and amount could be extremely high. As noted above, EPA expects hundreds of thousands of UST releases to be uncovered in the next few years. Subjecting each of these sites to subtitle C requirements could overwhelm the hazardous waste permitting program and the capacity of existing hazardous waste treatment, storage, and disposal facilities. Imposition of the subtitle C requirements is also likely to delay cleanups significantly and severely discourage the self-monitoring and voluntary reporting essential to implementation of the UST program. Moreover, the UST cleanup activities involving the most contaminated media and debris are also likely to involve free

product recovery. Free product recovery would not be subject to subtitle C requirements because the material being recovered is not a waste.

Because of the uncertainties of the impacts on the UST cleanups as a result of this rule, including the amount of contaminated media that would become hazardous waste and the type of management feasible and appropriate for such waste (i.e., on-site treatment, off-site disposal), EPA cannot determine whether the application of this rule to these cleanups will have the severe consequences on implementation of these RCRA programs that preliminary information suggests. Also, because this issue did not come to the Agency's attention until late in the development of this rulemaking, the Agency has not had an opportunity to obtain public input on this issue, the implications of the subtitle C requirements when applied to UST cleanups, or any alternative regulatory mechanisms to make feasible the implementation of UST cleanups while meeting subtitle C hazardous waste requirements. Thus, the Agency believes that further evaluation of the impacts of applying the TC to soils and ground water contaminated by petroleum from USTs and subject to the subtitle I program is necessary in order to determine whether an exemption for such materials is warranted or whether additional regulatory or administrative changes can or should be made in order to make the application of the TC to UST cleanups feasible.

In order to make a final decision concerning the applicability of this rule to UST sites, the Agency intends to undertake several activities. First, the Agency will attempt to more specifically define the impact of the TC through studies of petroleum UST sites, focusing upon the potential hazard from these sites. More specifically, the Agency will study the characteristics of UST sites (number of UST sites by media type, volumes of media and debris typically removed, fraction of this media and debris that exhibits the TC, if any, etc.), current practices and requirements for management of these media and debris, and how contaminated media and debris from these sites are managed under the new subtitle I state programs. As currently envisioned, these studies will include: (1) A survey of tank vendors, contractors, and others knowledgeable about UST site characteristics and contaminated media and debris management practices; (2) a survey of current state and local programs; and (3) a sampling program conducted in conjunction with one or

more selected states. The Agency also plans to evaluate the impact that subtitle C management of petroleum-contaminated media and debris from USTs would have on the Agency's and states' hazardous waste management programs. In addition, the inclusion of these media and debris in the subtitle C management system will be evaluated in comparison to the available capacity for commercial hazardous waste treatment, storage, and disposal.

Second, the Agency will evaluate whether and how the subtitle C requirements can be feasibly implemented for UST cleanups. This evaluation will include an investigation of regulatory streamlining, phased compliance, or other administrative changes to increase the feasibility of implementing UST cleanups in accordance with subtitle C requirements. As part of this effort and the larger issue of the application of subtitle C requirements to contaminated media, EPA intends to convene a public forum to discuss the relationship between subtitle C and subtitle I requirements, the impacts of the subtitle C program on UST cleanups, and how the subtitle C requirements can feasibly be applied to the UST cleanups.

EPA requests data and comment from the public on these issues. Upon completion of the evaluations described above, EPA will determine whether to retain the temporary exemption for UST cleanups provided in this rule or to remove the exemption and make the TC fully applicable to corrective actions under subtitle I.

7. RCRA Section 3004(n) Air Regulations

In HSWA, Congress directed EPA to " . . . promulgate such regulations for the monitoring and control of air emissions at hazardous waste treatment, storage, and disposal facilities, including but not limited to open tanks, surface impoundments, and landfills, as may be necessary to protect human health and the environment." This provision was added as section 3004(n) of RCRA. In response, the Agency proposed the first of a multi-phased set of air regulations for TSDFs on February 5, 1987 (53 FR 3748). This first phase is intended to apply to equipment that would be used to treat wastes that would first be subject to the Land Disposal Restrictions (LDR) standards to ensure that the LDR treatment did not result in cross-media transfer of hazardous constituents to the air (see III.L.2., above, for a discussion of the LDR program). This first phase is to be followed by proposals for more comprehensive air regulations for TSDFs. Once these air standards are promulgated, they are

expected to apply to many of the wastes newly regulated by today's rule.

The February 5, 1987 proposal would limit air emissions of organics as a class from certain treatment units. The proposed rule would apply to specified equipment that contains or is in contact with certain hazardous wastes, which are identified based upon their potential to emit organics. The proposed standards contain two major features. First, a 95% reduction in process emissions from units distilling or stripping (air or steam) organic wastes would be required. Second, leak detection and repair programs would be required for certain valves, pumps, compressors, pressure relief devices, and closed-vent systems. If wastes that exhibit the TC also have concentrations of organic constituents exceeding the regulatory threshold, they will be subject to this first phase of regulation for air emissions.

J. Relationship to Other Regulatory Authorities

1. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Although promulgated in fulfillment of a RCRA mandate, today's rule may affect, to varying degrees, remediations performed under CERCLA authority. Such effects or interactions, when they arise, will be associated with section 121(d) of CERCLA, which requires CERCLA remedial actions to comply with all applicable or relevant and appropriate requirements (ARARs) of other federal and state laws, including RCRA.

Several commenters questioned the applicability of the TC to CERCLA sites and argued that the TC would constrain the discretion of Remedial Project Managers and On-Scene Coordinators. However, CERCLA section 121(d) is clear that CERCLA remediations must comply with Federal and State ARARs. Accordingly, RCRA regulations, including today's TC, are incorporated into the CERCLA decision-making and remediation process to augment controls already in place under the CERCLA program.

In addition, a few commenters argued that as a result of today's rule, a greater number of hazardous waste determinations would be made during CERCLA remediations. Consequently, "thousands of additional Superfund sites" would be created, attributable in large part, one commenter notes, to petroleum and petrochemical waste that will exceed TC levels. The Agency disagrees with the commenters. While it is clear that CERCLA remediations must

comply with Federal and State ARARs, the TC is not used by CERCLA to determine whether or not to undertake a clean-up action. Rather, the TC will apply to decisions concerning the management of solid wastes (e.g., soil and debris) generated during cleanup activities.

2. Clean Water Act

a. Conflict with NPDES Effluent Guidelines and Pretreatment Standards. Many commenters argued that the regulatory levels in the proposed TC conflict with NPDES effluent guidelines and pretreatment standards under the Clean Water Act (CWA). Several commenters stated that in many cases, the proposed TC regulatory levels are lower than the concentrations allowed in wastewaters directly discharged to surface waters in compliance with NPDES effluent guidelines. Commenters also stated that many wastewaters that are indirectly discharged to publicly owned treatment works in compliance with pretreatment standards will exhibit the TC.

Most of the commenters argued that it would be difficult to justify labeling a wastewater as "hazardous" under RCRA, but "safe" under the CWA. One commenter claimed that differential treatment of identical wastewaters is particularly difficult to justify because leaks from on-site wastewater management operations normally migrate to the same bodies of water that receive NPDES-permitted discharges.

EPA acknowledges the possibility that some wastewaters that meet NPDES effluent guidelines or pretreatment standards may exhibit the TC. However, because the statutory bases for setting regulatory levels are different under the CWA and RCRA, the treatment standards and effluent limitations established under the CWA are not inconsistent with the TC rule. The CWA requires EPA to set effluent limitations to control discharges of toxic pollutants " . . . which shall require application of the best available technology economically achievable . . . " and to set more stringent effluent limitations where necessary to meet applicable water quality standards (see CWA section 301(b)). RCRA, however, mandates that EPA identify wastes which may be a threat to human health or the environment. The criteria for the identification and listing of hazardous waste requires EPA to take into account " . . . toxicity, persistence, and degradability in nature, potential for accumulation in tissue, and other related factors such as flammability, corrosiveness, and other hazardous

characteristics" (see RCRA section 3001(a)). These criteria are different from those used under the CWA.

Accordingly, the two statutory programs have different goals. EPA believes that the TC regulatory levels represent concentrations above which a wastewater poses a potential hazard to human health and the environment, if mismanaged, even if it has been treated to some degree. Therefore, owners and operators of wastewater treatment facilities that treat wastewaters exhibiting the TC will be required to comply with all applicable regulations under RCRA and the CWA.

b. Permit Requirements for Wastewater Treatment Facilities. Many commenters stated that under the proposed TC, many wastewater treatment facilities will become hazardous waste treatment facilities subject to full RCRA permitting requirements. These commenters were concerned that the costs to industry of preparing permit applications and complying with RCRA regulations for hazardous waste treatment facilities will be prohibitive. Some commenters argued that EPA has insufficient resources to process permit applications from all of the wastewater treatment facilities that will require permits.

Although owners and operators of some wastewater treatment facilities that use newly-regulated surface impoundments could be subject to RCRA permitting requirements, EPA believes that the actual number of facilities requiring permits will not be large. The Regulatory Impact Analysis for this rule indicates that other options available to wastewater treatment facilities treating wastewaters exhibiting the TC are likely to be more cost-effective than obtaining an RCRA permit (see section VI. B for a more detailed discussion). In particular, an alternative that the Agency expects may be attractive to many owners and operators is the replacement of surface impoundments with tanks. Retrofitting existing surface impoundments to meet RCRA requirements for hazardous waste management facilities will often be more expensive than building tanks that are subject to CWA requirements in lieu of RCRA permitting requirements. ("Wastewater treatment units" are exempt from the hazardous waste management standards under 40 CFR 264.1(g)(6) and 265.1(c)(10). Similarly, "totally enclosed treatment facilities" are exempt under 40 CFR 264.1(g)(5) and 265.1(c)(9).) Thus, there are options available to owners/operators for whom RCRA standards may be too costly.

There may be some wastewater treatment facilities that opt to continue

using surface impoundments to manage wastewaters exhibiting the TC, and these facilities will enter the RCRA permitting system. However, the Agency does not believe that there will be such a large number of facilities that it will overwhelm the Agency's permitting capabilities.

c. Sludges from Publicly Owned Treatment Works (POTW). The preamble to the June 13, 1986 proposed rule requested comments on the regulation of sewage sludge under RCRA and under the CWA. The preamble stated that EPA was considering an exemption from RCRA regulation for sludges from publicly owned treatment works (POTW sludges) upon the promulgation of sewage sludge management standards pursuant to section 405(d) of the CWA.

A number of commenters, including many municipalities, responded to this request for comments. Although a few commenters opposed an exemption from RCRA for POTW sludges, the commenting municipalities supported an exemption from RCRA. These municipalities stated that sewage sludge management regulations, in addition to pretreatment standards, are sufficient to protect human health and the environment without additional regulation under RCRA. Commenters stated that regulating POTW sludge under RCRA will place a significant economic burden on municipalities and will cause municipalities and EPA to face duplicative administrative costs and regulatory confusion.

EPA does not agree with commenters that regulation of POTW sludge under RCRA will place a significant economic burden on municipalities or increase the burden of implementation. EPA's office of Water tested 18 POTW sludge samples using the TCLP; none of the samples tested exhibited the TC at the proposed regulatory levels (Ref. 18). Because the final TC regulatory levels are higher than the proposed regulatory levels, the Agency believes that few, if any, POTW sludges will exhibit the TC. Thus, most POTW sludges will not be classified as hazardous waste under RCRA.

Although EPA does not believe it is necessary to exempt POTW sludges from RCRA at this time, the Agency may reconsider this decision after the sewage sludge management regulations are promulgated. In the unlikely event that a particular POTW sludge does exhibit the TC, the municipality may use the pretreatment program under the CWA to eliminate the indirect discharges of the pollutants that are causing the sludge to exhibit the TC.

3. Safe Drinking Water Act

Several commenters noted that the proposed regulatory level for chloroform is lower than the primary drinking water standard for trihalomethanes (a class of organic chemicals that includes chloroform) established under the Safe Drinking Water Act (SDWA). Most of these commenters consequently declared that the regulatory level had been set too low, and they argued that it would be unreasonable to regulate ordinary drinking water as a hazardous waste. Some commenters asserted that an industrial facility taking water from a public water supplier (a facility supplying drinking water in compliance with the SDWA rules) could find that its noncontact cooling water becomes a hazardous waste after it is passed through the plant and is disposed.

In today's final rule, the regulatory level for chloroform has been raised from that proposed in the June 13, 1986, notice of proposed rulemaking. The change is because of two modifications to the data originally used to set the regulatory level: first, the chronic toxicity reference level for chloroform is roughly 12 times higher than when originally proposed (see 53 FR 18024) and, second, due to the changes in the model, the DAF is about 7 times higher than the one originally proposed. Together, these two changes result in a regulatory level that is higher than both the original regulatory level and the SDWA standard for trihalomethanes. Non-contact cooling water or other wastewaters derived from public water supplies complying with the SDWA thus should not exhibit the TC for chloroform unless these wastewaters are contaminated by other sources.

4. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

a. Pesticide Wastes. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) authorizes EPA regulation of pesticide sale, distribution, use, and disposal. Since RCRA regulations cover solid wastes which include pesticide product wastes, these wastes may be regulated under both FIFRA and RCRA.

Until recently, pesticide disposal under FIFRA was primarily controlled by mandating that product labeling include instructions for the proper disposal of the pesticide and its container. Recent amendments to FIFRA, effective October 25, 1988, authorize the Administrator to impose additional requirements relating to storage, transportation, and disposal of certain pesticides. For example, EPA under FIFRA may issue requirements

and procedures for the storage, transportation, and disposal of suspended or cancelled pesticides and of rinsates or containers associated with the pesticides. Also, EPA may require that applicants for registration of a pesticide submit information regarding methods for safe storage and disposal of the pesticide, and that applicants for registration provide evidence of sufficient financial resources to provide for disposal in the event of suspension or cancellation.

A number of pesticide-related wastes are listed as hazardous under 40 CFR part 261. The listings include four groups: The first, at § 261.31, includes certain discarded unused pesticide formulations containing tri-, tetra-, and pentachlorophenols (F027) or certain compounds derived from the chlorophenols; these are listed as acute hazardous waste. This listing includes approximately 20 phenoxy pesticides and their salts and esters. Today's rule will add the constituent 2,4,6-trichlorophenol, which is used as an active ingredient in pesticide products, to the TC list. Because products containing this constituent are separately listed under F027, the promulgation of specific toxicity limits will not affect their regulation under RCRA (i.e., they will continue to be regulated as acute hazardous wastes at all concentrations, both above and below the TC level).

The second group, at § 262.32, consists of "K" wastes from the production of specific pesticides, such as wastewater treatment sludges from the production of the pesticide chlordane (K032); these are listed as toxic wastes. Again, however, because these wastes are listed, they will not be affected by the regulatory levels of the TC, but will continue to be subject to regulation regardless of concentration levels.

The third grouping, at § 261.33 (e) and (f), consists of "P" and "U" wastes. Section 261.33 lists certain commercial chemical products as hazardous when discarded or intended for discard. Approximately 50 pesticide active ingredients are listed as acute hazardous wastes under § 261.33(e), while 83 pesticide active ingredients are listed under § 261.33(f) as toxic hazardous wastes. Pesticide products containing these chemicals as sole active ingredients or the pure or technical grade of these chemicals are regulated under both RCRA and FIFRA when they become wastes. Generally, products containing these ingredients as one of multiple active ingredients are not regulated (at this time) as hazardous wastes under subtitle C of RCRA unless

they meet one of the characteristics; their disposal is still subject to any applicable FIFRA and RCRA subtitle D requirements. For the majority of the 133 listed pesticides, today's rule will not change their status under RCRA; waste pesticides that are either pure, technical grade, or sole active ingredient products will continue to be subject to regulation as hazardous at all concentrations under RCRA subtitle C. Wastes from multiple active ingredient products that do not exhibit a characteristic will still be regulated under any applicable FIFRA and RCRA subtitle D requirements.

Six pesticide wastes that are currently regulated on a concentration basis under the existing EPTC at § 261.24, form the fourth group. These six pesticides (endrin, lindane, methoxychlor, toxaphene, 2,4-D, and silvex) will be retained in the new rule with their current concentration limits, which are based on a DAF of 100. The significant difference between the listings and the TC is that, while multiple active ingredient products are not covered by the listings, they are covered under the characteristic. Thus, increasing the number of pesticidal constituents encompassed by the TC (whether or not they are also listed), brings more multiple active ingredient formulations into the subtitle C system. Consequently, today's rule is expanding regulation of pesticide wastes under RCRA.

Although EPA is adding pesticides to the TC list of constituents, today's rule will not have a significant effect on many pesticide users who generate wastes. RCRA regulations contain special requirements that affect the extent to which pesticide users will become subject to additional RCRA regulation:

- Household pesticide wastes are, like other household wastes, exempt from RCRA.
- Farmers who triple rinse their containers and dispose of the rinsate on their own farm in a manner consistent with 40 CFR 262.51 and label instructions are exempt from RCRA requirements.
- Other small quantity generators under § 261.5 need comply only with reduced requirements. Many pesticide users are small quantity generators.
- Under § 261.7, properly emptied containers may be exempted from further RCRA requirements. Thus, many pesticide containers may not be subject to regulation as hazardous wastes.

As a result, the principal effects of today's final rule will be felt by commercial applicators, such as aerial applicators and pest control operators,

who are not eligible for the special requirements applicable to farmers and who may use sufficiently large volumes of pesticides that they exceed the small quantity generator limitations. If they use large quantities of multiple active ingredient pesticide products that have not previously been regulated, such commercial applicators may be newly subject to the RCRA hazardous waste management requirements.

b. Treated Wood Wastes. The Agency is promulgating TC regulatory levels for certain chemicals—for example, cresols and pentachlorophenol—that are commonly used as wood preservatives. In its review of wood preservative chemicals under FIFRA, EPA concluded that these wood preservatives may continue to be used under certain circumstances, and the Agency decided to allow disposal of treated wood by means of ordinary trash collection, burial, or incineration (49 FR 28666, July 13, 1984, and 51 FR 1334, January 10, 1986). However, the mandates of FIFRA and RCRA are different. EPA has previously stated that even if it were determined that certain ground uses of treated wood did not pose unreasonable risks, wood wastes might still be regulated under RCRA subtitle C (45 FR 78531, November 25, 1980). Under FIFRA, the Agency may determine that the economic benefits of continued use of a pesticide outweigh any potential risks posed by the pesticide. This does not mean, however, that materials treated with pesticides should not be managed in a controlled manner under RCRA at the end of their useful lives, to ensure that long-term risks are minimized.

Some treated wood that is hazardous solely because it fails the EP toxicity test for arsenic which is not a hazardous waste for any other reason or reasons is exempt from regulation as hazardous (40 CFR 261.4(b)(9)). The exemption is limited to wood wastes generated by persons who use wood products for their intended end use. Several commenters claimed that large quantities of treated wood wastes will be newly regulated as hazardous under the TC, and they argued that this result is inconsistent with other EPA policies and regulations. Most of these commenters recommended that EPA expand the existing exemption for arsenic-treated wood waste to encompass all treated wood that exhibits the TC.

EPA has decided not to expand the existing exemption for arsenic-treated wood. If a wood waste does exhibit the TC for a constituent other than arsenic, or if the waste is hazardous waste for any other reasons or reasons, the

Agency believes that the waste should be regulated as hazardous, in order to protect human health and the environment. The arsenic-treated wood exemption is not being revoked at this time, but it may be reevaluated in the future.

5. Food, Drug, and Cosmetic Act (FDCA)

a. Food Wastes. Several commenters noted that allowable levels set by the Food and Drug Administration (FDA) under the Food, Drug, and Cosmetics Act (FDCA) are, in some cases, higher than the proposed TC regulatory levels for the same chemicals. Most of these commenters then asserted that if it is safe to consume substances containing pesticides or additives, it must also be safe to place such substances in municipal landfills. Some commenters expressed concern that food wastes that comply with FDCA pesticide tolerance or action levels may nevertheless have to be handled as hazardous wastes as a result of the TC. One food processing industry trade association requested that the final TC rule state that any waste from food already in compliance with a tolerance or action level set by EPA or FDA is nonhazardous.

The Agency acknowledges that for certain chemicals in waste, it proposed TC regulatory levels lower than FDCA tolerances or action levels in food. However, it is inappropriate to make a direct comparison of these two sets of levels. FDCA levels are set for concentrations in food products, while TC levels apply to concentrations in the *leachate* from waste materials. Because not all toxic constituents leach from the waste, levels in the leachate are lower than in the waste material itself. Accordingly, for a food waste to be hazardous, the waste would have to have constituent concentrations higher than the TC levels. The Agency is unaware of any food-related wastes that will be regulated as hazardous under the TC rule. (In addition, unlike the FDCA, RCRA does not allow consideration of economic factors in establishing regulatory levels of concern.)

If any food waste does exhibit the TC, it may be subject to lesser requirements as household waste (40 CFR 261.4(b)(1)) or under the small quantity generator provisions (40 CFR 261.5). For non-household food wastes that fail the TC (i.e., leachate from the waste contains contaminants in levels equal to or above the regulatory levels promulgated in today's rule) and that are generated in large quantities, it is appropriate that they be managed in a controlled manner to protect human health and the environment. Because EPA sees no conflict between the TC rule and

tolerance or action levels under FDCA, this rule contains no exemption for wastes that meet the FDCA standards.

b. Pharmaceutical and Cosmetic Wastes. Several commenters, arguing that the proposed TC levels were too low, pointed out that the proposed regulatory levels are lower than FDCA-allowed levels for the same chemicals in drugs or cosmetics.

Although the proposed TC regulatory levels for certain chemicals were lower than the FDCA levels for the same chemicals in drug and cosmetic products, the levels are higher in the final rule. Moreover, it is clear that different factors must be taken into account when regulating these constituents in drugs and cosmetics rather than in solid wastes, as confirmed by different statutory mandates. The constituents in drugs and cosmetics products, often used in very small quantities, serve a useful function and may be therapeutic in certain quantities and under proper circumstances. However, this does not mean that these same constituents should not be controlled where found at TC levels in waste materials.

Of course, drug and cosmetic wastes generated in households are not subject to subtitle C regulation (40 CFR 261.4(b)(1)) nor are wastes generated by small quantity generators (less than 100 kg/mo of non-acute hazardous waste—see 40 CFR 261.5). However, drug and cosmetic products when discarded may present risks to human health and the environment if disposed in large volumes. Thus, EPA maintains that regulation of large quantities of drug or cosmetic wastes exhibiting the TC is appropriate and not in conflict with the existing FDCA program.

6. Used Oil Recycling Act

The Used Oil Recycling Act of 1980 (UORA), which amended RCRA, was intended to increase safe recycling and reuse of used oil. It established that it is in the national interest to recycle used oil in a manner that both protects public health and the environment and conserves energy and materials. The UORA has been incorporated in section 3014 of RCRA.

Section 3014 of RCRA, as amended by HSWA, requires EPA to make a determination of whether to list or identify used oil as a hazardous waste (see RCRA section 3014(b)). In response to this statutory directive, EPA proposed to list most types of used oil, including recycled used oil, as a hazardous waste on November 29, 1985 (see 50 FR 49258). EPA subsequently decided in November, 1986 not to list used oil because the Agency believed that the listing would

discourage recycling of used oil and could result in an increase in the amount of used oil that is disposed of or illegally dumped. The Agency decided to continue to study whether used oil that is disposed should be listed as a hazardous waste under RCRA or regulated under different statutes (see 51 FR 41900 (November 19, 1986)). EPA's decision to withdraw the proposed listing of used oils was invalidated by the D.C. Circuit Court of Appeals in 1988. The Agency was directed by the Court to reconsider the listing of used oil as a hazardous waste based on the technical criteria contained in RCRA section 3001.

Some commenters claimed that used oil would be brought into the subtitle C system under the TC proposal. They stated that used oil is likely to fail the TC test for both aromatic hydrocarbons (e.g., benzene) and chlorinated solvents (e.g., trichloroethylene and tetrachloroethylene). The commenters argued that regulating used oil as a hazardous waste would be inconsistent with the intent of the UORA, as well as with current Agency policies regarding used oil.

Under today's rule, used oil will be regulated as a hazardous waste only: (1) If it exhibits one or more of the hazardous waste characteristics defined in subpart C of 40 CFR part 261 (including the TC as finalized today) and (2) if it is disposed of (rather than recycled). On the other hand, used oil that exhibits one or more of the hazardous waste characteristics and is recycled is exempt from regulation (see 40 CFR 261.6(a)(3)(iii)) except as provided in subpart E of 40 CFR part 266. In addition, RCRA prohibits the use of used oil as a dust suppressant or for road treatment if it is contaminated with dioxin or mixed with a hazardous waste. Thus, used oil that exhibits one, or more of the characteristics (except for ignitability) cannot be used as a dust suppressant. In particular, the regulations have the following effect:

- Solid waste that is hazardous waste because it fails a characteristic and that is recycled (except by burning or use as a dust suppressant) is exempt from regulation.

- Characteristically hazardous used oil that is disposed of (or incinerated without recovery of energy value) is subject to full RCRA subtitle C regulation.

- Characteristically hazardous used oil that is being burned for energy recovery is subject to subpart E of part 266—i.e., off-specification used oil is subject to certain administrative requirements, while specification used

oil is subject only to the analysis and recordkeeping requirements of 40 CFR 266.43(b) (1) and (6).

- Characteristically hazardous used oil is prohibited from being used as a dust suppressant, unless it is hazardous solely for exhibiting the ignitability characteristic (see 40 CFR 266.23(b)).

- Characteristically hazardous used oil that is recycled in any manner other than being burned for energy recovery (e.g., by being re-refined) is exempt from subtitle C regulation.

Therefore, today's rule will not affect the regulatory status of most recycled used oil. In fact, today's rule should encourage the recycling of used oil, and not discourage its recycling as suggested by some commenters. It should also be noted that some percentage of used oil already is defined as hazardous (i.e., exhibits one or more of the hazardous waste characteristics and is disposed). Consequently, the amount of used oil that is affected by this rule and is either disposed of or recycled by being burned for energy recovery or used as a dust suppressant will be even less.

The Agency is currently determining how best to deal with used oil listing and management issues. Section 3014 of RCRA also requires EPA to promulgate management standards for used oil that is recycled. Standards for controlling used oil which is recycled were proposed on November 29, 1985 (50 FR 49212), but have not been finalized. The Agency will be addressing these issues as well as addressing the listing determination in the near future.

7. Toxic Substances Control Act (TSCA)

EPA has decided to exempt from the application of this rule certain polychlorinated biphenyl (PCB) wastes that are regulated under the Toxic Substances Control Act (TSCA) and would be identified as hazardous because of today's rule. Specifically, PCB-containing dielectric fluids removed from electrical transformers, capacitors, and associated PCB-contaminated electrical equipment may exhibit the TC, and thus become hazardous wastes when disposed, not because they contain PCBs (which are not among the constituents regulated under the TC) but because they may contain other TC constituents, such as chlorinated benzenes. The Agency has decided to exempt such wastes from the subtitle C management standards because new regulation of these wastes under RCRA may be disruptive to the mandatory phaseout of PCBs in certain electrical transformers and capacitors. In addition, the Agency believes that the regulation of these wastes under TSCA is adequate to protect human health and

the environment. However, the exemption applies only to those dielectric fluids (as described above) that are fully regulated under TSCA. Other PCB-containing wastes that are hazardous (i.e., listed or exhibit a hazardous waste characteristic including the existing EPTC wastes—waste codes D004 through D017) are subject to all applicable subtitle C standards. Furthermore, these non-TC hazardous wastes that are (1) liquids containing PCBs at concentration greater than 50 ppm, or (2) solids containing PCBs listed in Appendix III of part 268 at concentrations greater than 1000 mg/Kg, are prohibited from land disposal under 40 CFR part 268.

The disposal and storage of PCB wastes is regulated under TSCA section 6(e)(1) authority rather than under subtitle C of RCRA. Since the enactment of TSCA, the manufacture, processing, and distribution in commerce of PCBs (without an exemption) has been banned and the use of PCB without authorization has been banned. In addition, EPA has developed comprehensive PCB disposal regulations under TSCA. This regulatory framework includes specific disposal requirements for defined classes of PCB wastes, specific marking requirements for PCB items, facility recordkeeping requirements, approval requirements for disposers, and a proposed notification and manifesting system modeled on the subtitle C "cradle to grave" tracking system.

One commenter stated that utility transformer dielectric fluids are likely to exhibit the revised TC and urged the Agency to exempt PCB-containing utility transformer dielectric fluids from the rule. The commenter noted that the regulation of PCBs is unique because the manufacture of PCBs (without an exemption) has been banned. Thus, the critical regulatory concern with respect to these PCB wastes is the need to expedite safe disposal of the chemical. The commenter stressed that if PCB wastes were to be regulated now under RCRA as well as under TSCA, serious legal, practical and administrative complications could result.

The Agency agrees with the commenter. The most significant potential negative impact of dual regulation of these wastes under both RCRA subtitle C and TSCA results from the unique scope and timing of PCB disposal. The Agency estimates that approximately 312 million pounds of PCBs are dispersed among nearly 30 million discrete units of electrical equipment. The TSCA regulations require the phaseout of certain PCB-containing electrical transformers, and

EPA expects that the TSCA mandatory phaseout requirements and restrictions will render the next three years a peak period for PCB disposal. Under the authority of the TSCA mandatory phaseout, by October 1, 1990, owners of secondary network higher voltage transformers located in or near commercial buildings are required to either remove or reclassify these transformers. (Reclassification necessitates draining of all PCB fluids from the unit, and replacing them with non-PCB fluids or low concentration PCB fluids, and keeping the transformer in full service, under loaded conditions, for a minimum of three months.) In addition, the phaseout restrictions affect lower secondary voltage network units of PCB-containing electrical transformers located in or near commercial buildings; by October 1, 1993, such transformers must either be removed or be reclassified, or an alternative option for lower voltage units allows for providing enhanced electrical protection on such units by October 1, 1990. Radial PCB-containing electrical transformers must either have enhanced electrical protection or be removed.

The TSCA program, with which the regulated community is familiar, is specifically tailored to deal with the problem of widely dispersed waste generation and the timely disposal of a chemical that is no longer commercially produced. The confusion that could result from the addition of requirements under a separate regulatory disposal system, and the RCRA disincentives to waste production, would cause significant disruption to the expeditious disposal of large quantities of these PCB wastes if these wastes were to become subject to the RCRA hazardous waste regulations.

In addition, the Agency believes that the existing system for PCB disposal, including the existing TSCA disposal regulations and recent additions to the program (e.g., the proposed notification and manifesting rule, published at 53 FR 37436), are adequate to protect human health and the environment with respect to the disposal of these wastes. Thus, further regulation under RCRA for PCB-containing dielectric fluids and associated PCB-contaminated electrical equipment does not appear to be necessary at this time. The Agency will also evaluate the integration of the TSCA PCB regulations with the RCRA hazardous waste regulations for other PCB-containing wastes which are identified or listed as hazardous.

K. Implementation Issues

EPA received many comments concerning implementation of the TC rule. The comments addressed issues including the schedule for companies and municipalities to come into compliance with subtitle C requirements, exemptions and applicability, implications for permit modifications, and administrative requirements. Major comments on implementation are summarized and addressed below. Section V of this preamble further discusses how the Agency will implement today's rule.

1. Notification

In the June 13, 1986 Federal Register notice, EPA proposed to waive the RCRA section 3010 notification requirement for persons who manage TC wastes and have already: (1) Notified the Agency that they manage other hazardous wastes and (2) received an EPA identification number. Virtually all commenters who addressed the notification requirement supported EPA's proposal. However, one state agency opposed the proposal, on the grounds that a waiver would hinder efforts to develop a more accurate and complete understanding of hazardous waste management practices within the United States.

EPA has decided, as proposed, to waive the notification requirement for TC waste handlers that have already notified the Agency that they manage hazardous wastes and have received an EPA identification number. The Agency believes that, given the vast scope of the TC rule, a notification requirement for persons already identified within the hazardous waste management universe would present an administrative burden without providing any significant benefits to human health and the environment.

2. Effective Date

Several commenters claimed that the 6-month effective date of the TC rule would not provide them with sufficient time to come into compliance with the full array of hazardous waste regulations. Some commenters argued that it would be impossible for generators of TC wastes to test their wastes, obtain EPA identification numbers, arrange for transport and off-site management of their wastes, modify their short-term storage (i.e., accumulation) practices, and institute the necessary recordkeeping and reporting procedures within a 6-month time frame. The commenters stated that the time constraints are especially unreasonable in light of the shortages of

laboratory and TSDF capacity that can be expected to result from the TC revisions. Other commenters claimed that TSDFs will require more than 6 months to come into compliance with the interim status standards of 40 CFR part 265 (e.g., personnel training, contingency planning, and financial responsibility).

EPA appreciates the concerns of the commenters, and the Agency is aware that all of the commenters addressing the effective date for the TC rule encouraged EPA to adopt a delayed effective date for most, if not all, requirements. However, RCRA section 3010(b) requires that hazardous waste regulations become effective 6 months after the date of promulgation unless EPA has good cause to establish an earlier effective date. Thus, the effective date for the final TC rule will be 6 months from the date of promulgation.

However, EPA is promulgating different compliance dates for two different categories of waste generators: (1) All generators of more than 100 and less than 1,000 kg/month of hazardous waste (small-quantity generators) must come into compliance with subtitle C requirements for management of their TC waste within one year of today; and (2) all generators of 1,000 kg/month or more of hazardous waste are required to comply with all subtitle C requirements for TC wastes within six months of today, on the effective date of the rule.

All generators of over 1,000 kg/month of hazardous waste are required to comply with all applicable RCRA regulations for their TC wastes on the effective date of this rule. (The generator quantity refers to all of a generator's hazardous waste, not just newly hazardous TC waste.) The Agency recognizes that this compliance category will include two groups of generators: current hazardous waste generators, including small quantity hazardous waste generators who will be generating additional hazardous wastes and generators of large quantities of solid wastes who will be regulated as hazardous waste generators for the first time. EPA believes that both of these groups of generators should predominantly be large businesses and either be familiar with the waste management regulations or be in a position to come into compliance with the requirements within the six month period. These persons should have been aware of the Agency's statutory commitment and have had ample notice of the impending TC rule through the proposed rule and supplemental notices.

On the other hand, the Agency is allowing an additional six months from

the effective date (i.e., one year from today) for generators of greater than 100 but less than 1,000 kg/month of hazardous waste (small quantity generators) to comply with all applicable subtitle C regulations. (As with the over 1,000 kg/month category, this quantity refers to the total quantity of a generator's hazardous waste, not just newly hazardous TC waste.) The TC has the potential to affect an extremely large number of handlers that never before have been subject to the hazardous waste regulations; many of these firms are small businesses. Handlers that will assume small quantity generator status as a result of the TC rule are most likely not regulated under subtitle C at the present time. Thus, these handlers are less likely to be familiar with the waste management regulations, or because of their small business status, will need more than six months to come into compliance with the regulations.

As already indicated, these handlers are likely to be small entities and may be unaware that their practices, which were not regulated in the past, will now be regulated as a result of today's rule. The Agency recognizes that these new handlers of small quantities of TC wastes (over 100 but less than 1,000 kg/month) may have to test their wastes, obtain EPA identification numbers, arrange for transport and off-site management of their wastes, modify their short-term storage (i.e., accumulation) practices, and institute the necessary recordkeeping and reporting procedures. As recognized by the Agency in establishing special requirements for small quantity generators, the burden of initial compliance may fall relatively harder on these generators (see 51 FR 10146, March 24, 1986). Thus, to lessen the burden on the handlers of small quantities of TC wastes, the Agency has developed an outreach program targeted for the small quantity generators which will inform new generators of the required steps necessary to enter the hazardous waste management system. Effective program outreach, however, will take more than 6 months.

In amending RCRA in 1984, Congress, in requiring EPA to promulgate regulations for small quantity generators, indicated that the Agency should consider the impacts on small businesses, while still providing protection to human health and the environment. While this rule is not promulgated pursuant to this provision, we believe the intent of Congress is for the Agency (in promulgating any rule substantially affecting small quantity

generators) to consider such impacts and to provide procedural adjustments where appropriate. EPA believes that extending the compliance date for this group of generators will allow the Agency time to provide necessary assistance and outreach to these generators and will allow sufficient time for small quantity generators to comply with the full range of applicable subtitle C requirements. Finally, by delaying the effective date of the TC for small quantity generators, the Agency will be able to concentrate its initial implementation efforts on large quantity generators, who will generate the vast majority of waste brought into the RCRA subtitle C system under this rule. Thus, because the delayed compliance date for small quantity generators enables the Agency to focus its attention on the waste generators expected to produce the largest volumes of waste, it maximizes protection of human health and the environment.

In summary, the Agency believes that allowing an additional six months for small quantity generators to come into full compliance with the TC will serve two purposes. First, it will allow the Agency time to educate small quantity generators on the RCRA rules, while at the same time, allowing the Agency to focus immediate implementation efforts on large generators of hazardous waste. Second, it will provide the necessary time for small quantity generators to comply with subtitle C requirements as a result of the TC.

3. Permitting

Several commenters expressed concern that they would not be able to submit required permit modifications before the effective date of the rule. Some commenters also expressed concern that the TC revisions could

place a significant burden on the system for permitting hazardous waste treatment, storage, and disposal facilities.

The commenters recommended a number of different mechanisms for reducing the prospective burdens on the permitting system, such as (1) Allowing permitted facilities to operate under interim status with respect to newly regulated wastes; (2) handling requests from permitted facilities to manage TC wastes as minor permit modifications, rather than as major permit modifications (especially in the case of facilities that are already permitted to manage listed wastes containing TC constituents); (3) requiring permitted facilities to apply for major permit modifications by the effective date of the TC rule, but not requiring them to actually obtain the modification until a later date; or (4) delaying the effective date of the final rule.

EPA has promulgated amendments to the procedures for permit modifications for treatment, storage, and disposal facilities on September 28, 1988 (53 FR 37934). These changes to the regulations should generally allay the concerns expressed by the commenters. Although the new permit modifications rule will not automatically be effective in authorized states, EPA expects that many authorized states will adopt the provisions and EPA plans to use the new permit modification procedures to implement the TC. The new permit modification procedures are further explained in section V.

IV. Regulatory Levels

The regulatory levels established in today's rule are based on two elements—the toxicity of each constituent and the expected fate of the constituent when released into the

environment. The latter element is expressed as a dilution/attenuation factor (DAF), which, when multiplied by the toxicity value, results in the regulatory level. It is this level that, when compared to the results of the TCLP, defines a waste as hazardous. If the waste leachate generated through the TCLP contains constituents equal to or above the regulatory levels in today's rule, the waste is a hazardous waste.

This section summarizes the Agency's basis for selecting the final list of constituents and the regulatory levels that are being promulgated in today's rule.

A. List of Constituents

1. Proposed List

The Agency initially proposed regulatory levels for 38 new organic constituents, proposed to modify the regulatory levels for the six organic constituents that are regulated under the existing EPTC, and proposed to retain the existing levels for the eight inorganic constituents regulated in the existing EPTC (see Table IV-1).

2. Constituents for Which Final Regulatory Levels Are Not Now Being Promulgated

The model used to predict DAFs for today's rule accounts for hydrolysis, which may occur during the transport of a constituent through the environment. If a constituent hydrolyzes during transport, its concentration will decrease more rapidly than it would if it were influenced by dispersion alone. Therefore, the DAF for a constituent that hydrolyzes during transport will be higher than that for a constituent that does not hydrolyze. However, the products that are formed because of hydrolysis of the constituent also may be toxic.

TABLE IV-1.—TC CONSTITUENTS AND REGULATORY LEVELS PROPOSED JUNE 13, 1986

HWNO ¹	Constituents	CASNO ²	Regulatory level (mg/L)
D016.....	Acrylonitrile.....	107-13-1	5.0
D004.....	Arsenic.....	7440-38-2	5.0
D005.....	Barium.....	7440-39-3	100.0
D019.....	Benzene.....	71-43-2	0.07
D020.....	Bis(2-chloroethyl) ether.....	111-44-4	0.05
D006.....	Cadmium.....	7440-43-9	1.0
D021.....	Carbon disulfide.....	75-15-0	14.4
D022.....	Carbon tetrachloride.....	58-23-5	0.07
D023.....	Chlordane.....	57-74-9	0.03
D024.....	Chlorobenzene.....	108-90-7	1.4
D025.....	Chloroform.....	67-66-3	0.07
D007.....	Chromium.....	1333-82-0	5.0
D026.....	o-Cresol.....	95-46-7	10.0
D027.....	m-Cresol.....	106-39-4	10.0
D028.....	p-Cresol.....	106-44-5	10.0
D016.....	2,4-D.....	94-75-7	1.4
D029.....	1,2-Dichlorobenzene.....	96-50-1	4.3
D030.....	1,4-Dichlorobenzene.....	106-46-7	10.8
D031.....	1,2-Dichloroethane.....	107-08-2	0.40

TABLE IV-1.—TC CONSTITUENTS AND REGULATORY LEVELS PROPOSED JUNE 13, 1986—Continued

HWNO ¹	Constituents	CASNO ²	Regulatory level (mg/L)
D032	1,1-Dichloroethylene	75-35-4	0.1
D033	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.003
D034	Heptachlor (and its hydroxide)	76-44-2	0.001
D035	Hexachlorobenzene	118-74-1	0.13
D036	Hexachlorobutadiene	87-68-3	0.72
D037	Hexachloroethane	67-72-1	4.3
D038	Isobutanol	78-83-1	36.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.06
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	1.4
D039	Methylene chloride	75-09-2	8.6
D040	Methyl ethyl ketone	78-93-3	7.2
D041	Nitrobenzene	96-95-3	0.13
D042	Pentachlorophenol	87-86-5	3.6
D043	Phenol	106-95-2	14.4
D044	Pyridine	110-86-1	5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D045	1,1,2,2-Tetrachloroethane	630-20-6	10.0
D046	1,1,2,2-Tetrachloroethane	79-34-5	1.3
D047	Tetrachloroethylene	127-18-4	0.1
D048	2,3,4,6-Tetrachlorophenol	58-90-2	1.5
D049	Toluene	106-88-3	14.4
D015	Toxaphene	8001-35-2	0.07
D050	1,1,1-Trichloroethane	71-55-6	30.0
D051	1,1,2-Trichloroethane	79-00-5	1.2
D052	Trichloroethylene	79-01-6	0.07
D053	2,4,5-Trichlorophenol	95-95-4	5.8
D054	2,4,6-Trichlorophenol	88-06-2	0.30
D017	2,4,5-TP (Silvex)	93-76-5	0.14
D066	Vinyl chloride	75-01-4	0.05

¹ EPA Hazardous Waste Code Number.² Chemical Abstracts Service number.

As explained in section III.E.2.a.vii, the Agency does not have sufficient data to address the formation and toxicity of hydrolysis products. Therefore, in today's rule, the Agency is not establishing regulatory levels for those new organic constituents that are expected to appreciably hydrolyze and thereby form potentially toxic by-products. Rather, the Agency expects to address these constituents in a future Federal Register notice.

Three of the organic constituents currently regulated by the EPTC may hydrolyze to a significant extent. However, due to uncertainties associated with this mechanism, the Agency believes that it would not be prudent to remove these constituents from regulation on a temporary basis (i.e., until their hydrolysis products can be assessed). Therefore, these constituents (endrin, methoxychlor, and toxaphene) will continue to be regulated at the existing EPTC levels in the interim.

Also, as explained in section III.E.2.a, the Agency has concluded that the steady-state assumption used in the ground water transport model may not be appropriate for all constituents. The constituents for which a steady-state solution may not be appropriate are

being deferred from the list of proposed constituents. EPA will promulgate or repropose (as warranted) regulatory levels for these constituents in a future Federal Register notice.

3. Final List of Constituents

a. Organic Constituents. The organic constituents for which the Agency is today establishing regulatory levels (i.e., those that are on the current EP list, and those that do not appreciably hydrolyze and for which a steady-state assumption is appropriate) are presented in Table IV-2.

TABLE IV-2.—ORGANIC CONSTITUENTS

EPA HW number ¹	Contaminant	CAS number ²
D018	Benzene	71-43-2
D019	Carbon tetrachloride	56-23-5
D020	Chlordane	57-74-9
D021	Chlorobenzene	106-90-7
D022	Chloroform	67-68-3
D023	o-Cresol	95-46-7
D024	m-Cresol	106-39-4
D025	p-Cresol	106-44-5
D016	2,4-D	94-75-7
D027	1,4-Dichlorobenzene	106-46-7
D028	1,2-Dichloroethane	107-06-2
D029	1,1-Dichloroethylene	75-35-4
D030	2,4-Dinitrotoluene	121-14-2
D012	Endrin	72-20-8

TABLE IV-2.—ORGANIC CONSTITUENTS—Continued

EPA HW number ¹	Contaminant	CAS number ²
D031	Heptachlor (and its hydroxide)	76-44-2
D032	Hexachlorobenzene	118-74-1
D033	Hexachloro-1,3-butadiene	87-68-3
D034	Hexachloroethane	67-72-1
D013	Lindane	58-89-9
D014	Methoxychlor	72-43-5
D035	Methyl ethyl ketone	78-93-3
D036	Nitrobenzene	96-95-3
D037	Pentachlorophenol	87-86-5
D038	Pyridine	110-86-1
D039	Tetrachloroethylene	127-18-4
D015	Toxaphene	8001-35-2
D040	Trichloroethylene	79-01-6
D041	2,4,5-Trichlorophenol	95-95-4
D042	2,4,6-Trichlorophenol	88-06-2
D017	2,4,5-TP (Silvex)	93-76-5
D043	Vinyl chloride	75-01-4

¹ Hazardous waste number.² Chemical abstracts service number.

b. Inorganic Constituents. Among the constituents that were proposed for inclusion in the TC were eight inorganic constituents that are currently regulated in the EPTC. Because EPACML does not currently accommodate metallic species, it cannot be used to predict DAFs for these constituents. Therefore, the Agency is today retaining the regulatory

levels for these constituents at their current levels. When the MINTEQ model (see III.B.5.c) is available to accommodate these constituents, the Agency will reconsider their regulatory levels and propose new ones, if so warranted.

B. Selection of DAFs

The selection of the appropriate DAF for the constituents addressed in today's rule is based on the municipal landfill scenario, as proposed. However, based on comments on fate processes that were not appropriately considered in the model, several constituents have been omitted from the proposed list of constituents—specifically, those that may hydrolyze to more than a negligible extent and those for which the steady-state assumption may not be appropriate.

For the remaining constituents, the Agency believes that a DAF of 100 is appropriate for establishing regulatory levels in today's rule. The basis for this conclusion is explained in Section III.E.4.d.

C. Analytical Constraints

The regulatory levels for the compounds proposed for inclusion in the TC span approximately five orders of magnitude (i.e., from the low parts per billion to 100 parts per million). The calculated regulatory levels for three of these compounds (2,4-dinitrotoluene, hexachlorobenzene, and pyridine) are below the concentrations measurable using currently available methods.

EPA believes that the appropriate way to deal with a calculated regulatory level that is below the analytical detection limit is to use (for the regulatory level) the lowest level of detection that can be attained. The lowest level of a particular chemical that can be reliably measured within acceptable limits of precision and accuracy under routine laboratory operating conditions is that chemical's "quantitation limit." A quantitation limit is determined through such studies as method performance evaluations.

If data from interlaboratory studies are unavailable, quantitation limits are estimated based on the detection limits and an estimated multiplier that represents a practical and routinely achievable level with relatively high certainty that the reported value is reliable. EPA proposed to use a value of five times the analytical detection limit as the quantitation limit and to set the regulatory level at the quantitation limit for those compounds for which the calculated regulatory level is below the quantitation limit, and interlaboratory studies were not available.

Because TCLP extracts are aqueous in nature, the quantitation limits used in this rule are based on the presence of these compounds in a water matrix. The Agency received many comments on the use of the quantitation limit as the regulatory level for the three compounds with health-based thresholds below that level. Most commenters expressed concern that quantitation limits based on analysis of the constituent in a water matrix may not be achievable in more complex samples. The comments discussed potential complications that could hamper analysis of various kinds of wastes and recommended that EPA work toward determining actual quantitation limits on real wastes.

The Agency agrees that the ability to achieve the quantitation levels listed in the proposed rule is strongly influenced by the type of waste that is being analyzed. However, determination of a matrix-dependent quantitation limit would require analysis of a wide variety of wastes. EPA believes that it would be impractical to perform such waste-specific analyses at this time. Therefore, EPA has chosen to use the proposed definition (i.e., five times the method detection limit) for the quantitation limit.

A number of commenters addressed the issue of the generic multiplier used to derive the quantitation limit. Several commenters recommended using 10 to 25 times the detection limit as the regulatory level, while a few commenters supported setting the

regulatory level at the detection limit itself, to provide what they believe would be greater environmental protection.

The Agency is working to improve the sensitivity of analytical methods to provide increased protection of human health and the environment. Analytical detection limits are, by definition, not routinely achievable under average laboratory conditions. Thus, a regulatory level set at the detection limit would be difficult for the Agency to enforce and would make it difficult for the regulated community to demonstrate compliance. To provide a consistently enforceable regulatory limit while providing assurance that those wastes that clearly pose hazards are subject to subtitle C requirements, the Agency will set the regulatory level at five times the detection limit. The Agency has a high degree of confidence in setting the regulatory level at the quantitation limit (i.e., five times the detection limit) because other programs within the Agency have successfully used this method in the past to set regulatory levels (e.g., the Contract Laboratory Program under the Superfund Program).

Comments on the use of the quantitation limit are addressed more extensively in the testing methods background document.

D. Final Regulatory Levels

The regulatory levels being promulgated today are equal to the product of each constituent's toxicity threshold and the DAF or the quantitation limit. These regulatory levels are presented in Table IV-3. These levels are designed to identify wastes that clearly pose a hazard and define those wastes as hazardous. However, it should be noted that wastes that do not exhibit this characteristic (e.g., result in TCLP levels that are less than the regulatory levels) are not necessarily nonhazardous and may be listed as a hazardous waste or become hazardous under other hazardous waste characteristics.

TABLE IV-3.—TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS

EPA HW number ¹	Constituent	CAS Number ²	Regulatory level (mg/L)
D004.....	Arsenic.....	7440-38-2	5.0
D005.....	Barium.....	7440-39-3	100.0
D018.....	Benzene.....	71-43-2	0.5
D006.....	Cadmium.....	7440-43-9	1.0
D019.....	Carbon tetrachloride.....	56-23-5	0.5
D020.....	Chlordane.....	57-74-9	0.03
D021.....	Chlorobenzene.....	108-90-7	100.0
D022.....	Chloroform.....	67-66-3	6.0
D007.....	Chromium.....	7440-47-3	5.0
O023.....	o-Cresol.....	95-48-7	* 200.0

TABLE IV-3.—TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS—Continued

EPA HW number ¹	Constituent	CAS Number ²	Regulatory level (mg/L)
D024.....	m-Cresol.....	108-39-4	* 200.0
D025.....	p-Cresol.....	106-44-5	* 200.0
D026.....	Cresol.....		* 200.0
D016.....	2,4-D.....	94-75-7	10.0
D027.....	1,4-Dichlorobenzene.....	106-46-7	7.5
D028.....	1,2-Dichloroethane.....	107-06-2	0.5
D029.....	1,1-Dichloroethylene.....	75-35-4	0.7
D030.....	2,4-Dinitrotoluene.....	121-14-2	³ 0.13
D012.....	Endrin.....	72-20-8	0.02
D031.....	Heptachlor (and its hydroxide).....	76-44-8	0.008
D032.....	Hexachlorobenzene.....	118-74-1	³ 0.13
D033.....	Hexachloro-1,3-butadiene.....	87-68-3	0.5
D034.....	Hexachloroethane.....	67-72-1	3.0
D008.....	Lead.....	7439-92-1	5.0
D013.....	Lindane.....	58-89-9	0.4
D009.....	Mercury.....	7439-97-6	0.2
D014.....	Methoxychlor.....	72-43-5	10.0
D035.....	Methyl ethyl ketone.....	78-93-3	200.0
D036.....	Nitrobenzene.....	98-95-3	2.0
D037.....	Pentachlorophenol.....	87-86-5	100.0
D038.....	Pyridine.....	110-86-1	³ 5.0
D010.....	Selenium.....	7782-49-2	1.0
D011.....	Silver.....	7440-22-4	5.0
D039.....	Tetrachloroethylene.....	127-18-4	0.7
D015.....	Toxaphene.....	8001-35-2	0.5
D040.....	Trichloroethylene.....	79-01-6	0.5
D041.....	2,4,5-Trichlorophenol.....	95-95-4	400.0
D042.....	2,4,6-Trichlorophenol.....	88-06-2	2.0
D017.....	2,4,5-TP (Silvex).....	93-72-1	1.0
D043.....	Vinyl chloride.....	75-01-4	0.2

¹ Hazardous waste number.² Chemical abstracts service number.³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

* If o-m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level for total cresol is 200 mg/L.

V. Implementation

This section is intended to assist the regulated community in understanding their regulatory obligations for managing TC wastes. Responses to comments and an analysis of issues related to implementation were presented in section IIIK.

The first step in a solid waste generator's decision making process must be to determine whether or not particular wastes are hazardous (40 CFR 262.11). If a waste is excluded from regulation under 40 CFR 261.4, or if it is a listed hazardous waste under subpart D of 40 CFR part 261, then no further determination is necessary. If a waste is neither excluded nor listed, a generator must determine whether the waste exhibits any of the characteristics of hazardous waste; the Toxicity Characteristic is one such characteristic of hazardous waste. A generator may determine if a waste exhibits a characteristic either by testing the waste or applying knowledge of the waste, the raw materials, and the processes used in its generation.

When a waste is determined to be hazardous, handlers of that waste must

comply with any applicable standards in parts 262, 263, 264, 265, 266, 267, 268 and 270 of chapter 40. Table V-1 presents an implementation timeline for the TC. The remainder of this section illuminates five implementation concerns: state authority, integration of today's TC with the existing EPTC, notification, permitting, and compliance date.

TABLE V-1.—IMPLEMENTATION TIMELINE FOR THE TOXICITY CHARACTERISTIC

0 Months: Publication in the Federal Register.
3 Months:
• Generators of 1000 kg/mo or more and TSDFs who have not previously notified submit 3010 Notification to EPA.
6 Months:
• Facilities wishing to avoid entering the RCRA program cease managing newly regulated TC hazardous wastes. Units that were receiving TC hazardous wastes must cease further receipt in order to avoid regulation under Subtitle C.
• Large quantity generators begin to comply with all applicable Subtitle C regulations for newly regulated TC wastes.

- Newly regulated facilities.
 - Submit Part A permit application.
- Already regulated facilities.
 - Interim Status Facilities: submit amended Part A permit application.
 - Permitted TSDFs: submit Class 1 permit modification.

12 Months:

- Small quantity generators begin to comply with all applicable Subtitle C regulations for newly regulated TC wastes.
- Already regulated facilities.
 - Permitted TSDFs: submit Class 2 or Class 3 permit modifications.

18 Months:

- Newly regulated land disposal units: submit Part B permit application and certifications to EPA—Interim Status terminates for those land disposal units that did not submit their Part B permit application and certifications by this date.

A. State Authority

1. Applicability of Final Rule in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified states to

administer and enforce the RCRA program within the state (see 40 CFR part 271 for the standards and requirements for authorization). Following authorization, EPA retains enforcement authority under sections 3008, 7003 and 3013 of RCRA, although authorized states have primary enforcement responsibility. Prior to HSWA, a state with final authorization administered its hazardous waste program entirely in lieu of the federal program. The federal requirements no longer applied in the authorized state, and EPA could not issue permits for any facilities in a state that was authorized to issue permits. When new, more stringent federal requirements were promulgated or enacted, the state was obligated to enact equivalent authority within specified time frames. New federal requirements did not take effect in an authorized state until the state adopted the requirements as state law.

In contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by HSWA take effect in authorized states at the same time that they take effect in nonauthorized states. EPA is directed to carry out those requirements and prohibitions in authorized states, including the issuance of permits, until the state is granted authorization to do so. While states must still adopt HSWA-related provisions as state law to retain final authorization, the HSWA requirements are implemented by EPA in authorized states in the interim.

Today's rule is promulgated pursuant to RCRA section 3001(g) and (h). These provisions were added by HSWA. Therefore, the Agency is adding the requirement to Table 1 in § 271.1(j), which identifies the federal program requirements that are promulgated pursuant to HSWA and that take effect in all states, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1, as discussed in the following section of this preamble.

2. Effect on State Authorization

As noted above, EPA will implement today's rule in authorized states until they modify their programs to adopt these rules and the modifications are approved by EPA. Because the rule is promulgated pursuant to HSWA, a state

submitting a program modification may apply to receive either interim or final authorization under section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for state program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations will expire January 1, 1993 (see 40 CFR 271.24(c)).

40 CFR 271.21(e)(2) requires that states with final authorization must modify their programs to reflect federal program changes, and they must subsequently submit the modifications to EPA for approval. The deadline for state program modifications for this rule is July 1, 1991 (or July 1, 1992, if a state statutory change is needed). These deadlines can be extended in certain cases (40 CFR 271.21(e)(3)). Once EPA approves the modification, the state requirements become subtitle C RCRA requirements. States with authorized RCRA programs may already have requirements similar to those in today's rule. These state regulations have not been assessed against the federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a state is not authorized to implement these requirements in lieu of EPA until the state program modification is approved. Of course, states with existing standards may continue to administer and enforce their standards as a matter of state law. In implementing the federal program, EPA will work with states under cooperative agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the states in their program implementation efforts, rather than take separate actions under federal authority.

States that submit their official applications for final authorization less than 12 months after the effective date of these standards are not required to include standards equivalent to these standards in their application. However, the state must modify its program by the deadline set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their application. The

process and schedule for final state authorization applications is described in 40 CFR 271.3.

B. Integration of Today's Final Rule with Existing EPTC

As explained above, because this rule is promulgated pursuant to HSWA, it will be effective six months from today in both authorized and unauthorized states and will be implemented by EPA until states receive authorization for this rule. Thus, beginning on the effective date, large quantity generators that generate TC waste in all states are responsible for complying with the appropriate requirements. However, the rule promulgated today also revises an existing RCRA rule defining hazardous wastes that authorized states have been implementing for some time. The two principal changes in the rule are the revision to the leaching procedure, by replacing the EP with the TCLP, and the addition of constituents for which the leachate will be analyzed. The discussion below and Table V-2 describe how state implementation of the existing EPTC will be integrated with EPA implementation of the TC as promulgated today.

1. Facilities Located in Authorized States

There are three types of facilities located in authorized states which are affected by today's rule: facilities which are already operating under a RCRA permit, facilities which are already operating under interim status, and facilities which are subject to RCRA permit requirements for the first time as a result of today's rule. Permitted and interim status facilities can also be affected by today's rule in three distinct ways: (1) The facility may already be managing wastes that are hazardous under the existing EPTC, (2) the facility may already be managing wastes that are hazardous under the existing EPTC but which also exhibit the toxicity characteristic for a new constituent(s) under today's rule (and thus the waste would have a new waste code), or (3) the facility may be managing a solid waste which is newly subject to regulation as a result of today's revision of the TC. Table V-2 summarizes the initial filing requirements and applicable standards for each category of facility.

TABLE V-2.—INTEGRATION OF TC WITH EXISTING EPTC

Status of State authorization	Facility status	Type of waste	What to file	Where to file	Applicable permitting standards
I. Authorized State	A. Permitted	1. Regulated EPA waste w/no new constituents under revised TC.	NA	NA	State permit standards.
		2. Regulated EP waste w/new constituents.	Class 1 permit modification under 40 CFR 270.42.	EPA Regional Office and State.	State permit standards.
		3. Previously unregulated waste in: -Already regulated unit. -Previously unregulated unit.	Class 1 permit modification under 40 CFR 270.42. ¹	EPA Regional Office and State.	State permit standards.
	B. Interim Status	1. Regulated EP waste w/no new constituents under revised TC.	NA	NA	40 CFR Part 265.
		2. Regulated EP waste w/new constituents under revised TC.	Revised Part A under 40 CFR 270.72.	EPA Regional Office and State.	State interim status standards.
		3. Previously unregulated waste.	Revised Part A under 40 CFR 270.72. ²	EPA Regional Office and State.	40 CFR Part 265.
	C. Newly-regulated	1. Regulated EP waste w/no new constituents under revised TC.	Part A and 3010 under 40 CFR 270.70. ³	EPA Regional Office	40 CFR Part 265.
		2. Regulated EP waste w/new constituents under revised TC.	NA	NA	40 CFR Part 264.
		3. Previously unregulated waste in: -Already regulated unit. -Previously unregulated unit.	Class 1 permit modification under 40 CFR 270.42. ¹	EPA Regional Office	40 CFR Part 265.
II. Nonauthorized State	A. Permitted	1. Regulated EP waste w/no new constituents under revised TC.	NA	NA	40 CFR Part 264.
		2. Regulate EP waste w/new constituents under revised TC.	Class 1 permit modification under 40 CFR 270.42.	EPA Regional Office	40 CFR Part 265.
		3. Previously unregulated waste in: -Already regulated unit. -Previously unregulated unit.	Class 1 permit modification under 40 CFR 270.42. ¹	EPA Regional Office	40 CFR Part 264.
	B. Interim Status	1. Regulated EP waste w/no new constituents under revised TC.	NA	NA	40 CFR Part 265.
		2. Regulated EP waste w/new constituents under revised TC.	Revised Part A under 40 CFR 270.72.	EPA Regional Office	40 CFR Part 265.
		3. Previously unregulated waste.	Revised Part A under 40 CFR 270.72. ²	EPA Regional Office	40 CFR Part 265.
	C. Newly-regulated	1. Regulated EP waste w/no new constituents under revised TC.	Part A and 3010 under 40 CFR 270.70. ³	EPA Regional Office	40 CFR Part 265.
		2. Regulated EP waste w/new constituents under revised TC.	NA	NA	40 CFR Part 264.
		3. Previously unregulated waste in: -Already regulated unit. -Previously unregulated unit.	Class 1 permit modification under 40 CFR 270.42. ¹	EPA Regional Office	40 CFR Part 265.

¹ Facility may also need to receive a Class 2 or Class 3 modification under CFR 270.42.

² If newly regulated waste is being managed in a land disposal unit, facility may need to submit certification of compliance within one year under 40 CFR 270.73.

³ If facility is a land disposal facility, Part B permit application and certification of compliance must be submitted within one year under RCRA Section 3005(e)(3) and 40 CFR 270.73.

For facilities which have been managing EPTC wastes under an authorized state program and the constituents exhibited by the wastes are unchanged under today's rule, (i.e., no waste code change is necessary), such interim status and permitted facilities have no changes to file with permitting authorities. Similarly, since the regulatory status of the waste is unchanged, management of that waste will continue to be regulated under the authorized state standards. The only effect of today's rule on such facilities is that the facility must use the TCLP when testing for toxic constituents. However, use of the EP in addition to the TCLP

may continue to be required as a matter of state law.

For facilities which have been managing EPTC wastes under an authorized state program and the constituents exhibited by the wastes have changed as a result of today's rule, the facility will need to change the waste code assigned to its TC wastes. Permitted facilities must submit permit modifications to EPA reflecting the new wastes codes. Because EPA must implement this rule until the state is authorized to do so, the permittee must comply with federal permit modification procedures under 40 CFR 270.42 rather than state permit modification procedures. However, because the

permit undergoing modification is most likely a joint EPA-state RCRA permit, a copy of the modification request should also be submitted to the authorized state. Similarly, interim status facilities must submit a revised part A permit application to EPA pursuant to 40 CFR 270.72, with a copy to state permitting authorities. Although these facilities must make appropriate waste code modifications to reflect the new TC constituents, the wastes are already regulated as EP wastes under the authorized state program. Accordingly, such wastes are not subject to any new management requirements as a result of this rule and must continue to comply with appropriate authorized state

requirements for management of these wastes.

Some permitted and interim status facilities in authorized states will be managing wastes which will become hazardous as a result of today's rule. These facilities must also submit permit modifications or part A permit application revisions to EPA. However, because these wastes were previously unregulated under RCRA, they also were not regulated under the authorized state program. As a result, if these wastes are in a previously unregulated unit, they will be subject to the self-implementing Federal standards for hazardous wastes management at 40 CFR part 265 until permit issuance (for interim status facilities) or modification (for permitted facilities). After permit issuance or modification, the Federal permitting standards at 40 CFR part 264 will apply to these wastes (or the state permitting standards if the permit is ultimately issued or modified by a state authorized for the TC). However, if the wastes are at a permitted facility in a unit that is already regulated, that unit will continue to comply with the applicable 40 CFR part 264 (or state equivalent) standards.

Facilities in authorized states which are newly subject to RCRA permit requirements as a result of today's rule must obtain an EPA identification number and submit their part A permit application and section 3010 notification to EPA in order to obtain interim status (see 40 CFR 270.70). Such facilities are subject to regulation under 40 CFR part 265 until a permit is issued by EPA or a state authorized for the TC.

2. Facilities Located in Unauthorized States

There are also three types of facilities located in unauthorized states which are affected by today's rule: already permitted facilities, facilities operating under interim status, and facilities newly subject to RCRA permit requirements under today's rule. As in authorized states, some of the permitted and interim status facilities have been managing EPTC wastes.

For interim status and permitted facilities which have been managing EPTC wastes that will exhibit no new constituents as a result of the replacement of the EP with the TCLP and the addition of constituents to the TC, there will be no waste code changes. Accordingly, such facilities do not need to submit permit modifications or revised permit applications to EPA and will continue to be subject to the applicable federal standards for hazardous waste management.

Facilities which have been managing EPTC wastes which exhibit the toxicity characteristic for new constituents as a result of today's changes to the TC must notify EPA of the waste code changes for its TC wastes. Permitted facilities must submit permit modifications to EPA as required under 40 CFR 270.42 that reflect the new waste codes. Interim status facilities must submit revised part A permit applications in accordance with 40 CFR 270.72. These facilities must continue to comply with the applicable federal standards for hazardous waste management.

Permitted and interim status facilities which manage waste that is newly defined as hazardous waste as a result of today's rule must also submit permit modification requests or part A permit application revisions to EPA. Facilities must manage these wastes in accordance with 40 CFR part 265 or 40 CFR part 264 until permit modification or issuance, depending on whether the waste is managed in a newly regulated or previously regulated unit.

Facilities which are newly subject to RCRA permit requirements as a result of today's rule must get an EPA identification number and a part A permit application to EPA in order to obtain interim status. Such facilities are subject to regulation under 40 CFR part 265 until a permit is issued.

C. Notification

Pursuant to RCRA section 3010, the Administrator may require all persons who handle hazardous wastes to notify EPA of their hazardous waste management activities within 90 days after the wastes are identified or listed as hazardous. This requirement may be applied even to those generators, transporters, and TSDFs who have previously notified EPA with respect to the management of other hazardous wastes.

In the June 13, 1986, *Federal Register* notice, EPA proposed to waive the notification requirement for persons who manage TC wastes and have already (1) notified the Agency that they manage other hazardous wastes and (2) received an EPA identification number. EPA has decided to waive the notification requirement as proposed. The Agency believes that, given the vast scope of the TC rule, a notification requirement for persons already identified within the hazardous waste management universe is unnecessary.

EPA is not waiving the notification requirement for TC waste handlers that have neither notified the Agency that they manage hazardous wastes nor received an EPA identification number. Those persons must notify EPA no later

than June 27, 1990 of these activities pursuant to section 3010 of RCRA. Notification instructions are set forth in 45 FR 12746, February 26, 1980.

D. Permitting

Currently permitted facilities that manage TC wastes must submit Class 1 permit modifications if they are to continue managing the newly regulated wastes in units that require a permit. The facilities must obtain the necessary modification by the effective date of the rule, or they will be prohibited from accepting additional TC wastes.

Interim status facilities that manage TC wastes in units that require a permit must file an amended part A permit application under 40 CFR 270.10(g) if they are to continue managing newly regulated wastes. The facilities must file the necessary amendments by the effective date of the rule, or they will not receive interim status with respect to the TC wastes (i.e., they will be prohibited from accepting additional TC wastes until permitted).

Newly regulated facilities (i.e., facilities at which the only hazardous wastes that are managed are newly regulated TC wastes) must qualify for interim status by the compliance date of the rule in order to continue managing TC wastes prior to receiving a permit. Under 40 CFR 270.70, an existing facility may obtain interim status by getting an EPA identification number and submitting a part A permit application. To retain interim status, a newly-regulated land disposal facility must submit a part B permit application within one year after the effective date of the rule and certify that the facility is in compliance with all applicable ground water monitoring and financial responsibility requirements (see RCRA section 3005(e)(3)).

EPA recently promulgated amendments to the procedures for permit modifications for treatment, storage, and disposal facilities (see 53 FR 37934, September 28, 1988). The following discussion assumes implementation in accordance with the new rule. EPA will implement the TC by using the new permit modification procedures, consistent with EPA policy (see 53 FR 37933, September 28, 1988).

Under the new regulation in § 270.42, there are now three classes of permit modifications with different submittal and public participation requirements for each class. In § 270.42(g), which concerns newly listed or identified wastes, a permitted facility that is "in existence" as a hazardous waste facility for the newly listed or identified waste on the effective date of the notice must

submit a Class 1 modification by that date. Essentially, this modification is a notification to the Agency that the facility is handling the waste. As part of the procedure, the permittee must also notify the public within 90 days of submittal to the Agency.

Next, within 180 days of the effective date, the permittee must submit a Class 2 or 3 modification to the Agency. A permittee may submit a Class 2 modification if the newly regulated waste will be disposed in existing TSD units and will not require additional or different management practices from those authorized in the permit. A Class 2 modification requires public notice by the facility owner of the modification request, a 60 day public comment period, and an informal meeting between the owner and the public within the 60 day period. The rule includes a "default provision," so that for Class 2 modifications, if the Agency does not make a decision within 120 days, the modification is automatically authorized for 180 days. If the Agency does not reach a decision by the end of that period, the modification is permanently authorized. If the newly regulated waste requires additional or different management practices, a Class 3 modification is required. The initial public notification and public meeting requirements are the same as for Class 2. However, after the end of the public comment period, the Agency will develop a draft permit modification, open a public comment period of 45 days and hold a public hearing.

E. Compliance Date

The Agency is promulgating two different compliance dates for two different categories of TC waste generators: (1) All generators of greater than 100 and less than 1,000 kg/month of hazardous waste (small-quantity generators) must come into compliance with subtitle C requirements for management of their TC waste within one year from today; and (2) all generators of 1,000 kg/month or more of hazardous waste and TSDFs are required to comply with all subtitle C requirements for TC wastes within six months from today, on the effective date of the rule. Thus the EPTC remains in effect until six months after today's date for large quantity generators and TSDFs, and remains in effect for 12 months after today's date for small quantity generators. The generator quantity refers to all of a generator's hazardous waste, not just newly hazardous TC waste.

Further discussion of the Agency's reasons for promulgating an extended compliance date for small-quantity

generators is provided in section III.K of this preamble. In summary, the Agency believes that allowing an additional six months for small quantity generators to come into full compliance with the TC will serve two purposes. First, it will allow the Agency time to educate small quantity generators on the RCRA rules while, at the same time, allowing the Agency to focus immediate implementation efforts on large volumes of hazardous waste. Second, it will provide the necessary time for small quantity generators to comply with subtitle C requirements as a result of the TC.

VI. Regulatory Requirements

A. Introduction

This portion of the preamble discusses the analyses required by Executive Order No. 12291 and the Regulatory Flexibility Act. The Agency is required under the Executive Order to estimate the costs, economic impacts, and benefits of "major" rules by conducting a regulatory impact analysis (RIA). Recognizing the potential of the Toxicity Characteristic (TC) rule to affect a broad spectrum of American industry, EPA prepared an RIA comparing several regulatory alternatives. Based on the results of this analysis, the Agency concluded that this final regulation is a major rule. Section VI.B presents the methodology and results of the RIA.

The Regulatory Flexibility Act requires the Agency to assess small business impacts resulting from regulations. The analysis of small business impacts indicated that the TC rule would not have a significant impact on small businesses, and therefore a formal regulatory flexibility analysis was not prepared. Section VI.C addresses potential effects on small businesses.

The Agency received many comments on the RIA for the June 13, 1988 proposal. A summary of comments, along with Agency responses, is included as section VI.D. Section VI.E discusses requirements under the Paperwork Reduction Act.

Details of the regulatory impact analysis and small business analysis are available in the RIA document for the final rule (Ref. 8). This final rule was submitted to the Office of Management and Budget for review as required by E.O. No. 12291.

B. Regulatory Impact Analysis

1. Executive Order No. 12291

Executive Order No. 12291 requires EPA to assess the effect of Agency actions during the development of regulations. Such an assessment

consists of a quantification of the potential costs, economic impacts, and benefits of a rule, as well as a description of any beneficial or adverse effects that cannot be quantified in monetary terms. In addition, Executive Order No. 12291 requires that regulatory agencies prepare a regulatory impact analysis (RIA) for major rules. Major rules are defined as those likely to result in (1) an annual cost to the economy of \$100 million or more; (2) a major increase in costs or prices for consumers or individual industries; or (3) significant adverse effects on competition, employment, investment, innovation, or international trade.

EPA prepared an RIA comparing the final TC rule with several regulatory alternatives. Based on the RIA, EPA estimates that the final TC rule is a major rule with annual compliance costs of between \$130 million and \$400 million. The analysis was conducted based on the Office of Management and Budget's "Interim Regulatory Impact Analysis Guidance" and EPA's "Guidelines for Performing Regulatory Impact Analyses."

2. Basic Approach

In the final rule, EPA is amending its hazardous waste identification regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA) by refining and expanding the existing Extraction Procedure Toxicity Characteristic (EPTC). The resulting TC includes a new extraction procedure (the Toxicity Characteristic Leaching Procedure or TCLP) and 25 new organic constituents in addition to the 14 existing EPTC constituents. Wastes exhibiting the TC, based on concentrations of constituents in the TCLP extract, are designated as hazardous wastes and are brought under subtitle C regulation.

EPA estimated the costs, economic impacts, and benefits of the final rule and of a number of major regulatory alternatives to the rule. Only the anticipated effects of the final rule are presented in this preamble; results for the regulatory alternatives are discussed in the RIA. In presenting the results of the analysis, the Agency has presented range estimates for costs, economic impacts, and benefits to express the uncertainty associated with certain analytical assumptions.

In order to gauge the effects of the final rule, EPA first identified wastes and industries which would be affected by the rule. Incremental costs for affected facilities were estimated based on the change in waste management practices which would be required once

the wastes became hazardous. These incremental costs were aggregated to estimate national costs of the rule.

Economic impacts on facilities were based on a comparison of facility compliance costs with costs of production and cash from operations. The potential for facility closures was also examined.

Benefits, like costs, were based on required changes in waste management practices. Benefit measures included human health risk reduction, resource damage reduction, and cleanup costs avoided. Facility-level benefit estimates were aggregated to obtain national benefits.

Section VI.B.3, below, presents the methodology used to estimate costs, economic impacts, and benefits. It also briefly describes the sensitivity analyses that were conducted to determine the significance of key analytical assumptions; these sensitivity analyses are discussed in more detail in the RIA. Limitations of the analytical approach (e.g., assumptions which are likely to overstate, understate, or create uncertainty in results) are discussed in the RIA. Results of the analysis of costs, economic impacts, and benefits are provided in section VI.B.4.

3. Methodology

The methodology for the RIA is presented in several parts. First, the procedure for identifying wastes and facilities affected by the TC is discussed. Next, the development of national cost estimates is presented. The section on economic impact methodology describes the criteria used in gauging impacts on the regulated community. Following that is a section that presents several alternative measures of benefits of the rule. The last section describes the methodology for analysis of used oil.

a. Determination of Affected Wastes and Facilities. The first step in estimating the impacts of the rule was to determine which wastes and facilities would be affected by the rule, based on waste characteristics, quantities, and management practices. No single data source contained all of this information, and none of the data were facility-specific. Therefore, the Agency assembled aggregated data (e.g., by industrial sector) from separate sources and used it to draw inferences on facility-level impacts.

Data on waste characterization and volume came primarily from a series of TC industry studies. (Ref. 19 through 29) These studies were conducted for major industrial categories identified as likely to generate significant quantities of TC wastes; other sectors, generating smaller

quantities of potentially affected waste, were not addressed. Standard Industrial Classifications (SICs) for the industrial sectors studied range between the two-digit and four-digit levels. The industries profiled are shown in Table VI-1.

TABLE VI-1.—POTENTIALLY AFFECTED INDUSTRIES CONSIDERED IN RIAs FOR THE PROPOSED AND FINAL TC RULES

Industry	SIC ¹	Proposed	Final
Textile Mills ²	22		X
Lumber and Wood Products ²	2421, 2499		X
Pulp and Paper ²	261, 262, 263, 266		X
Printing and Publishing	27		X
Plastics Materials and Resins ²	2821	X	X
Synthetic Rubber ²	2822	X	X
Synthetic Fibers ²	2823, 2824		X
Pharmaceuticals ²	283	X	X
Soaps and Other Detergents	2841	X	
Surface Active Agents	2843	X	
Paints and Allied Products	2851	X	
Organic Chemicals ²	2865, 2869	X	X
Agricultural Chemicals	2879	X	
Petroleum Refining ²	2911	X	X
Miscellaneous Petroleum and Coal Products ²	2992		X
Rubber and Miscellaneous Plastics Products ²	30		X
Non-Ferrous Wire Drawing and Insulation	3357	X	
Machinery and Mechanical Products	34 through 39		X
Pipelines, except Natural Gas ²	461		X
Electrical Services	4911		X
Wholesale Petroleum Marketing ³	517		X

¹ SICs listed are those defining the group considered in this analysis. SICs given at the two-digit or three-digit SIC level indicate that the analysis applies to all four-digit SICs contained within the broader category.

² Included in detailed quantitative analysis for the final RIA.

The industry studies provided data including waste type (wastewater, sludge, solid process residual, or organic liquid), waste quantity, constituent concentration ranges and distributions, and number of generating facilities. The data in the studies were based primarily on EPA's effluent guidelines reports, supplemented by best engineering judgement and data received in comments on the proposed rule or in follow-up correspondence (Refs. 30 and 31). Most of the wastes which were

included were related to wastewater treatment; there was relatively little data on process residuals. Wastes which were already hazardous by virtue of a listing or characteristic (e.g., the EPTC) were not included. Due to lack of data, certain types of wastes were not included in the analysis (e.g., contaminated soil, off-spec products, contaminated debris).

It is particularly difficult to predict the behavior of oily wastes in the TCLP test. For the purpose of deriving upper bound estimates of costs, economic impacts, and benefits, one assumption that EPA adopted was that oily non-liquid wastes would not present filtration problems in the TCLP (i.e., that the oily phase passes through the filter and hazardous constituents in the oil phase leach to the test extract) and that if extract concentrations exceeded regulatory levels, these wastes would fail the TC. As a basis for lower bound estimates for costs, economic impacts and benefits, the Agency assumed that no oily wastes will be caught by TC regulation because the oily phase (and corresponding high levels of toxic constituents) would not filter through to the extract in the TCLP.

Due to the lack of facility-specific waste generation data, certain assumptions had to be made to derive the quantity of each wastestream per facility. First, potentially affected facilities within each industrial sector were split between small (with less than 50 employees) and large (with 50 employees or more) facility size categories based on 1982 Census of Manufacturers data on the number of facilities by size category. (The 1982 Census data were the most recent available.) Second, the total quantity of potentially affected waste was distributed between small and large facilities based on Census of Manufacturers data on the value of shipments for the small and large size categories. Using the distribution of facilities and of total waste quantity between small and large size categories, EPA estimated wastestream quantity per facility for small and large facilities.

EPA conducted a sensitivity analysis in order to test the sensitivity of results to the assumed distribution of wastes based on value of shipments. Since the division of waste quantities based on value of shipments resulted in most waste being generated by large facilities, EPA tested the alternative assumption that waste quantities were split evenly between the large and small facility size categories in each industry. (Results of sensitivity analyses are presented in section VI.B.4.)

Baseline management practices (i.e., management practices in the absence of the regulation) were derived primarily from the Screening Survey of Industrial subtitle D Establishments. (Ref. 16.) This survey provided information on the percent of facilities, by industrial sector, which manage non-hazardous wastes on-site in landfills, surface impoundments, waste piles, and land application units. Other baseline management practices were not specifically identified in the survey; therefore, EPA had to use knowledge of potentially affected TC wastes to identify these other practices and estimate the percentage of facilities using them.

In the case of non-wastewaters, the other practices considered included management in off-site landfills and land application units. For wastewaters, the other baseline practices included management in tanks as part of a wastewater treatment system, direct discharge under a NPDES permit, or indirect discharge to a Publicly Owned Treatment Works. These other wastewater management practices were assumed to be permissible under subtitle C; therefore it was assumed that facilities using these practices for wastes which were identified as hazardous by the TC would not be affected by the TC rule. EPA examined the sensitivity of results to this assumption by assuming, alternatively, that all wastewaters were managed on site in subtitle D surface impoundments.

For organic liquids, EPA determined, based on the Office of Solid Waste's Industry Studies Database, that the most likely baseline management practices were recycling and burning. EPA assumed that incremental management costs for these wastes would not be significant and therefore did not include the wastes in the analysis.

By combining the waste characterization and volume data with the management practice data, it was possible to estimate, by industrial sector, the amount of waste and the number of facilities potentially affected by the TC.

In order to determine the quantity of each wastestream which would be affected by the TC, the regulatory levels for constituents in the waste were compared with the estimated concentration distributions, derived from the TC industry studies, for constituents in the waste leachate. The constituent which caused the largest percentage of the wastestream to fail the TC was designated as the "cost-driving" constituent, and the quantity exhibiting the TC due to the presence of that constituent was used as the affected

quantity. EPA tested the sensitivity of results to the assumption that waste would fail for a single driving constituent by adding the percentages failing for all constituents (up to 100 percent).

Due to the lack of facility-specific data, it was assumed that the percentage of facilities affected by the TC for a particular wastestream would equal the percentage of the total waste failing the TC. (For example, if 25 percent of a wastestream failed, it was assumed that 25 percent of the facilities generating the waste would be affected and that all of the wastestream at each affected facility would fail.) In order to test the importance of this assumption, EPA adopted two alternative assumptions as sensitivity analyses: for any percentage of waste failing (except for 0 and 100 percent, where clearly no facilities or all facilities would be affected), the percentage of facilities affected would be 10 percent or, alternatively, 90 percent.

The effects of potential production process changes in response to the rule were not addressed.

b. Cost Methodology. EPA estimated both the social costs and the compliance costs of the final rule. Social costs do not include transfer payments between different parties within society (i.e., they do not include tax payments or above-average profits); the social costs therefore represent the real resource costs imposed by the rule on society as a whole. Compliance costs, which include the effects of taxes and above-average profits, more accurately reflect the effect of the rule on particular entities within society.

1. Social Costs

EPA estimated the national social costs of the final rule by calculating before-tax incremental management costs for affected wastes at model facilities and then summing the facility costs across industrial sectors.

Before-tax incremental costs were calculated by subtracting baseline management costs from post-regulatory costs. Baseline management practices were determined as discussed previously. Post-regulatory management practices were developed based on waste types and quantities; the least-cost practice among those feasible for a waste was chosen as discussed below. The post-regulatory practices did not include potential waste treatment practices under the land disposal restrictions program since land disposal restrictions requirements for TC wastes will not come into effect until after the TC rule is promulgated. Possible post-regulatory management practices, as

well as baseline practices, for TC wastes are shown in Table VI-2.

TABLE VI-2.—BASELINE AND POST-REGULATORY MANAGEMENT PRACTICES

Waste type	Baseline practice	Post-regulatory practice
Wastewater.....	On-site Subtitle D surface impoundment.	On-site tank exempt from Subtitle C, Subtitle C surface impoundment. ¹
	or Practice permissible under Subtitle. ²	Same as baseline. ³
Non-wastewater.	On-site Subtitle D landfill or land application unit or off-site Subtitle D landfill.	On-site or off-site Subtitle C landfill or land application unit.
Organic liquid.....	Burning, recycling.	Same as baseline. ³

¹ Dilution and deep-well injection were also considered as post-regulatory practices but were found to be more expensive than tank management.

² Includes management in Subtitle C-exempt tanks, direct discharge under a NPDES permit, or indirect discharge to a Publicly Owned Treatment Works.

³ Since the post-regulatory practice was the same as the baseline practice, the rule would not affect management of these wastes.

To estimate before-tax baseline and post-regulatory costs for wastes, EPA first estimated the cost per metric ton for the different on-site and off-site waste management practices. Before-tax costs for on-site management units include operation and maintenance (O&M) and capital costs. O&M costs are incurred annually for operation and maintenance of waste treatment or disposal units. Capital costs include costs for construction of the unit and for depreciable assets; these costs, which assumed an average operating life of 20 years, were restated as annual values by using a capital recovery factor based on a discount rate of three percent. RCRA-related costs such as personnel training, financial assurance, and liability insurance were included as indirect capital costs.

For the subset of subtitle D facilities which could potentially become subtitle C TSDFs in order to manage TC wastes on-site, post-regulatory costs for on-site management also included corrective action costs. Corrective action costs for units were based on data from the to-be-proposed corrective action subpart S rule RIA, which indicated the probability of a unit requiring a RCRA facility assessment, RCRA facility investigation, and corrective action cleanup. Corrective action costs were

not assigned to facilities which were determined to already be subtitle C treatment, storage, and disposal facilities, since units at these facilities would already be subject to corrective action requirements under subparts S and F. Like capital costs, corrective action costs were converted to annual values.

The annualized capital and (as appropriate) corrective action costs were added to yearly O&M costs to derive overall annualized costs for on-site units of various sizes. These annualized costs were then divided by the waste management capacities of the units to obtain the costs per metric ton for on-site management in different units.

Off-site management costs were based on commercial hazardous waste management prices, adjusted for the effects of above-average profits. Shipping costs were included for wastes sent off-site. Neither the on-site nor off-site costs included the cost of waste testing.

Since no data were available on the combinations of wastestreams generated at particular facilities, EPA used an algorithm to create model facilities. In estimating costs for the model facilities, wastes that were amenable to co-management were grouped to identify economies of scale.

Once the costs per metric ton for different types of on-site and off-site management had been developed and waste quantities for the model facilities had been determined, EPA estimated each facility's baseline cost based on the quantities of waste and the cost per metric ton for the baseline management practices identified for the wastes. The post-regulatory cost for each facility was estimated in a similar way. The post-regulatory management practices for facilities were selected by comparing the cost per metric ton for different feasible post-regulatory practices for wastes and selecting the least expensive alternative. (This comparison was made based on compliance costs, rather than social costs, as discussed below). EPA then subtracted baseline costs from post-regulatory costs to obtain the before-tax incremental cost for each facility. These before-tax incremental costs were then added across industrial sectors to obtain the total (national) social costs of the rule.

EPA examined the possibility that some facilities managing wastewaters would incur costs over and above the cost of switching from management in unlined surface impoundments to management in wastewater treatment tanks that are exempt from subtitle C. To calculate upper bound costs, the

Agency assumed that facilities generating large quantities of TC wastewater (over 400,000 metric tons per year) would not be able to convert existing non-hazardous surface impoundments to tanks by the effective date of the rule (i.e., October 1, 1990) and therefore would become interim status facilities under RCRA and subject to subtitle C closure of any impoundments. The upper bound cost estimates included costs for subtitle C "landfill closure" of the surface impoundments currently used to manage TC waste. Costs for surface impoundment subtitle C closure included pumping of free liquid, solidification of sludges, construction of a cover system, installation of upgradient and downgradient ground water monitoring wells, closure certification, and potential corrective action costs triggered by bringing facilities with TC surface impoundments into the subtitle C system.

2. Compliance Costs

EPA used the same basic approach to estimate compliance costs that was used to estimate social costs except that the after-tax costs (or revenue requirements) of management practices were used rather than the before-tax costs, and the price of off-site management was used rather than the cost of off-site management (to address above-average profits). Since the compliance costs reflect the cost of the rule for particular entities within society more accurately than the social costs do, compliance costs were used in determining whether it would be less expensive for facilities to use on-site or off-site post-regulatory management practices.

Based on the cost analysis discussed above, EPA estimated the number of existing subtitle C treatment, storage, and disposal facilities (TSDFs) electing to manage TC non-wastewaters on site and the number of subtitle D facilities which would be likely to become subtitle C TSDFs in order to manage their non-wastewaters on-site. (The focus was on on-site management of non-wastewaters, since it was assumed that most facilities would be able to manage wastewaters on site without becoming subtitle C TSDFs.) This was done by first determining the number of facilities that would be likely to choose on-site management as the least-cost management practice for non-wastewaters and then estimating how many of these would be likely to already be subtitle C TSDFs. EPA also estimated the number of new subtitle C generators, by determining how many facilities would generate in excess of 100

kilograms per month of TC waste and then calculating how many of these facilities would be likely to already be subtitle C generators.

c. Economic Impact Methodology. To gauge impacts, EPA compared compliance costs (discussed previously) with average facility costs of production and with cash from operations. Financial data were obtained primarily from the Census and Annual Survey of Manufacturers (U.S. Department of Commerce, Bureau of Census) and were organized by Standard Industrial Classification (SIC) code and facility size. Impacts were estimated at the facility level rather than the firm level, due to lack of data on specific facilities and the firms owning them.

Two ratios were used to identify facilities likely to experience adverse economic effects: compliance cost divided by cost of production (the COP ratio) and cash from operations divided by compliance cost (the CFO ratio). These ratios bound possible effects on individual facilities by examining impacts assuming complete pass-through of compliance costs to customers, on the one hand, and assuming no pass-through of costs, on the other. The COP ratio represents the percentage product price increase for facility output that would be necessary if the entire compliance cost, accompanied by facility profit, were to be passed through to customers in the form of higher prices. A change exceeding five percent is considered an indication of a significant adverse economic impact on a facility. The CFO ratio represents the number of times that a facility's gross margin (profit) would cover the compliance cost if the facility were to fully absorb the cost. For this ratio, a value of less than 20 is considered to represent a significant adverse impact.

EPA then performed an analysis on the facilities experiencing significant economic impacts to identify the potential for facility closures. Those facilities for which the CFO ratio was less than two were considered likely to close.

Impacts on significantly affected product markets were addressed qualitatively by examining market structure and the ability of facilities to pass compliance costs on to customers.

d. Benefits Methodology. The benefits of the final rule were evaluated by considering the reduction in human health risk, the reduction in resource damage, and future cleanup costs avoided that would result from required changes in management practices for affected wastes. These benefits

measures centered primarily on the exposure to contaminants via the ground water medium, since this was the route of exposure addressed by the TC rule; however, a screening analysis of risks via air, due to emissions from surface impoundments, was also conducted to gauge the significance of these risks.

It is important to point out that the benefits measures should not be added. The measures provide alternative ways of evaluating benefits of the rule, and significant overlap between measures does occur.

EPA estimated benefits on a wastestream-by-wastestream basis. To simplify the analysis of benefits, EPA employed a screening analysis to identify two "risk-driving" constituents in each wastestream, one a carcinogen and one a non-carcinogen. These constituents were then used in developing benefit estimates.

A Monte Carlo modeling approach was used to simulate fate and transport of the constituents and subsequent exposure to them under a variety of waste characterizations, hydrogeologic settings, and exposure scenarios. Based on data from EPA's National Survey of Solid Waste Municipal Landfill Facilities (the "Municipal Landfill Survey"), it was assumed that only 46 percent of facilities had down-gradient wells. EPA examined the sensitivity of results to this assumption by assuming, alternatively, that all facilities had down-gradient wells.

Due to the way in which fate and transport of constituents was modeled (using an infinite source, steady-state model), benefits estimates were primarily a function of the number of facilities estimated to manage each wastestream and constituent concentrations in the waste; wastestream volumes did not affect benefits estimates. In contrast, cost analysis results were a function of the number of facilities, waste constituent concentrations, and wastestream volumes.

Worst-case estimates of baseline risk, resource damage, and cleanup costs were developed by assuming that the baseline management practice for both wastewaters and non-wastewaters was an unlined, non-hazardous waste landfill. This is the same assumption that was employed by the Agency in determining regulatory levels for TC constituents. Post-regulatory risk, resource damage, and cleanup costs were estimated by assuming that the wastes managed as hazardous under the TC would be effectively prevented from contaminating ground water and would therefore result in no risk, resource

damage, or cleanup costs; only those wastes continuing to be managed as non-hazardous would pose a threat to human health or the environment.

For wastewaters, the baseline risk, resource damage, and cleanup cost due to ground water contamination were based on concentrations of constituents in the influents to waste management units. Consequently, since volatilization of constituents from waste management units was not accounted for, benefits due to reduction in ground water contamination may be overstated.

The three benefits measures used in this analysis are discussed separately below.

1. Human Health Risk Reduction

EPA estimated two types of human health risk: risk to the most exposed individual (MEI) and population risk. Human health risk is defined herein as the probability of injury, disease, or death over a given time (70 years) due to responses to doses of disease-causing agents. The human health risk posed by a waste management practice is a function of the toxicity of the chemical constituents in the wastestream and the extent of human exposure to the constituents. The likelihood of exposure is dictated by hydrogeologic and climatic settings at land disposal units and by the fate and transport of chemical constituents in environmental media.

a. MEI Risk Reduction. MEI risk was based on exposure to the risk-driving constituents. Concentrations of the risk-driving constituents in the waste leachate were selected randomly from the constituents' concentration distributions. A dilution-attenuation factor (DAF), derived from EPA's subsurface fate and transport model (EPACML), was then randomly selected and used to model the fate and transport of the constituents in ground water. (The DAFs were developed using data from the Municipal Landfill Survey on landfill size, hydrogeology, and distance from the unit to the closest drinking water well; see section III.E for further discussion of the model.) By dividing the initial leachate concentrations of the risk-driving constituents by the DAF, exposure concentrations at a down-gradient well were estimated. Risks from ingestion of contaminated ground water were then calculated. The carcinogenic MEI risk was expressed as the probability of the MEI contracting cancer over a 70-year lifetime, and the non-carcinogenic MEI risk was expressed as an exceedance of the health-effects threshold.

Risk estimates were developed in this way for baseline conditions and for the

final rule. The difference between the final rule and baseline risk estimates yielded the MEI risk reduction (or benefit).

EPA conducted a separate screening analysis of baseline MEI risks due to air emissions from surface impoundments in order to assess whether potential air risks were significant. This was done by assuming that constituents in wastewaters would potentially volatilize to the air rather than leach to ground water. EPA's Liner Location Model (Ref. 32) was used to estimate concentrations of constituents at an exposure point 200 meters from the edge of the surface impoundment. Both carcinogenic and non-carcinogenic risks were estimated.

b. Population Risk Reduction.

Population risk was estimated in much the same way as MEI risk, with the exception that ground water plume areas for risk-driving constituents were used to model the exposure of populations located downgradient from units. The plume areas were developed for a representative hydrogeologic environment, based on data from the Municipal Landfill Survey.

Each plume area contained a gradient of exposure concentrations, with the highest concentration near the unit boundary and the lowest concentration near the outside edge of the plume. By assuming a uniform population density of 1.6 persons per acre, based on the Municipal Landfill Survey, it was possible to estimate the number of persons exposed to each of the concentration levels within each plume.

The population risk for the carcinogenic constituent, based on the constituent's risk-specific dose (RSD), was expressed as the number of cancer cases over a 70-year lifetime. The population risk for the non-carcinogenic constituent, based on the constituent's reference dose (RfD), was expressed as the number of persons exposed to average daily concentrations exceeding the RfD over a 70-year period.

2. Resource Damage Avoided

Resource damage measures the cost associated with replacing contaminated ground water that had been used as a source of drinking water. Resource damage was assumed to result from any contamination of ground water which would render it unsuitable for human consumption; other potential foregone uses, such as industrial or agricultural uses, were not addressed.

If the concentration of a constituent in ground water exceeded a maximum contaminant level (MCL), the ground water was assumed to be damaged. If

the contaminant did not have an MCL but the concentration exceeded a taste and odor threshold or a health effects threshold, the ground water was also assumed to be damaged. Areas of damaged ground water were derived based on a comparison of the constituent's concentration within the plume with the constituent's MCL, taste and odor threshold, or health-based number, in an approach similar to that used to estimate plume areas for population risk.

To place a value on the damaged resource, EPA assumed that an alternative water supply system would have to be built to provide water to persons living above the area of the damaged ground water. The costs of constructing the water supply system included capital and O&M costs; these costs were discounted to the present at a rate of three percent to obtain the resource damage per facility. Addition of resource damage across facilities provided a national estimate.

3. Cleanup Costs Avoided

As an alternative measure of benefits, EPA estimated the cleanup costs avoided as a result of the TC rule. Costs of cleanup of contaminated ground water were estimated by assuming that sites with resource damage in the baseline would eventually require cleanups. To develop an upper bound estimate, it was assumed that sites with resource damage greater than \$1,000,000 (present value) would require cleanup.

Cleanup costs were based on an average cost of \$15 million per site, with cleanups beginning in 15 years. EPA estimated the average cost of cleanup by examining recent Superfund records of decision (RODs) for sites contaminated with TC constituents that required substantial ground water cleanup efforts. Costs were discounted to present values using a discount rate of three percent.

e. Used Oil Methodology. EPA addressed the impacts of the TC on used oil separately from other wastes for several reasons. First, used oil is generated across a wide variety of industrial sectors. Second, unlike other wastes, it has economic value and can be sold in intermediate or end-use markets; this complicates any analysis of the costs of regulating it as a hazardous waste. Also, data on used oil are quite limited. Finally, it is difficult to accurately estimate quantities of used oil that may exhibit the TC because in practice TCLP filtration is sample-specific and difficult to predict.

The analysis of costs, economic impacts, and benefits associated with used oil was qualitative in nature; no

attempt was made to develop national estimates. In determining the quantity of used oil potentially affected, EPA excluded used oil that was: (1) Already hazardous because it exhibits a hazardous waste characteristic (e.g., ignitability); (2) recycled; or (3) generated by "do-it-yourselfers" (i.e., auto owners disposing of crankcase oil). In order to develop worst-case estimates of impacts on used oil, it was assumed that used oil would filter in the TCLP. It was also assumed that the facilities managing used oil were subtitle D facilities. Finally, estimated impacts on used oil did not account for the possible stigma associated with management of used oil as a hazardous waste.

4. Results

Results of the RIA are presented below. These results are approximations that are intended to identify the most significant impacts of the TC rule. As discussed previously, there were no data on the waste types and quantities generated by specific facilities in the different industrial sectors. Therefore, EPA used more aggregated data and focused on those industrial sectors which were most likely to generate significant quantities of TC wastes.

a. Affected Wastes and Facilities. EPA estimated the amount of waste and the number of facilities that would be "affected" by the rule, i.e., that would incur any incremental costs due to required changes in management practices for newly hazardous wastes.

1. Affected Wastes

The overall quantity of waste affected by the TC was driven by wastewaters. EPA estimated the quantity of affected wastewaters to be approximately 730 million metric tons (MMT) per year and the quantity of affected non-wastewaters (sludges and solids) would range from approximately 0.85 MMT/year to 1.8 MMT/year. It should be noted that the affected wastewaters, which would be hazardous wastes, are assumed to be exempt from subtitle C regulation in the post-regulatory scenario due to their management in exempt tanks. However, they would be affected wastes because a change in management practice (from surface impoundments to tanks) would be required.

The industrial sectors with the largest quantities of affected wastewaters were Petroleum Refining (SIC 2911), Organic Chemicals (SIC 286), Synthetic Rubber (SIC 2822), and Cellulosic and Non-Cellulosic Synthetic Fibers (SICs 2823 and 2824). For the lower bound estimate of 0.85 MMT/year of non-wastewaters affected, the sectors with the largest

quantities of affected non-wastewaters were Pulp and Paper (SIC 26), Synthetic Fibers, Organic Chemicals, and Pharmaceuticals (SIC 283). For the upper bound estimate of 1.8 MMT/year, industry sectors generating the largest quantities of affected non-wastewaters were Petroleum Refining, Pulp and Paper, Synthetic Fibers, Organic Chemicals, and Wholesale Petroleum Marketing (SIC 517). Certain sectors generate significant quantities of both wastewaters and non-wastewaters due to the wastewater treatment sludges associated with wastewater streams. Most of the affected wastewaters and non-wastewaters are believed to be generated by large facilities.

A total of twelve constituents appeared as "cost-driving" constituents in the analysis. However, benzene was the driving constituent for over 60 percent of the affected waste quantity. Other volume-driving constituents include chloroform (25%), vinyl chloride (17%), and trichloroethylene (15%).

2. Affected Facilities

EPA estimated that between 15,000 and 17,000 generators would be affected by the rule. Costs and additional requirements among these affected facilities will vary (e.g., some may already be RCRA generators or TSDFs, others may need to apply for RCRA permits or send wastes off-site). Over 90 percent of these were small facilities (with fewer than 50 employees). The industries with the most affected large facilities were Hosiery and Knit Fabric Finishing (SIC 225), Wholesale Petroleum Marketing, Organic Chemicals, Petroleum Refining, and Plastics Materials and Resins (SIC 2821). The industries with the most affected small facilities were Wholesale Petroleum Marketing, Hosiery and Knit Fabric Finishing, Miscellaneous Petroleum and Coal Products (SIC 2992), Organic Chemicals, and Plastics Materials and Resins.

3. Sensitivity Analysis of Affected Wastes and Facilities

Changes in certain analytical assumptions had significant effects on the quantity of waste and number of facilities affected by the TC final rule. (Refer to section VI.B.3.a for discussion of the sensitivity analyses which were conducted.) Some of the changes also affected cost and benefit results, as discussed below under cost results and benefit results.

Assuming that oily wastes would not filter in the TCLP, rather than assuming that they would, would have a very significant effect on the quantity of non-

wastewaters affected by the TC. This effect can be seen in the difference between lower bound (assuming oily wastes do not filter) and upper bound (assuming oily wastes filter without complications) estimates of affected quantities of non-wastewaters. Nearly all of the non-wastewaters from Petroleum Refining (including a very large-volume primary treatment sludge), Wholesale Petroleum Marketing, and Petroleum Pipelines are oily wastes.

Assuming that all wastewaters were managed in surface impoundments, rather than some portion being managed by practices exempt under subtitle C, increased affected wastewater quantity significantly to approximately 1,900 MMT/year. It also increased the number of facilities affected in certain sectors.

Finally, assuming that only 10 percent of the facilities would be affected for a waste failing the TC, rather than using the percent of the waste failing, significantly reduced the number of facilities affected by the TC in most industrial sectors.

b. Cost Results—1. Social Costs and Compliance Costs. EPA estimated the total social costs of the TC rule (excluding taxes and above-average profits) to be approximately \$90 million to \$310 million per year (present value \$1.3 billion to \$5.7 billion); this does not include costs associated with used oil. Compliance costs (which include taxes and above-average profits) ranged from \$130 million to \$400 million per year (present value \$1.9 billion to \$6.0 billion). While affected waste quantities were driven by wastewaters, compliance costs (for the scenario where oily wastes fail the TC and no surface impoundment closure costs are incurred) were driven by non-wastewaters due to the significantly higher incremental costs of managing non-wastewaters. Non-wastewaters accounted for over 95 percent of compliance costs.

For the lower bound cost estimate, the industrial sectors with the largest compliance costs were Pulp and Paper, Synthetic Fibers, Organic Chemicals, and Synthetic Rubber. For the upper bound cost estimate, the industrial sectors with the largest compliance costs were Petroleum Refining, Pulp and Paper, Synthetic Fibers, Wholesale Petroleum Marketing, and Organic Chemicals. Constituents driving the cost results were: benzene, chloroform, trichloroethylene, vinyl chloride, and carbon tetrachloride.

Approximately 90 percent of the compliance costs (for the scenario where oily wastes fail the TC and no surface impoundment closure costs are incurred) were incurred by large

facilities and 10 percent by small facilities across industrial sectors. A relatively small number of large facilities incurs the majority of compliance costs because large facilities are believed to have much greater waste generation rates than small facilities.

The estimated number of subtitle D facilities seeking permits to become non-commercial subtitle C TSDFs was 40 to 250; this does not include facilities seeking permits for storage or treatment only. Most of the expected permit applicants were in the Pulp and Paper Industry in the lower bound estimate. Most of these new TSDFs in the upper bound estimate were in Petroleum Refining.

The number of existing subtitle C non-commercial TSDFs expected to seek permit modifications to handle TC wastes was between 45 and 220, depending on whether permits are considered for only disposal or for treatment, storage, and disposal. Most of these facilities in the upper bound estimate were in the Wholesale Petroleum Marketing and Petroleum Refining industries.

The number of subtitle C commercial TSDFs (SIC 4953) seeking permit modifications or changes to interim status could be as high as 360, the estimated number of existing commercial TSDFs. Many of these commercial TSDFs are primarily storage facilities.

In addition, the TC rule would result in as many as 15,000 new subtitle C generators. Most of the new generators would be in Wholesale Petroleum Marketing and Hosiery and Knit Fabric Finishing.

2. Sensitivity Analysis of Costs. Changes in certain analytical assumptions had significant effects on the social costs and compliance costs of the TC final rule. (Refer to section VI.B.3.a for discussion of the sensitivity analyses which were conducted.) Some of the changes also affected benefit results, as discussed below under benefits results.

Assuming that oily wastes would not filter in the TCLP, rather than assuming that they would, would have a significant effect on both social costs and compliance costs. The Agency estimated, as a lower bound assuming that no oily wastes will fail the TC test, social costs of about \$90 million per year and compliance costs of about \$130 million per year. By comparison, if it were assumed for the purpose of predicting TCLP results that oily wastes behave like other non-liquid wastes, social costs would be \$190 million per year and compliance costs would be \$250 million per year.

Assuming that not all facilities would be able to convert within six months from surface impoundments to tanks for management of their TC wastewaters, rather than assuming that all facilities would be able to convert, significantly increased the cost of the rule. Based on landfill closure of impoundments, this assumption added approximately \$120 million to annual social costs and \$140 million to annual compliance costs.

Splitting wastestream quantity evenly between small and large facility size categories, rather than based on value of shipments, shifted wastes from large to small facilities. While this did not affect the overall costs greatly, it significantly decreased compliance costs for large facilities and increased them for small facilities.

Finally, assuming that only 10 percent of the facilities would be affected for a waste failing the TC, rather than using the percent of the waste failing, significantly reduced social costs and compliance costs due to the larger quantities of waste being managed at a smaller number of facilities and the resultant economies of scale. The estimated number of new subtitle C TSDFs, existing TSDFs seeking permit modifications, and new subtitle C generators also decreased significantly.

c. Economic Impact Results—1. Significantly Affected Facilities. Based on the economic impact criteria discussed previously the estimated total number of significantly affected facilities was 65 to 81, of which most (51 to 66) are large. The fact that most of the significantly affected facilities are large can be partially explained by the fact that data indicate there are no small facilities in certain sectors (e.g., Cellulosic Synthetic Fibers). Another reason for the preponderance of significantly affected large facilities is that for some wastes, total compliance costs are less for small facilities than for large facilities because large facilities are believed to generate significantly more waste.

In the lower bound estimates, significantly affected facilities were expected in four industrial sectors: Pulp and Paper, Synthetic Rubber, Synthetic Fibers, and Organic Chemicals. In the lower bound estimates the Pulp and Paper industry was predicted to have the greatest number of significantly affected facilities (35), of which 30 are large facilities. The synthetic rubber industry had the highest number of significantly affected small facilities (8), out of a total of 14 significantly affected small facilities. None of the industries examined were expected to suffer facility closures as a result of the TC.

In the upper bound estimates, significantly affected facilities were expected in seven industries: Pulp and Paper, Synthetic Rubber, Synthetic Fibers, Organic Chemicals, Textiles, Pharmaceuticals, and Plastics and Resins. Pulp and paper had the largest number of significantly affected facilities—36 out of 80 for all facilities.

2. Effects on Product and Capital Markets

The industries with significantly affected facilities have very little potential to pass compliance costs on to consumers in the form of higher prices. These industries produce primarily intermediate goods (e.g., rubber, paper, fibers, and chemicals) which are used in a number of subsequent processes (e.g., manufacturing and fabrication) before they reach consumer markets. The users of these intermediate products have access to similar or identical products from U.S. suppliers that are not significantly affected by the TC and from foreign suppliers; because substitutes are available, these users would not be forced to pay higher prices for the intermediate products.

While results suggest that prices in product markets will not be affected, at least some impact is likely on capital markets. Because affected facilities will not be able to pass compliance costs through to buyers in the form of higher prices, they will experience lower profits. Lower profits will reduce the value of capital tied up in these facilities. However, as most of the affected facilities are part of integrated production systems and are owned by large firms with significant asset holdings, the effect on capital markets (i.e., stock prices and bond ratings) should be relatively small.

3. Sensitivity Analysis of Economic Impacts.

A change in one of the analytical assumptions had significant effects on economic impacts due to the TC final rule. Refer to section VI.B.3.a for discussion of the sensitivity analyses which were conducted.

Splitting wastestream quantity evenly between small and large facility size categories, rather than based on value of shipments, shifted wastes from large to small facilities. Under the scenario where oily wastes fail the TC and no surface impoundment closure costs are incurred, this resulted in nearly 40 additional small facilities with significant economic impacts and 10 small facility closures.

d. Benefits Results. EPA estimated the benefits of regulating TC wastes on a wastestream by wastestream basis;

results of this analysis are presented in Table VI-3. As discussed in the benefits methodology section, results for different benefit measures (human health risk, resource damage, and cleanup costs avoided) are likely to overlap and should not be added.

TABLE VI-3.—BENEFITS OF THE TC RULE

Reduction in MEI Risk:	
• Reduction in Carcinogenic Risk (number of facilities with risk greater than 1×10^{-5} at down-gradient well).	370 to 780.
• Reduction in Non-Carcinogenic Risk (number of facilities with exposure above a health-based threshold at downgradient well).	8.
Reduction in Population Risk:	
• Reduction in Carcinogenic Risk (number of cancer cases over 70 years).	6.
• Reduction in Non-Carcinogenic Risk (number of persons with exposure above a health-based threshold at downgradient wells).	320.
Reduction in Resource Damage (present value, millions of 1988 dollars).	3,800.
Cleanup Costs Avoided (present value, millions of 1988 dollars).	Up to 15,000.

1. MEI Risk

As can be seen from the table, there is a potentially significant reduction under the final rule in the carcinogenic risk to the most exposed individual (MEI). There are from 370–780 fewer facilities managing wastes that present risks to the most exposed individual (MEI) greater than 1×10^{-5} under the final rule than there were under baseline conditions. The industrial sectors driving these benefits include Wholesale Petroleum Marketing (SIC 517) and Miscellaneous Plastics Products (SIC 3079). The constituent driving most of these benefits is benzene. The difference between the lower and upper bounds results from certain oily wastes that are unregulated in the lower bound.

For non-carcinogenic MEI risk, there are 8 fewer facilities managing wastewaters where the exposure to a non-carcinogenic constituent exceeds the reference dose (RfD) under the final rule than under baseline conditions. Wastes from Wholesale Petroleum Marketing drive these benefits results. Cresols are the risk-driving constituents.

The Wholesale Petroleum Marketing sector presents significant risks due to the large number of facilities managing wastewaters and non-wastewaters. The number of facilities in this sector estimated to manage wastewaters and non-wastewaters are 1,290 and 1,050 facilities, respectively; this compares with 1,900 and 8,600 facilities, respectively, managing affected

wastewaters and non-wastewaters across all industrial sectors.

A screening analysis of MEI risks due to air emissions from surface impoundments was conducted to gauge the potential risk via the air medium. This analysis indicated that in sectors other than Wholesale Petroleum Marketing approximately 20 percent of modeled facilities had carcinogenic risks greater than 1×10^{-5} and 5 percent had non-carcinogenic doses greater than the RfD; MEI air risks from Wholesale Petroleum Marketing were less than 1×10^{-6} . Benzene contributed most of the carcinogenic risks while phenol was responsible for most of the non-carcinogenic risks.

The industries generating wastes with high MEI air risks differ to some extent from those generating wastes with high MEI ground water risks. The industries generating wastes with high MEI air risks include Pulp and Paper, Plastics Materials and Resins, Synthetic Rubber, Cellulosic and Non-Cellulosic Synthetic Fibers (SICs 2823 and 2824), and Organic Chemicals.

There is some potential overlap in estimates of air and ground water risk. The wastewater MEI risks via ground water were based on the assumption that all the constituent mass was available for leaching to ground water; in contrast, the air risks assumed some percentage of constituent mass would volatilize from impoundments. As a result, the wastewater MEI risks via ground water are likely to be overstated.

2. Population Risk

Based on a very limited analysis of population risk, EPA estimates that there would be six fewer cancer cases over the 70-year modeling period due to the final rule. Wholesale Petroleum Marketing (constituent: benzene) and Plastics and Resins (SIC 2821) (constituent: vinyl chloride) drive these benefits. The reduction in number of persons exposed to non-carcinogens at concentrations greater than the RfDs was estimated to be 320 over a 70-year period. Sawmills and Planing Mills (SIC 2421) and Organic Chemicals (pentachlorophenol and methyl ethyl ketone) drive these results.

3. Resource Damage

The total reduction in resource damage would be approximately \$3.8 billion (present value). Wholesale Petroleum Marketing and Miscellaneous Plastics Products are the industrial sectors driving resource damage benefits. Benzene is the driving constituent.

4. Cleanup Costs Avoided

Estimated cleanup costs avoided due to the final rule ranged up to \$15 billion (present value). Under the assumption that all sites with significant resource damage (i.e., resource damage greater than \$1,000,000 (present value)) would require cleanup, approximately 1,600 facilities would require cleanup.

5. Sensitivity Analysis of Benefits

Changes in certain analytical assumptions had significant effects on the benefits of the TC final rule. (Refer to sections VI.B.3. a and d for discussion of the sensitivity analyses which were conducted.) Some of the changes also affected cost results, as discussed under cost results.

Assuming that oily wastes would not filter in the TCLP, rather than assuming that they would, would reduce the benefits associated with non-wastewaters, as can be seen in the lower bound estimates indicated in the results above. This would result primarily from the significant reduction in the number of facilities managing non-wastewaters in Wholesale Petroleum Marketing.

Assuming that all wastewaters were managed in surface impoundments, rather than some portion being managed by practices exempt under subtitle C, would increase the number of facilities affected in many sectors and increase benefits significantly. Benefits for wastewaters could increase by approximately 10 times since there would be 10 times as many facilities with surface impoundments.

Assuming that only 10 percent of the facilities would be affected for a waste failing the TC, rather than using the percent of the waste failing, significantly reduced the number of facilities affected by the TC in all industrial sectors. This would significantly reduce benefits as a result, since fewer facilities would be managing wastes.

Assuming that all facilities have down-gradient wells, rather than assuming only 46% have down-gradient wells, would increase benefit results by a factor of approximately two.

e. Cost-Effectiveness. The Agency estimated the cost-effectiveness of the final rule and of several regulatory alternatives. This discussion is presented in the regulatory impact analysis document, which is part of the public docket for the rule.

f. Used Oil Results. Used oil is generated across a wide variety of industrial sectors. Some generators manage or dispose of their used oil directly while others provide their used oil to the used oil management system

(UOMS), a system of intermediate collectors and processors (Ref. 33). Firms in the UOMS then re-refine or process the used oil and/or sell it for various end uses.

Under the worst-case assumption that used oil would not create TCLP filtration problems, EPA found based on constituent concentration data (see Ref. 8), that virtually all used oil would fail the TC. EPA determined that three end-use management practices for used oil would be affected: landfilling/incineration, dumping, and road oiling.

Once used oil became TC hazardous, it would have to be shifted to other end-use management practices. Much of the used oil that is currently dumped or applied directly to roads by generators would probably be collected and sold to the UOMS. Firms in the UOMS that currently sell used oil for road oiling would generally shift this oil to other management practices, such as re-refining or burning as a fuel. Used oil that is managed by landfilling or incineration in subtitle D units would likely be shifted to management in subtitle C units.

The shift in management practices would impose costs on used oil generators, the UOMS, and end-users of used oil. Used oil generators currently providing used oil to the UOMS would be likely to pay somewhat higher collection costs due to pass-through of compliance costs by firms in the UOMS. Generators that currently manage their wastes by road oiling would incur storage and collection costs for their used oil as well as costs for a road-oiling substitute. Generators directly managing their wastes by dumping would incur costs for storage and collection. Firms in the UOMS that sell used oil for road oiling would be forced to sell the oil in less profitable markets, and some firms could close if unable to enter another market. Firms in the UOMS could also incur costs for disposal of low quality used oil and related wastes in subtitle C (rather than subtitle D) units if these wastes were TC hazardous; as discussed above, some of these costs could be passed on to used oil generators. Firms that re-refine used oil could benefit from the TC rule, since a greater volume of used oil would potentially be available at a lower price. Finally, end-users that purchase used oil for road oiling would incur costs for an alternative dust suppressant.

The shift in management practices could also result in certain benefits. A previous study of carcinogenic risks from used oil management practices (Ref. 34) indicates that dumping of used oil may present significant risks relative to other management practices (with the

possible exception of burning in boilers, where risks are more comparable). Road oiling appears to present more significant risks than recycling and comparable or fewer risks relative to burning in boilers or landfill disposal. It is difficult to draw definitive conclusions concerning benefits due to the different constituent profiles and population densities associated with each of the management practices in the risk analysis.

C. Regulatory Flexibility Analysis

1. Approach

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires that whenever an agency publishes a notice of rulemaking, it must prepare a Regulatory Flexibility Analysis (RFA) that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). An RFA is unnecessary, however, if the Agency's administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities.

EPA examined the final rule's potential effects on small entities as required by the Regulatory Flexibility Act. Three measures, based on EPA guidelines for conducting an RFA, were used to determine whether the rule would have a "significant economic effect" on small entities: the ratio of compliance cost to cost of production, the ratio of compliance cost to value of sales, and the ratio of cash from operations to compliance cost (the last ratio being used to assess potential closures). Two of the three criteria, the ratio of compliance cost to cost of production and the ratio of cash from operations to compliance cost, are discussed in section VI.B.3.c. The third, the ratio of compliance cost to value of sales, was estimated for small and large facilities; if the difference between these ratios was greater than ten percent, this indicated a significant impact.

The guidelines for conducting RFAs are somewhat ambiguous with respect to evaluating impacts based on the third criterion. Determining whether the difference between ratios exceeds ten percent can be done by subtracting the large facility ratio from the small facility ratio or by dividing the small facility ratio by the large facility ratio. Dividing the small facility ratio by the large facility ratio may incorrectly indicate significant impacts on small facilities when both ratios are very small but the small facility ratio is larger than the large facility ratio. (For example, a small

facility ratio of 0.00002 divided by a large facility ratio of 0.00001 would indicate a significant impact on small businesses based on the division approach, despite the fact that the very low ratio of compliance cost to value of sales for small facilities indicates little impact on small facilities.) Therefore, the division approach must be interpreted with caution.

A "substantial number" of small entities was assumed to be 20 percent or more of the population of small businesses, small organizations, or small government jurisdictions within the universe of facilities affected by the rule.

The Agency defined a small business as a business employing 50 employees or less. (Standard Small Business Administration criterion is 500 employees.) EPA decided to use the 50 employee definition of a small business because the RIA estimates facility-level impacts, and the SBA definition applies to entire firms. The SBA definition would designate most of the facilities in the examined industries as small businesses, which would obscure differential impacts on smaller facilities.

Impacts on small businesses related to costs of compliance for used oil and contaminated soils were not examined due to lack of data on the facilities experiencing those costs.

2. Results

The only entities found to be affected by the final rule were small businesses, defined here as businesses employing fewer than 50 persons. No small organizations or small government jurisdictions were identified as potential TC waste generators in the TC industry studies which form the foundation for this analysis.

The Agency did not identify any industries in which 20 percent or more of the small businesses were significantly affected based on the ratio of compliance cost to cost of production, the ratio of cash from operations to compliance cost, or the ratio of compliance cost to value of sales (using the subtraction approach). Using the division approach for the ratio of compliance cost to value of sales indicated that small businesses in four sectors (including Pulp and Paper, Synthetic Rubber, Organic Chemicals, and Wholesale Petroleum Marketing) would be significantly affected. However, since the small facility and large facility ratios were both quite small (small facility ratios were less than 0.03), the Agency does not expect significant small business impacts in these sectors. Based on these results, EPA has concluded that today's final

rule will not have a significant effect on a substantial number of small entities. As a result of this finding, EPA has not prepared a formal RFA in support of the rule. More detailed information on small business impacts is available in the RIA for this rule.

D. Response to Comments on RIA for June 13, 1986 Proposal

EPA received many comments on the RIA for the proposed TC rule. This section presents a general summary and analysis of the public comments concerning the original RIA; all of the comments are addressed in the background document for this final rule. Major issues addressed by commenters included consideration of particular industries, specific aspects of cost and benefit methodologies, cost and benefit estimates, and the assessment of small business impacts.

1. Industries Included in the Analysis

The majority of comments on the RIA for the proposed rule concerned the absence of specific industrial sectors from the group examined for potential impacts. Other commenters criticized the RIA for not considering the effects of the TC on end users of products and on facilities such as Publicly Owned Treatment Works and Municipal Landfills.

Industries that commenters suggested should have been evaluated included natural gas production, manufacturing of a variety of products, including forest products, pharmaceuticals, automobiles, plastics, metals, polyvinyl chloride, semi-conductors, wire and cables, and waste management. The Agency agrees with commenters that a number of industrial sectors were not addressed in the RIA for the proposed rule. The Agency notes, however, that several of the wastestreams that commenters believed should have been included in the RIA (based upon the proposed regulatory levels) are not expected to be defined as hazardous based upon the final regulatory levels being promulgated today. One of the fundamental problems with determining which industries would potentially be affected by the TC is lack of data on currently non-hazardous wastes. Since these wastes are currently outside the subtitle C system, requirements for information gathering related to them are minimal.

The Agency made extensive efforts, in preparing the RIA for the TC final rule, to obtain data on the industrial sectors potentially affected by the TC. These data were derived from a variety of sources. The Agency contacted numerous trade associations and

individual facilities and collected pertinent EPA and other government publications. In addition, EPA prepared a series of TC industry study reports on those sectors most likely to generate significant quantities of TC wastes.

In preparing its TC industry studies, EPA first conducted preliminary studies which examined a large number of industries, with emphasis on identifying whether or not TC constituents would be likely to be present in industry wastes. Based on the preliminary studies, EPA completed detailed profiles of potentially affected industries for use in the final RIA. The Agency examined the potential for impacts on a number of industries that were not considered in the RIA for the proposed rule, as well as reconsidering some that were addressed in that RIA. Table VI-1 in section VI.B compares the coverage of industries for both the proposed rule RIA and the final rule RIA and indicates the industries for which detailed quantitative analysis was conducted.

Commenters also criticized the proposed rule RIA for not considering effects on end-users of products containing TC constituents. Examples of such end-user industries include agricultural chemical users, transporters, automotive maintenance facilities, petroleum retailers, medical facilities, and research laboratories. The Agency recognizes that TC toxicants exist in a variety of substances, and that end-users as well as producers of products containing TC constituents could be affected by the rule. Some end-users not identified in the RIA may be affected, but there is no information to quantify these potential impacts. The Agency believes that some of the impacts on affected end users may be mitigated by small quantity generator regulations under 40 CFR 261.5.

Finally, several commenters questioned EPA's assessment of impacts on Publicly Owned Treatment Works (POTWs), resource recovery facilities, public water suppliers, municipal landfills, the electrical services industry, and currently regulated RCRA facilities. As discussed previously in section III.K.2, the Agency has tested a number of POTW sludges to determine whether or not these sludges would be considered hazardous under the TC; the data generally indicate that these wastes would not be affected by the TC (Ref. 8). Because the final regulatory level for chloroform is significantly higher than originally proposed, EPA believes that public water suppliers also are unlikely to generate TC wastes. The Agency analyzed wastestreams generated by the Electrical Services

industry. These wastes were excluded from the RIA because they are fossil fuel combustion wastes, which are exempt from subtitle C regulation until a determination is made as to whether they should be regulated as hazardous. The Agency acknowledges that some waste generated by waste management facilities may exhibit the TC; however, most of these wastestreams that commenters believed should be included are not expected to exhibit the TC under the final regulatory levels. Finally, impacts on currently regulated RCRA facilities (in the industries included in the RIA) were addressed in the RIA.

2. Estimation of Costs and Economic Impacts

Many commenters expressed concern that the compliance cost estimates for facilities included in the economic impact analysis did not capture many of the expenditures faced by handlers of hazardous waste. The most common criticism was directed at the omission of the cost for actually performing the TCLP. Other commenters mentioned insurance costs and costs associated with RCRA permit applications. Another large group of comments concerned the costs for permitting and retrofitting the large universe of surface impoundments containing wastewaters which would exhibit the TC. In addition, a number of commenters contended that the RIA significantly underestimated potential economic impacts of the TC.

Other commenters claimed that the expense of the highly sophisticated equipment and specially trained personnel necessary for the testing of wastes would pose a significant burden on many firms, especially those without on-site laboratory facilities. The Agency recognizes that testing of wastes could pose a significant expense for firms that choose to test their wastes. On the other hand, there is currently no RCRA requirement for generators to test their wastes; the determination of hazardousness may be made based on either laboratory analysis of the waste or on knowledge of the waste, raw materials, and production processes. The Agency expects that many generators will rely on the latter method, and elect not to perform the TCLP. The Agency is still considering promulgating a testing requirement at a future date. If a testing requirement is proposed, potential costs of testing will be analyzed in detail.

Recognizing that administrative and insurance costs can constitute a significant portion of waste management costs, the Agency considered these in cost estimates in the final RIA. In addition, the cost of preparing RCRA

permit applications is considered in the cost of subtitle C waste management, as are items such as liability insurance, personnel training, and contingency planning.

In response to comments that surface impoundment impacts were understated, the Agency examined the effect of the TC rule on wastewaters and estimated the costs of compliance with subtitle C requirements. The Agency assumed in the final RIA that, based on least-cost management practices, surface impoundments would not have to be retrofitted. Instead, it was assumed that affected wastewaters would be segregated and treated in a separate tank system, while remaining non-hazardous wastewaters could continue to be managed in the impoundments. In deriving an upper bound estimate of costs, it was assumed that some impoundments would have to undergo subtitle C clean closure.

Given the broad scope of the TC rule and the general lack of data on industries and facilities managing currently non-hazardous wastes, the Agency agrees that economic impacts on certain sectors may have been underestimated in the RIA for the proposed rule. As discussed above, the Agency has made significant efforts in the final RIA to more accurately characterize the sectors potentially affected by the TC and to estimate the actual impacts on affected facilities.

3. Estimation of Benefits

Several commenters remarked on the original methodology used for the estimation of benefits. The most frequent target of criticism was the assumption that all contaminated aquifers would be cleaned up as a result of the TC. Commenters also questioned the validity of assuming that ground water resource conditions in North Carolina were representative of conditions across the entire United States.

Commenters on the use of aquifer cleanup as the basis for estimating benefits of the proposed rule asked for justification of the assumption that all aquifers would be cleaned up and an explanation of the benefits to human health and the environment which would result from the cleanup. The Agency used a different methodology to estimate benefits for the final RIA than was used for the original RIA. For the final RIA, EPA examined three potential types of benefits: human health risk reduction, resource damage avoided, and cleanup costs avoided. The assumption that all aquifers would be cleaned up was not used in the final RIA. In estimating benefits based on

cleanup costs avoided through controlled subtitle C management of TC wastes, EPA assumed in the RIA for the final rule that, for the near term, the subtitle D facilities with down-gradient wells and with at least some resource damage (as predicted by the resource damage analysis) would be the most likely candidates for cleanup.

The Agency agrees with the comments that ground water resource conditions in North Carolina may not be representative of conditions across the entire United States. As a result, in the final RIA EPA used distributions of hydrogeologic parameters which were representative of nationwide conditions, rather than relying on hydrogeologic information from one state.

4. Cost-Benefit Comparisons

In general, commenters argued that the RIA overestimated likely benefits of the proposed rule while underestimating the potential impacts. Commenters believed that the TC would bring large quantities of waste into the subtitle C system with little or no attendant environmental or health benefit. One commenter claimed that, after all indirect impacts are considered, the net benefits of the rule could be negative. Another commenter, however, stated that benefits were actually underestimated because of assumptions in the baseline scenario.

The Agency has used an improved methodology and additional data in the final RIA. EPA believes that the final RIA provides reasonable estimates of the potential costs and benefits of the rule. As presented in this section, the final RIA does indicate that the TC will bring relatively large quantities of waste into the subtitle C system, and also indicates that there will be attendant benefits. The Agency used cost and benefit estimates to compare relative costs and benefits of the various regulatory options. The analyses were conducted separately using approaches constructed to make the best possible use of available data. The separate analyses were not meant to be used to produce absolute measures of cost effectiveness. The RIA contains discussion of the Agency's evaluation and comparison of cost and benefit results.

5. Small Business Analysis

The Agency received many comments on its assessment of the effects of the proposed TC on small businesses. One group of comments focused on the definition chosen by EPA for small businesses. The Agency was also criticized for its threshold for

determining if a "substantial number" of small businesses would suffer significant economic impacts, and therefore necessitate the preparation of a full Regulatory Flexibility Analysis. Finally, many commenters felt that the analysis severely underestimated the impact of the rule on small businesses.

Commenters asked why the Agency did not use the standard Small Business Administration (SBA) criterion of 500 employees to define a small business. The Agency decided to use the 50 employee definition of a small business because the RIA estimates facility-level impacts, and the SBA definition applies to entire firms. In the absence of data to estimate firm-level impacts, the Agency chose the 50 employee cutoff as an appropriate small facility definition for the RIA. The SBA definition would designate most of the establishments in most of the examined industries as small facilities, which would obscure differential impacts on smaller facilities.

The Agency was criticized for using a 20 percent threshold for determining if a "substantial number" of small businesses would be significantly affected. Commenters claimed that it was arbitrary to consider the small business impact negligible if "only 19.9 percent" of small business were significantly affected. The Agency recognizes that, for an individual facility, the magnitude of impacts is not altered by the number of other facilities which are significantly affected. Nevertheless, the Agency believes that 20 percent is a reasonable benchmark for defining a "substantial number" of small businesses. The 20 percent threshold is commonly applied in RIAs conducted by EPA.

A large number of commenters criticized the overall conclusions of the small business analysis, declaring that the analysis severely underestimated the economic effects of the TC on small businesses. Commenters maintained that the universe of small businesses was inadequately addressed. Examples of small businesses not included in the analysis which commenters felt should have been considered included service stations and vehicle maintenance facilities. Commenters also mentioned the expense of performing the TCLP, claiming that it was an especially significant hardship for small businesses.

As explained in the general discussion of the industrial sectors included in the RIA, the Agency made extensive efforts to identify and include sectors potentially affected by the TC rule, including end users of products. And, as discussed under the comments on incorporating testing costs, these costs

were not included since generators are not currently required to test their wastes. Although EPA maintains that a full RFA is not necessary for the TC rule, it realizes that the impact of the rule could be significant for individual small enterprises.

E. Paperwork Reduction Act

The information collection requirements in this rule have been approved by the Office of Management and Budget (OMB) under the Paper Reduction Act, 44 U.S.C. 3501 et seq., and have been assigned the following OMB control numbers: 2050-0007, Land Disposal Permitting Standards; 2050-0008, RCRA Closure/Post-Closure; 2050-0009, Hazardous Waste Storage and Treatment Facilities; 2050-0011, Contingency Plans for Hazardous Waste Facilities; 2050-0012, General Facility Operating Requirements; 2050-0013, Operating Record for Hazardous Waste Facilities; 2050-0028, Notification of a Hazardous Waste Activity; 2050-0033, Reporting, Recordkeeping, and Planning for Ground-Water Monitoring; 2050-0034, RCRA Hazardous Waste Permit Application Part A; 2050-0036, RCRA Financial Assurance Requirements; 2050-0037, Recordkeeping and Reporting for RCRA Permittees; and 2050-0039, Uniform Hazardous Waste Manifest for Generators and Transporters.

VII. References

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List of Subjects in 40 CFR Parts 261, 264, 265, 268, 271, and 302

Administrative practice and procedure, Air pollution control, Chemicals, Confidential business information, Hazardous materials transportation, Hazardous substances, Hazardous waste, Indian lands, Intergovernmental relations, Natural resources, Nuclear materials, Penalties, Pesticides and pests, Radioactive materials, Recycling, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply, Waste treatment and disposal.

Dated: March 5, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, Chapter I of Title 40 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6922.

2. Section 261.4 is amended by revising paragraphs (b)(6)(i) introductory text, and (b)(9) and by adding paragraph (b)(10) to read as follows:

§ 261.4 Exclusions.

* * *

(b) * * *

(6)(i) Wastes which fail the test for the Toxicity Characteristic because chromium is present or are listed in

subpart D due to the presence of chromium, which do not fail the test for the Toxicity Characteristic for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

(9) Solid waste which consists of discarded wood or wood products which fails the test for the Toxicity Characteristic solely for arsenic and which is not a hazardous waste for any other reason or reasons, if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use.

(10) Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic of § 261.24 and are subject to the corrective action regulations under part 280 of this chapter.

3. Section 261.8 is added to subpart A to read as follows:

§ 261.8 PCB Wastes Regulated Under Toxic Substance Control Act

The disposal of PCB-containing dielectric fluid and electric equipment containing such fluid authorized for use and regulated under part 761 of this chapter and that are hazardous only because they fail the test for the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) are exempt from regulation under parts 261 through 265, and parts 268, 270, and 124 of this chapter, and the notification requirements of section 3010 of RCRA.

4. Section 261.24 is revised to read as follows:

§ 261.24 Toxicity characteristic.

(a) A solid waste exhibits the characteristic of toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table 1 at the concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Appendix II, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity, but is not listed as a hazardous waste in subpart D, has the EPA Hazardous Waste Number specified in Table 1 which

corresponds to the toxic contaminant causing it to be hazardous.

TABLE 1.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No. ¹	Contaminant	CAS No. ²	Regulatory Level (mg/L)
D004	Arsenic.....	7440-38-2	5.0
D005	Barium.....	7440-39-3	100.0
D018	Benzene.....	71-43-2	0.5
D006	Cadmium.....	7440-43-9	1.0
D019	Carbon tetrachloride.....	56-23-5	0.5
D020	Chlordane.....	57-74-9	0.03
D021	Chlorobenzene.....	108-90-7	100.0
D022	Chloroform.....	67-66-3	6.0
D007	Chromium.....	7440-47-3	5.0
D023	o-Cresol.....	95-48-7	* 200.0
D024	m-Cresol.....	108-39-4	* 200.0
D025	p-Cresol.....	106-44-5	* 200.0
D026	Cresol.....		* 200.0
D016	2,4-D.....	94-75-7	10.0
D027	1,4-Dichlorobenzene.....	106-46-7	7.5
D028	1,2-Dichloroethane.....	107-06-2	0.5
D029	1,1-Dichloroethylene.....	75-35-4	0.7
D030	2,4-Dinitrotoluene.....	121-14-2	* 0.13
D012	Endrin.....	72-20-8	0.02
D031	Heptachlor (and its hydroxide).....	76-44-8	0.008
D032	Hexachlorobenzene.....	118-74-1	* 0.13
D033	Hexachlorobutadiene.....	87-68-3	0.5
D034	Hexachloroethane.....	67-72-1	3.0
D008	Lead.....	7439-92-1	5.0
D013	Lindane.....	58-89-9	0.4
D009	Mercury.....	7439-97-6	0.2
D014	Methoxychlor.....	72-43-5	10.0
D035	Methyl ethyl ketone.....	78-93-3	200.0
D036	Nitrobenzene.....	98-95-3	2.0
D037	Pentachlorophenol.....	87-86-5	100.0
D038	Pyridine.....	110-86-1	* 5.0
D010	Selenium.....	7782-49-2	1.0
D011	Silver.....	7440-22-4	5.0
D039	Tetrachloroethylene.....	127-18-4	0.7
D015	Toxaphene.....	8001-35-2	0.5
D040	Trichloroethylene.....	79-01-6	0.5
D041	2,4,5-Trichlorophenol.....	95-95-4	400.0
D042	2,4,6-Trichlorophenol.....	88-06-2	2.0
D017	2,4,5-TP (Silvex).....	93-72-1	1.0
D043	Vinyl chloride.....	75-01-4	0.2

¹ Hazardous waste number.

² Chemical abstracts service number.

* Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

* If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

5. Section 261.30 is amended by revising paragraph (b) to read as follows:

§ 261.30 General.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

6. Appendix II of part 261 is revised to read as follows:

Appendix II—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)

1.0 Scope and Application

1.1 The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphasic wastes.

1.2 If a total analysis of the waste demonstrates that individual contaminants are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded, the TCLP need not be run.

1.3 If an analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high levels that even after accounting for dilution from the other fractions of the extract the concentration would be above the regulatory threshold for that compound, then the waste is hazardous and it is not necessary to analyze the remaining fractions of the extract.

1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile contaminant exceeds the regulatory threshold

for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compounds is below the regulatory threshold.

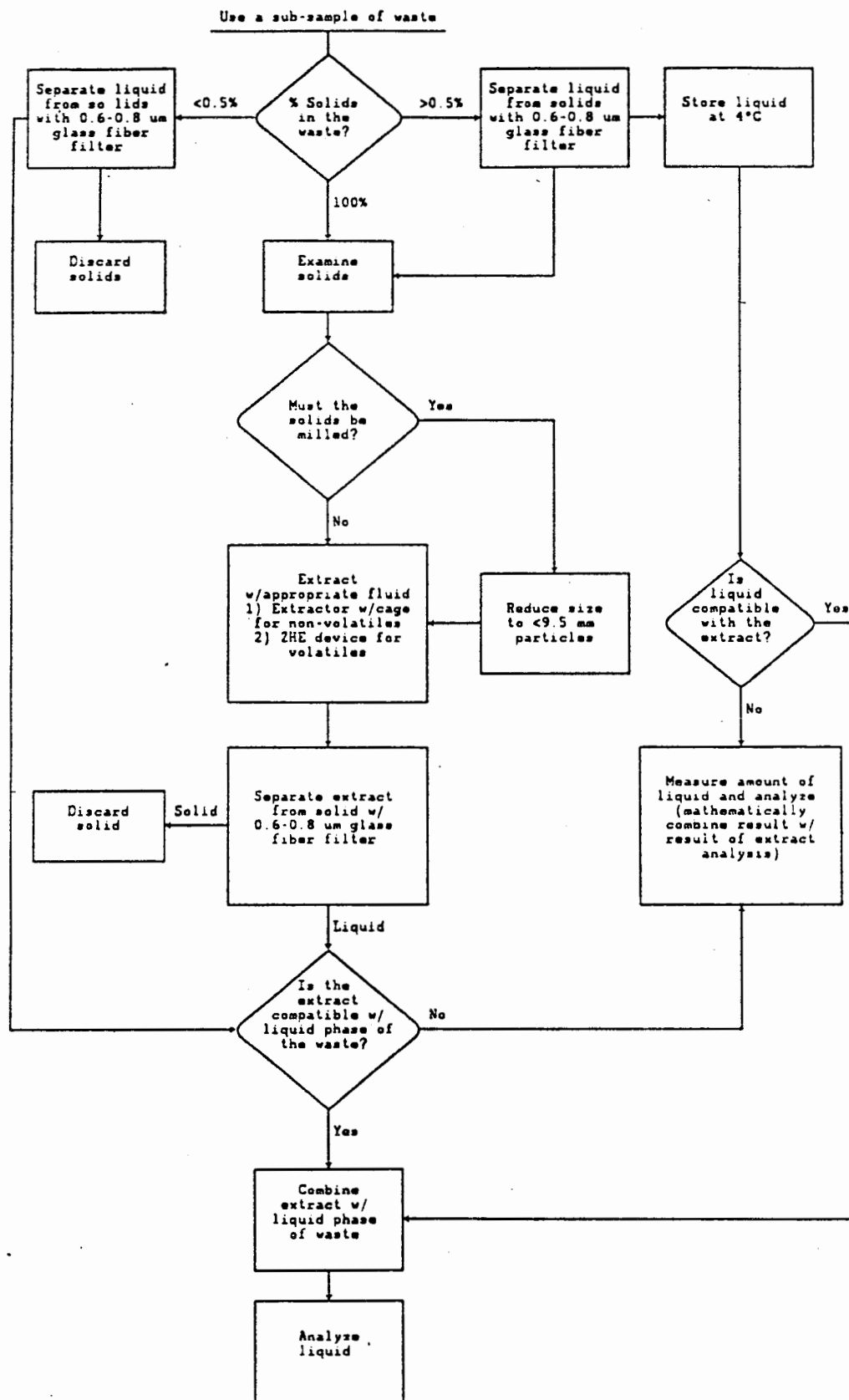
2.0 Summary of Method (see Figure 1)

2.1 For liquid wastes (i.e., those containing less than 0.5 percent dry solid material), the waste, after filtration through a 0.6 to 0.8-um glass fiber filter, is defined as the TCLP extract.

2.2 For wastes containing greater than or equal to 0.5 percent solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the solid phase, if necessary, is reduced in particle size. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile contaminants (see Table 1 for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8-um glass fiber filter.

BILLING CODE 6560-50-M

Figure 1 Method 1311 Flowchart



BILLING CODE 6560-50-C

TABLE 1.—VOLATILE CONTAMINANTS ¹

Compound	CAS no.
Acetone.....	67-64-1
Benzene.....	71-43-2
n-Butyl alcohol.....	71-36-3
Carbon disulfide.....	75-15-0
Carbon tetrachloride.....	56-23-5
Chlorobenzene.....	108-90-7
Chloroform.....	67-66-3
1,2-Dichloroethane.....	107-06-2
1,1-Dichloroethylene.....	75-35-4
Ethyl acetate.....	141-78-6
Ethyl benzene.....	100-41-4
Ethyl ether.....	60-29-7
Isobutanol.....	78-83-1
Methanol.....	67-56-1
Methylene chloride.....	75-09-2
Methyl ethyl ketone.....	79-93-3
Methyl isobutyl ketone.....	106-10-1
Tetrachloroethylene.....	127-18-4
Toluene.....	108-88-3
1,1,1-Trichloroethane.....	71-55-6
Trichloroethylene.....	79-01-6
Trichlorofluoromethane.....	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane.....	76-13-1
Vinyl chloride.....	75-01-4

TABLE 1.—VOLATILE CONTAMINANTS ¹—
Continued

Compound	CAS no.
Xylene.....	1330-20-7

¹ When testing for any or all of these contaminants, the zero-headspace extractor vessel shall be used instead of the bottle extractor.

2.3 If compatible (i.e., multiple phases will not form on combination), the initial liquid phase of the waste is added to the liquid extract, and these are analyzed together. If incompatible, the liquids are analyzed separately and the results are mathematically combined to yield a volume-weighted average concentration.

3.0 Interferences

3.1 Potential interferences that may be encountered during analysis are discussed in the individual analytical methods.

4.0 Apparatus and Materials

4.1 Agitation apparatus: The agitation apparatus must be capable of rotating the extraction vessel in an end-over-end fashion (see Figure 2) at 30 ± 2 rpm. Suitable devices known to EPA are identified in Table 2.

4.2 Extraction Vessel:

4.2.1 Zero-Headspace Extraction Vessel (ZHE). This device is for use only when the waste is being tested for the mobility of volatile constituents (i.e., those listed in Table 1). The ZHE (depicted in Figure 3) allows for liquid/solid separation within the device, and effectively precludes headspace. This type of vessel allows for initial liquid/solid separation, extraction, and final extract filtration without opening the vessel (see step 4.3.1). The vessels shall have an internal volume of 500-600 mL and be equipped to accommodate a 90-110 mm filter. The devices contain VITON[®] O-rings which should be replaced frequently. Suitable ZHE devices known to EPA are identified in Table 3.

BILLING CODE 6560-50-M

¹ VITON[®] is a trademark of Du Pont.

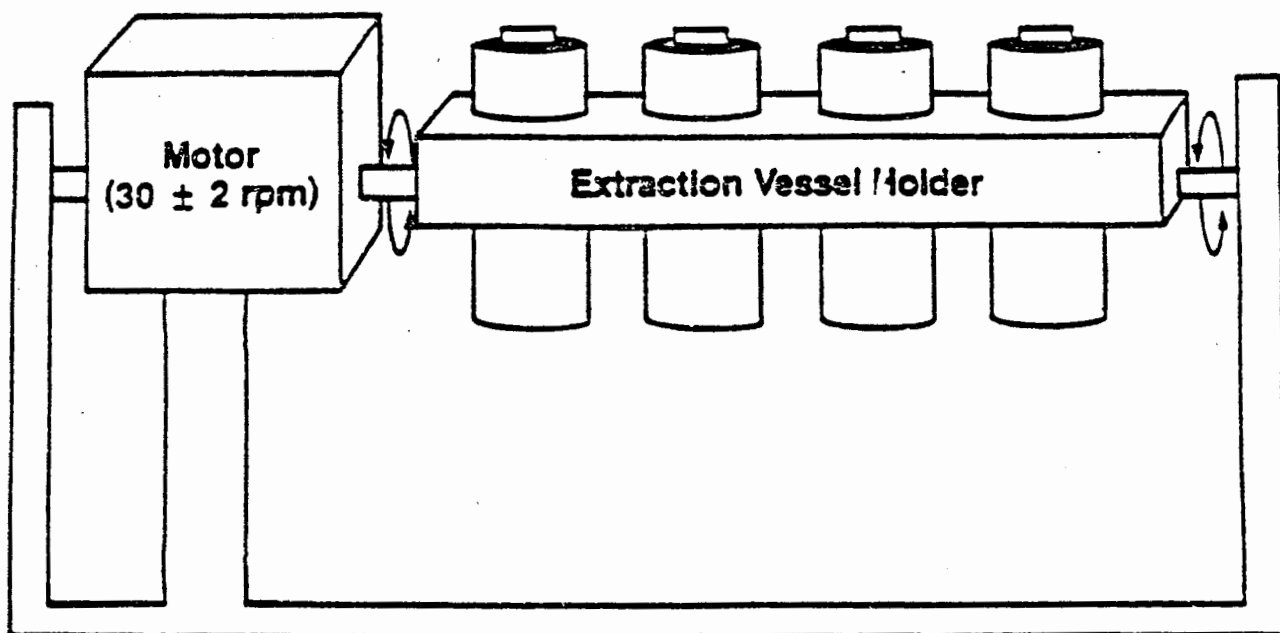


Figure 2. Rotary Agitation Apparatus

BILLING CODE 6560-50-C

TABLE 2.—SUITABLE ROTARY AGITATION APPARATUS ¹

Company	Location	Model no.
Analytical Testing and Consulting Services, Inc	Warrington, PA (215) 343-4490..	2-ZHE or 4-bottle extractor (DC20S); 4-ZHE or 8-bottle extractor (DC20); 6-ZHE or 12-bottle extractor (DC20B).
Associated Design and Manufacturing Company	Alexandria, VA (703) 549-5999 ..	2-vessel (3740-2). 4-vessel (3740-4). 6-vessel (3740-6). 8-vessel (3740-8). 12-vessel (3740-12). 24-vessel (3740-24).
Environmental Machine and Design, Inc	Lynchburg, VA (804) 845-6424 ..	8-vessel (08-00-00). 4-vessel (04-00-00).
IRA Machine Shop and Laboratory	Santurce, PR (809) 752-4004	8-vessel (011001).
Lars Lande Manufacturing	Whitmore Lake, MI (313) 449-4116.	10-vessel (10VRE). 5-vessel (5 VRE).
Millipore Corp.....	Bedford, MA (800) 225-3384	4-ZHE or 4 1-liter bottle extractor (YT30ORAHW).

¹ Any device that rotates the extraction vessel in an end-over-end fashion at 30 +2 rpm is acceptable.

BILLING CODE 6560-50-M

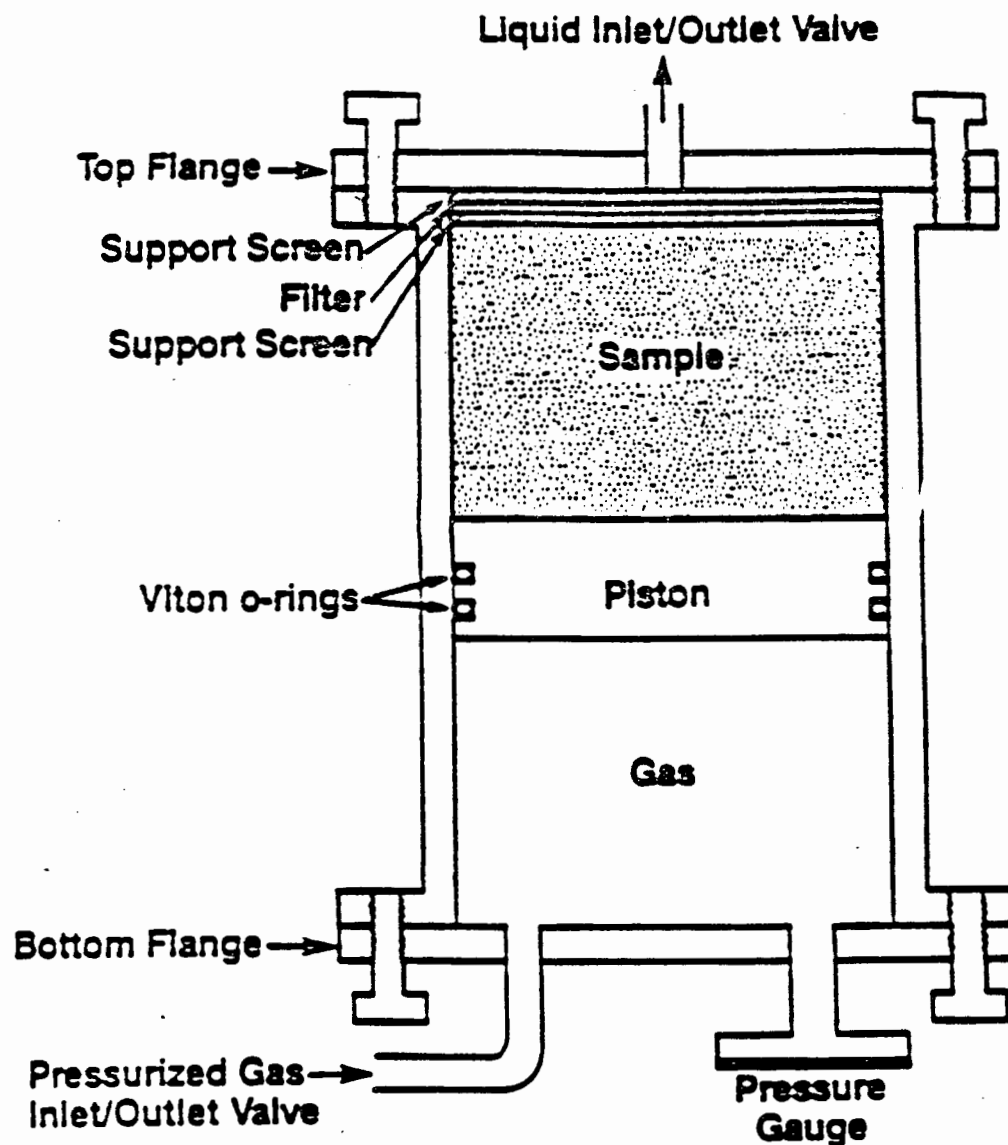


Figure 3. Zero-Headspace Extractor (ZHE)

BILLING CODE 6560-50-C

TABLE 3.—SUITABLE ZERO-HEADSPACE EXTRACTOR VESSELS¹

Company	Location	Model no.
Analytical Testing & Consulting Services, Inc.	Warrington, PA (215) 343-4490	C102, Mechanical Pressure Device.
Associated Design and Manufacturing Company	Alexandria, VA (703) 549-5999	3745-ZHE, Gas Pressure Device.
Lars Lande Manufacturing ²	Whitmore Lake, MI (313) 449-4116	ZHE-11, Gas Pressure Device.
Millipore Corporation	Bedford, MA (800) 225-3384	YT3009OHW, Gas Pressure Device.
Environmental Machine and Design, Inc.	Lynchburg, VA (804) 645-6424	VOLA-TOX1, Gas Gas Pressure Device.

¹ Any device that meets the specifications listed in Section 4.2.1 of the method is suitable.² This device uses a 110 mm filter.

For the ZHE to be acceptable for use, the piston within the ZHE should be able to be moved with approximately 15 psi or less. If it takes more pressure to move the piston, the O-rings in the device should be replaced. If this does not solve the problem, the ZHE is unacceptable for TCLP analyses and the manufacturer should be contacted.

The ZHE should be checked for leaks after every extraction. If the device contains a built-in pressure gauge, pressurize the device to 50 psi, allow it to stand unattended for 1 hour, and recheck the pressure. If the device does not have a built-in pressure gauge, pressurize the device to 50 psi, submerge it in water, and check for the presence of air bubbles escaping from any of the fittings. If pressure is lost, check all fittings and inspect and replace O-rings, if necessary. Retest the device. If leakage problems cannot be solved, the manufacturer should be contacted.

Some ZHEs use gas pressure to actuate the ZHE piston, while others use mechanical pressure (see Table 3). Whereas the volatiles procedure (see section 9.0) refers to pounds-per-square-inch (psi), for the mechanically actuated piston, the pressure applied is measured in torque-inch-pounds. Refer to the manufacturer's instructions as to the proper conversion.

4.2.2 Bottle Extraction Vessel. When the waste is being evaluated using the nonvolatile extraction, a jar with sufficient capacity to hold the sample and the

extraction fluid is needed. Headspace is allowed in this vessel.

The extraction bottles may be constructed from various materials, depending on the contaminants to be analyzed and the nature of the waste (see Step 4.3.3). It is recommended that borosilicate glass bottles be used instead of other types of glass, especially when inorganics are of concern. Plastic bottles, other than polytetrafluoroethylene, shall not be used if organics are to be investigated. Bottles are available from a number of laboratory suppliers. When this type of extraction vessel is used, the filtration device discussed in Step 4.3.2 is used for initial liquid/solid separation and final extract filtration.

4.3 Filtration Devices: It is recommended that all filtrations be performed in a hood.

4.3.1 Zero-Headspace Extractor Vessel (ZHE): When the waste is evaluated for volatiles, the zero-headspace extraction vessel described in section 4.2.1 is used for filtration. The device shall be capable of supporting and keeping in place the glass fiber filter and be able to withstand the pressure needed to accomplish separation (50 psi).

Note: When it is suspected that the glass fiber filter has been ruptured, an in-line glass fiber filter may be used to filter the material within the ZHE.

4.3.2 Filter Holder: When the waste is evaluated for other than volatile compounds, any filter holder capable of supporting a glass

fiber filter and able to withstand the pressure needed to accomplish separation may be used. Suitable filter holders range from simple vacuum units to relatively complex systems capable of exerting pressures of up to 50 psi or more. The type of filter holder used depends on the properties of the material to be filtered (see Step 4.3.3). These devices shall have a minimum internal volume of 300 mL and be equipped to accommodate a minimum filter size of 47 mm (filter holders having an internal capacity of 1.5 L or greater and equipped to accommodate a 142 mm diameter filter are recommended). Vacuum filtration can only be used for wastes with low solids content (< 10 percent) and for highly granular liquid-containing wastes. All other types of wastes should be filtered using positive pressure filtration. Suitable filter holders known to EPA are shown in Table 4.

4.3.3 Materials of Construction: Extraction vessels and filtration devices shall be made of inert materials which will not leach or absorb waste components. Glass, polytetrafluoroethylene (PTFE), or type 316 stainless steel equipment may be used when evaluating the mobility of both organic and inorganic components. Devices made of high-density polyethylene (HDPE), polypropylene, or polyvinyl chloride may be used only when evaluating the mobility of metals. Borosilicate glass bottles are recommended for use over other types of glass bottles, especially when inorganics are constituents of concern.

TABLE 4.—SUITABLE FILTER HOLDERS¹

Company	Location	Model/Catalogue no.	Size (µm)
Nucleopore Corporation	Pleasanton, CA (800) 882-7711	425910 410400	142 mm 47 mm
Micro Filtration Systems	Dublin, CA (800) 334-7132 (415) 828-6010	302400 311400	142 mm 47 mm
Millipore Corporation	Bedford, MA (800) 225-3384	YT30142HW XX1004700	142 mm 47 mm

¹ Any device capable of separating the liquid from the solid phase of the waste is suitable, providing that it is chemically compatible with the waste and the constituents to be analyzed. Plastic devices (not listed above) may be used when only inorganic contaminants are of concern. The 142 mm size filter holder is recommended.

4.4 Filters: Filters shall be made of borosilicate glass fiber, shall contain no binder materials, and shall have an effective pore size of 0.6 to 0.8-µm or equivalent. Filters known to EPA which meet these specifications are identified in Table 5. Pre-

filters must not be used. When evaluating the mobility of metals, filters shall be acid-washed prior to use by rinsing with 1N nitric acid followed by three consecutive rinses with deionized distilled water (a minimum of 1-L per rinse is recommended). Glass fiber

filters are fragile and should be handled with care.

4.5 pH meters: The meter should be accurate to +0.05 units at 25 °C.

TABLE 5.—SUITABLE FILTER MEDIA ¹

Company	Location	Model	Pore size
Millipore Corporation	Bedford, MA (800) 225-3384	AP40	0.7
Nucleopore Corporation	Pleasanton, CA (415) 463-2530	211625	0.7
Whatman Laboratory Products, Inc.	Clifton, NJ (201) 773-5800	GFF	0.7
Micro Filtration Systems	Dublin, CA (800) 334-7132 (415) 828-6010	GF75	0.7

¹ Any filter that meets the specifications in Section 4.4 of the Method is suitable.

4.8 ZHE extract collection devices: TEDLAR[®] bags or glass, stainless steel or PTFE gas-tight syringes are used to collect the initial liquid phase and the final extract of the waste when using the ZHE device. The devices listed are recommended for use under the following conditions:

4.8.1 If a waste contains an aqueous liquid phase or if a waste does not contain a significant amount of nonaqueous liquid (i.e., <1 percent of total waste), the TEDLAR[®] bag or a 600 mL syringe should be used to collect and combine the initial liquid and solid extract.

4.8.2 If a waste contains a significant amount of nonaqueous liquid in the initial liquid phase (i.e., >1 percent of total waste), the syringe or the TEDLAR[®] bag may be used for both the initial solid/liquid separation and the final extract filtration. However, analysts should use one or the other, not both.

4.8.3 If the waste contains no initial liquid phase (is 100 percent solid) or has no significant solid phase (is 100 percent liquid), either the TEDLAR[®] bag or the syringe may be used. If the syringe is used, discard the first 5 mL of liquid expressed from the device. The remaining aliquots are used for analysis.

4.7 ZHE extraction fluid transfer devices: Any device capable of transferring the extraction fluid into the ZHE without changing the nature of the extraction fluid is acceptable (e.g., a positive displacement or peristaltic pump, a gas tight syringe, pressure filtration unit (See Step 4.3.2), or other ZHE device).

4.8 Laboratory balance: Any laboratory balance accurate to within +0.01 grams may be used (all weight measurements are to be within +0.1 grams).

5.0 Reagents

5.1 Reagent water. Reagent water is defined as water in which an interferant is not observed at or above the methods detection limit of the analyte(s) of interest. For nonvolatile extractions, ASTM Type II water or equivalent meets the definition of reagent water. For volatile extractions, it is recommended that reagent water be generated by any of the following methods. Reagent water should be monitored periodically for impurities.

5.1.1 Reagent water for volatile extractions may be generated by passing tap water through a carbon filter bed containing about 500 grams of activated carbon (Calgon Corp., Filtrasorb-300 or equivalent).

5.1.2 A water purification system (Millipore Super-Q or equivalent) may also be used to generate reagent water for volatile extractions.

5.1.3 Reagent water for volatile extractions may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the water temperature at 90 ± 5 °C, bubble a contaminant-free inert gas (e.g., nitrogen) through the water for 1 hour. While still hot, transfer the water to a narrow mouth screw-cap bottle under zero-headspace and seal with a Teflon-lined septum and cap.

5.2 Hydrochloric acid (1N), HCl, made from ACS reagent grade.

5.3 Nitric acid (1N), HNO₃, made from ACS reagent grade.

5.4 Sodium hydroxide (1N), NaOH, made from ACS reagent grade.

5.5 Glacial acetic acid, HOAc, ACS reagent grade.

5.6 Extraction fluid.

5.6.1 Extraction fluid #1: Add 5.7 mL glacial HOAc to 500 mL of the appropriate water (See Step 5.1), add 64.3 mL of 1N NaOH, and dilute to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 4.93 ± 0.05.

5.6.2 Extraction fluid #2: Dilute 5.7 mL glacial HOAc with ASTM Type II water (See Step 5.1) to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 2.88 ± 0.05.

Note: These extraction fluids should be monitored frequently for impurities. The pH should be checked prior to use to ensure that these fluids are made up accurately. If impurities are found or the pH is not within the above specifications, the fluid shall be discarded and fresh extraction fluid prepared.

5.7 Analytical standards prepared according to the appropriate analytical method.

6.0 Sample Collection, Preservation, and Handling

6.1 All samples shall be collected using an appropriate sampling plan.

6.2 The TCLP may place requirements on the minimal size of the field sample depending upon the physical state or states of the waste and the contaminants of concern. An aliquot is needed for preliminary evaluation of which extraction fluid is to be used for the nonvolatile contaminant extraction procedure. Another aliquot may be needed to actually conduct the nonvolatile extraction (see section 1.4 concerning the use of this extract for volatile organics). If volatile organics are of concern, another aliquot may be needed. Quality control measures may require additional aliquots. Further, it is always wise to collect more sample just in case something goes wrong with the initial attempt to conduct the test.

6.3 Preservatives shall not be added to samples.

6.4 Samples may be refrigerated unless refrigeration results in irreversible physical change to the waste. If precipitation occurs, the entire sample (including precipitate) should be extracted.

6.5 When the waste is to be evaluated for volatile contaminants, care shall be taken to minimize the loss of volatiles. Samples shall be taken and stored in a manner to prevent the loss of volatile contaminants (e.g., samples should be collected in Teflon-lined septum capped vials and stored at 4 °C until ready to be opened prior to extraction).

6.6 TCLP extracts should be prepared for analysis and analyzed as soon as possible following extraction. Extracts or portions of extracts for metallic contaminant determinations must be acidified with nitric acid to a pH < 2, unless precipitation occurs (see section 8.14 if precipitation occurs). Extracts or portions of extracts for organic contaminant determinations shall not be allowed to come into contact with the atmosphere (i.e., no headspace) to prevent losses. See section 10.0 (QA requirements) for acceptable sample and extract holding times.

7.0 Preliminary Evaluations

Perform preliminary TCLP evaluations on a minimum 100 gram aliquot of waste. This aliquot may not actually undergo TCLP extraction. These preliminary evaluations include: (1) determination of the percent solids; (2) determination of whether the waste contains insignificant solids and is, therefore, its own extract after filtration; (3) determination of whether the solid portion of the waste requires particle size reduction; and (4) determination of which of the two extraction fluids are to be used for the nonvolatile TCLP extraction of the waste.

7.1 Preliminary determination of percent solids: Percent solids is defined as that fraction of a waste sample (as a percentage of the total sample) from which no liquid may be forced out by an applied pressure, as described below.

7.1.1 If the waste will obviously yield no free liquid when subjected to pressure filtration (i.e., is 100% solids) proceed to Step 7.3.

7.1.2 If the sample is liquid or multiphasic, liquid/solid separation to make a preliminary determination of percent solids is required. This involves the filtration device described in Step 4.3.2 and is outlined in Steps 7.1.3 through 7.1.9.

7.1.3 Pre-weigh the filter and the container that will receive the filtrate.

7.1.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure.

² TEDLAR[®] is a registered trademark of Du Pont.

7.1.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight.

7.1.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Centrifugation is to be used only as an aid to filtration. If used, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.

7.1.7 Quantitatively transfer the waste sample to the filter holder (liquid and solid phases). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature then allow the sample to warm up to room temperature in the device before filtering.

Note: If waste material (>1 percent of original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in Step 7.1.5 to

determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is not reached under 10 psi, and if no additional liquid has passed through the filter in any 2-minute interval, slowly increase the pressure in 10-psi increments to a maximum of 50 psi. After each incremental increase of 10-psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2-minute interval, proceed to the next 10-psi increment. When the pressurizing gas begins to move through the filter, or when liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within any 2-minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.1.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in Step 7.1.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

7.1.9 Determine the weight of the liquid phase by subtracting the weight of the filtrate container (see Step 7.1.3) from the total weight of the filtrate-filled container. Determine the weight of the solid phase of the waste sample by subtracting the weight of the liquid phase from the weight of the total waste sample, as determined in Step 7.1.5 or 7.1.7.

Record the weight of the liquid and solid phases. Calculate the percent solids as follows:

$$\text{Percent solids} = \frac{\text{Weight of solid (Step 7.1.9)}}{\text{Total weight of waste (Step 7.1.5 or 7.1.7)}} \times 100$$

7.2 If the percent solids determined in Step 7.1.9 is equal to or greater than 0.5%, then proceed either to Step 7.3 to determine whether the solid material requires particle size reduction or to Step 7.2.1 if it is noticed that a small amount of the filtrate is entrained in wetting of the filter. If the percent solids determined in Step 7.1.9 is less than 0.5%, then proceed to Step 8.9 if the

nonvolatile TCLP is to be performed and to section 9.0 with a fresh portion of the waste if the volatile TCLP is to be performed.

7.2.1 Remove the solid phase and filter from the filtration apparatus.

7.2.2 Dry the filter and solid phase at 100 + 20 °C until two successive weighing yield the same value within +1 percent. Record the final weight.

Note: Caution should be taken to ensure that the subject solid will not flash upon heating. It is recommended that the drying oven be vented to a hood or other appropriate device.

7.2.3 Calculate the percent dry solids as follows:

$$\text{Percent dry solids} = \frac{(\text{Weight of dry waste + filter}) - \text{tared weight of filter}}{\text{Initial weight of waste (Step 7.1.5 or 7.1.7)}} \times 100$$

7.2.4 If the percent dry solids is less than 0.5 percent, then proceed to Step 8.9 if the nonvolatile TCLP is to be performed, and to Section 9.0 if the volatile TCLP is to be performed. If the percent dry solids is greater than or equal to 0.5%, and if the nonvolatile TCLP is to be performed, return to the beginning of this Section (7.0) and, with a fresh portion of waste, determine whether particle size reduction is necessary (Step 7.3) and determine the appropriate extraction fluid (Step 7.4). If only the volatile TCLP is to be performed, see the note in Step 7.4.

7.3 Determination of whether the waste requires particle-size reduction (particle-size is reduced during this step): Using the solid portion of the waste, evaluate the solid for particle size. Particle-size reduction is required, unless the solid has a surface area per gram of material equal to or greater than 3.1 cm², or is smaller than 1 cm in its narrowest dimension (i.e., is capable of passing through a 9.5 mm (0.375 inch) standard sieve). If the surface area is smaller or the particle size larger than described above, prepare the solid portion of the waste for extraction by crushing, cutting, or grinding

the waste to a surface area or particle-size as described above. If the solids are prepared for organic volatiles extraction, special precautions must be taken, see Step 9.6.

Note: Surface area criteria are meant for filamentous (e.g., paper, cloth, and similar) waste materials. Actual measurement of surface area is not required, nor is it recommended. For materials that do not obviously meet the criteria, sample-specific methods would need to be developed and employed to measure the surface area. Such methodology is currently not available.

7.4 Determination of appropriate extraction fluid: If the solid content of the waste is greater than or equal to 0.5 percent and if TCLP extraction for nonvolatile constituents will take place (Section 8.0), perform the determination of the appropriate fluid (Step 5.8) to use for the nonvolatiles extraction as follows:

Note: TCLP extraction for volatile constituents uses only extraction fluid #1 (Step 5.8.1). Therefore, if TCLP extraction for nonvolatiles is not required, proceed to Section 9.0.

7.4.1 Weigh out a small subsample of the solid phase of the waste, reduce the solid (if necessary) to a particle-size of approximately 1 mm in diameter or less, and transfer 5.0 grams of the solid phase of the waste to a 500-mL beaker or Erlenmeyer flask.

7.4.2 Add 96.5 mL of reagent water (ASTM Type II) to the beaker, cover with a watchglass, and stir vigorously for 5 minutes using a magnetic stirrer. Measure and record the pH. If the pH is <5.0, use extraction fluid #1. Proceed to Section 8.0.

7.4.3 If the pH from Step 7.4.2 is >5.0, add 3.5 mL 1N HCl, slurry briefly, cover with a watchglass, heat to 50 °C, and hold at 50 °C for 10 minutes.

7.4.4 Let the solution cool to room temperature and record the pH. If the pH is <5.0, use extraction fluid #1. If the pH is >5.0, use extraction fluid #2. Proceed to Section 8.0.

7.5 If the aliquot of the waste used for the preliminary evaluation (Steps 7.1-7.4) was determined to be 100% solid at Step 7.1.1, then it can be used for the Section 8.0 extraction (assuming at least 100 grams

remain), and the section 9.0 extraction (assuming at least 25 grams remain). If the aliquot was subjected to the procedure in Step 7.1.7, then another aliquot shall be used for the volatile extraction procedure in Section 9.0. The aliquot of the waste subjected to the procedure in Step 7.1.7 might be appropriate for use for the section 8.0 extraction if an adequate amount of solid (as determined by Step 7.1.9) was obtained. The amount of solid necessary is dependent upon whether a sufficient amount of extract will be produced to support the analyses. If an adequate amount of solid remains, proceed to Step 8.10 of the nonvolatile TCLP extraction.

8.0 Procedure When Volatiles Are Not Involved

A minimum sample size of 100 grams (solid and liquid phases) is required. In some cases, a larger sample size may be appropriate, depending on the solids content of the waste sample (percent solids, See Step 7.1), whether the initial liquid phase of the waste will be miscible with the aqueous extract of the solid, and whether inorganics, semivolatile organics, pesticides, and herbicides are all analytes of concern. Enough solids should be generated for extraction such that the volume of TCLP extract will be sufficient to support all of the analyses required. If the amount of extract generated by a single TCLP extraction will not be sufficient to perform all of the analyses, more than one extraction may be performed and the extracts from each combined and aliquoted for analysis.

8.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100 percent solid, see Step 7.1), weigh out a subsample of the waste (100 gram minimum) and proceed to Step 8.9.

8.2 If the sample is liquid or multiphasic, liquid/solid separation is required. This involves the filtration device described in Step 4.3.2 and is outlined in Steps 8.3 to 8.8.

8.3 Pre-weigh the container that will receive the filtrate.

8.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure. Acid wash the filter if evaluating the mobility of metals (see Step 4.4).

Note: Acid washed filters may be used for all nonvolatile extractions even when metals are not of concern.

8.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight. If the waste contains <0.5 percent dry solids (Step 7.2), the liquid portion of the waste, after filtration, is defined as the TCLP extract. Therefore, enough of the sample should be filtered so that the amount of filtered liquid will support all of the analyses required of the TCLP extract. For wastes containing >0.5 percent dry solids (Step 7.1 or 7.2), use the percent solids information obtained in Step 7.1 to determine the optimum sample size (100 gram minimum) for filtration. Enough solids should be generated by filtration to support the analyses to be performed on the TCLP extract.

8.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Use centrifugation only as an aid to filtration. If the waste is centrifuged, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.

8.7 Quantitatively transfer the waste sample (liquid and solid phases) to the filter holder (see Step 4.3.2). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering.

Note: If waste material (>1 percent of the original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in Step 8.5, to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1–10 psi, until air or pressurizing gas moves through the filter. If this point is not reached under 10 psi, and if no additional liquid has passed through the filter in any 2-minute interval, slowly increase the pressure in 10-psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2-minute interval, proceed to the next 10-psi increment. When the pressurizing gas begins to move through the filter, or when the liquid flow has ceased

at 50 psi (i.e., filtration does not result in any additional filtrate within a 2-minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

8.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase. Weigh the filtrate. The liquid phase may now be either analyzed (See Step 8.12) or stored at 4 °C until time of analysis.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in Step 8.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the extraction as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

8.9 If the waste contains <0.5 percent dry solids (see Step 7.2), proceed to Step 8.13. If the waste contains >0.5 percent dry solids (see Step 7.1 or 7.2), and if particle-size reduction of the solid was needed in Step 7.3, proceed to Step 8.10. If the waste as received passes a 9.5 mm sieve, quantitatively transfer the solid material into the extractor bottle along with the filter used to separate the initial liquid from the solid phase, and proceed to Step 8.11.

8.10 Prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle-size as described in Step 7.3. When the surface area or particle-size has been appropriately altered, quantitatively transfer the solid material into an extractor bottle. Include the filter used to separate the initial liquid from the solid phase.

Note: Sieving of the waste is not normally required. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended. If sieving is necessary, a Teflon-coated sieve should be used to avoid contamination of the sample.

8.11 Determine the amount of extraction fluid to add to the extractor vessel as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (Step 7.1)} \times \text{weight of waste filtered (Step 8.5 or 8.7)}}{100}$$

Slowly add this amount of appropriate extraction fluid (see Step 7.4) to the extractor vessel. Close the extractor bottle tightly (it is recommended that Teflon tape be used to ensure a tight seal), secure in rotary agitation device, and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction takes place) shall be maintained at 22 ± 3 °C during the extraction period.

Note: As agitation continues, pressure may build up within the extractor bottle for some types of wastes (e.g., limed or calcium carbonate containing waste may evolve gases such as carbon dioxide). To relieve excess pressure, the extractor bottle may be periodically opened (e.g., after 15 minutes, 30 minutes, and 1 hour) and vented into a hood.

8.12 Following the 18 ± 2 hour extraction, separate the material in the extractor vessel into its component liquid and solid phases by

filtering through a new glass fiber filter, as outlined in Step 8.7. For final filtration of the TCLP extract, the glass fiber filter may be changed, if necessary, to facilitate filtration. Filter(s) shall be acid-washed (see Step 4.4) if evaluating the mobility of metals.

8.13 Prepare the TCLP extract as follows:

8.13.1 If the waste contained no initial liquid phase, the filtered liquid material obtained from Step 8.12 is defined as the TCLP extract. Proceed to Step 8.14.

8.13.2 If compatible (e.g., multiple phases will not result on combination), combine the filtered liquid resulting from Step 8.12 with the initial liquid phase of the waste obtained in Step 8.7. This combined liquid is defined as the TCLP extract. Proceed to Step 8.14.

8.13.3 If the initial liquid phase of the waste, as obtained from Step 8.7, is not or may not be compatible with the filtered liquid resulting from Step 8.12, do not combine these liquids. Analyze these liquids, collectively defined as the TCLP extract, and combine the results mathematically, as described in Step 8.14.

8.14 Following collection of the TCLP extract, the pH of the extract should be

recorded. Immediately aliquot and preserve the extract for analysis. Metals aliquots must be acidified with nitric acid to pH < 2. If precipitation is observed upon addition of nitric acid to a small aliquot of the extract, then the remaining portion of the extract for metals analyses shall not be acidified and the extract shall be analyzed as soon as possible. All other aliquots must be stored under refrigeration (4 °C) until analyzed. The TCLP extract shall be prepared and analyzed according to appropriate analytical methods. TCLP extracts to be analyzed for metals shall be acid digested except in those instances where digestion causes loss of metallic contaminants. If an analysis of the

undigested extract shows that the concentration of any regulated metallic contaminant exceeds the regulatory level, then the waste is hazardous and digestion of the extract is not necessary. However, data on undigested extracts alone cannot be used to demonstrate that the waste is not hazardous. If the individual phases are to be analyzed separately, determine the volume of the individual phases (to +0.5 percent), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final analyte concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phase (L).

C_1 = The concentration of the contaminant of concern in the first phase (mg/L).

V_2 = The volume of the second phase (L).

C_2 = The concentration of the contaminant of concern in the second phase (mg/L).

8.15 Compare the contaminant concentrations in the TCLP extract with the thresholds identified in the appropriate regulations. Refer to § 10.0 for quality assurance requirements.

9.0 Procedure When Volatiles Are Involved

Use the ZHE device to obtain TCLP extract for analysis of volatile compounds only. Extract resulting from the use of the ZHE shall not be used to evaluate the mobility of nonvolatile analytes (e.g., metals, pesticides, etc.).

The ZHE device has approximately a 500-mL internal capacity. The ZHE can thus accommodate a maximum of 25 grams of solid (defined as that fraction of a sample from which no additional liquid may be forced out by an applied pressure of 50 psi), due to the need to add an amount of extraction fluid equal to 20 times the weight of the solid phase.

Charge the ZHE with sample only once and do not open the device until the final extract (of the solid) has been collected. Repeated filling of the ZHE to obtain 25 grams of solid is not permitted.

Do not allow the waste, the initial liquid phase, or the extract to be exposed to the atmosphere for any more time than is absolutely necessary. Any manipulation of these materials should be done when cold (4 °C) to minimize loss of volatiles.

9.1 Pre-weigh the (evacuated) filtrate collection container (See Step 4.6) and set aside. If using a TEDLAR® bag, express all liquid from the ZHE device into the bag, whether for the initial or final liquid/solid separation, and take an aliquot from the liquid in the bag for analysis. The containers listed in Step 4.6 are recommended for use under the conditions stated in 4.6.1-4.6.3.

9.2 Place the ZHE piston within the body of the ZHE (it may be helpful first to moisten the piston O-rings slightly with extraction fluid). Adjust the piston within the ZHE body to a height that will minimize the distance the piston will have to move once the ZHE is charged with sample (based upon sample size requirements determined from Section 9.0, Step 7.1 and/or 7.2). Secure the gas inlet/

outlet flange (bottom flange) onto the ZHE body in accordance with the manufacturer's instructions. Secure the glass fiber filter between the support screens and set aside. Set liquid inlet/outlet flange (top flange) aside.

9.3 If the waste is 100 percent solid (see Step 7.1), weigh out a subsample (25 gram maximum) of the waste, record weight, and proceed to Step 9.5.

9.4 If the waste contains <0.5 percent dry solids (Step 7.2), the liquid portion of waste, after filtration, is defined as the TCLP extract. Filter enough of the sample so that the amount of filtered liquid will support all of the volatile analyses required. For wastes containing >0.5 percent dry solids (Steps 7.1 and/or 7.2), use the percent solids information obtained in Step 7.1 to determine the optimum sample size to charge into the ZHE. The recommended sample size is as follows:

9.4.1 For wastes containing <0.5 percent solids (see Step 7.1), weigh out a 500-gram subsample of waste and record the weight.

9.4.2 For wastes containing >0.5 percent solids (see Step 7.1), determine the amount of waste to charge into the ZHE as follows:

$$\text{Weight of waste to charge ZHE} = \frac{25}{\text{Percent solids (Step 7.1)}} \times 100$$

Weigh out a subsample of the waste of the appropriate size and record the weight.

9.5 If particle-size reduction of the solid portion of the waste was required in Step 7.3, proceed to Step 9.6. If particle-size reduction was not required in Step 7.3, proceed to Step 9.7.

9.6 Prepare the waste for extraction by crushing, cutting, or grinding the solid portion of the waste to a surface area or particle-size as described in Step 7.3.1. Wastes and appropriate reduction equipment should be refrigerated, if possible, to 4 °C prior to particle-size reduction. The means used to

effect particle-size reduction must not generate heat in and of itself. If reduction of the solid phase of the waste is necessary, exposure of the waste to the atmosphere should be avoided to the extent possible.

Note: Sieving of the waste is not recommended due to the possibility that volatiles may be lost. The use of an appropriately graduated ruler is recommended as an acceptable alternative. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended.

When the surface area or particle-size has been appropriately altered, proceed to Step 9.7.

9.7 Waste slurries need not be allowed to stand to permit the solid phase to settle. Do not centrifuge wastes prior to filtration.

9.8 Quantitatively transfer the entire sample (liquid and solid phases) quickly to the ZHE. Secure the filter and support screens onto the top flange of the device and secure the top flange to the ZHE body in accordance with the manufacturer's instructions. Tighten all ZHE fittings and place the device in the vertical position (gas

inlet/outlet flange on the bottom). Do not attach the extract collection device to the top plate.

Note: If waste material (>1% of original sample weight) has obviously adhered to the container used to transfer the sample to the ZHE, determine the weight of this residue and subtract it from the sample weight determined in Step 9.4 to determine the weight of the waste sample that will be filtered.

Attach a gas line to the gas inlet/outlet valve (bottom flange) and, with the liquid inlet/outlet valve (top flange) open, begin applying gentle pressure of 1–10 psi (or more if necessary) to force all headspace slowly out of the ZHE device into a hood. At the first appearance of liquid from the liquid inlet/outlet valve, quickly close the valve and discontinue pressure. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before

filtering. If the waste is 100 percent solid (see Step 7.1), slowly increase the pressure to a maximum of 50 psi to force most of the headspace out of the device and proceed to Step 9.12.

9.9 Attach the evacuated pre-weighed filtrate collection container to the liquid inlet/outlet valve and open the valve. Begin applying gentle pressure of 1–10 psi to force the liquid phase of the sample into the filtrate collection container. If no additional liquid has passed through the filter in any 2-minute interval, slowly increase the pressure in 10-psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if no additional liquid has passed through the filter in any 2-minute interval, proceed to the next 10-psi increment. When liquid flow has ceased such that continued pressure filtration at 50 psi does not result in any additional filtrate within a 2-minute period, stop the filtration. Close the liquid inlet/outlet valve, discontinue pressure to the piston, and disconnect and weigh the filtrate collection container.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

9.10 The material in the ZHE is defined as the solid phase of the waste and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying pressure filtration, this material will not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the TCLP extraction as a solid.

If the original waste contained <0.5 percent dry solids (see Step 7.2), this filtrate is defined as the TCLP extract and is analyzed directly. Proceed to Step 9.15.

9.11 The liquid phase may now be either analyzed immediately (See Steps 9.13 through 9.15) or stored at 4 °C under minimal headspace conditions until time of analysis. Determine the weight of extraction fluid #1 to add to the ZHE as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (Step 7.1)} \times \text{weight of waste filtered (Step 9.4 or 9.8)}}{100}$$

9.12 The following steps detail how to add the appropriate amount of extraction fluid to the solid material within the ZHE and agitation of the ZHE vessel. Extraction fluid #1 is used in all cases (See Step 5.6).

9.12.1 With the ZHE in the vertical position, attach a line from the extraction fluid reservoir to the liquid inlet/outlet valve. The line used shall contain fresh extraction fluid and should be preflushed with fluid to eliminate any air pockets in the line. Release gas pressure on the ZHE piston (from the gas inlet/outlet valve), open the liquid inlet/outlet valve, and begin transferring extraction fluid (by pumping or similar means) into the ZHE. Continue pumping extraction fluid into the ZHE until the appropriate amount of fluid has been introduced into the device.

9.12.2 After the extraction fluid has been added, immediately close the liquid inlet/outlet valve and disconnect the extraction fluid line. Check the ZHE to ensure that all valves are in their closed positions. Manually rotate the device in an end-over-end fashion 2 or 3 times. Reposition the ZHE in the vertical position with the liquid inlet/outlet valve on top. Pressurize the ZHE to 5–10 psi (if necessary) and slowly open the liquid inlet/outlet valve to bleed out any headspace (into a hood) that may have been introduced due to the addition of extraction fluid. This

bleeding shall be done quickly and shall be stopped at the first appearance of liquid from the valve. Re-pressurize the ZHE with 5–10 psi and check all ZHE fittings to ensure that they are closed.

9.12.3 Place the ZHE in the rotary agitation apparatus (if it is not already there) and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction occurs) shall be maintained at 22 ± 3 °C during agitation.

9.13 Following the 18 ± 2 hour agitation period, check the pressure behind the ZHE piston by quickly opening and closing the gas inlet/outlet valve and noting the escape of gas. If the pressure has not been maintained (i.e., no gas release observed), the device is leaking. Check the ZHE for leaking as specified in Step 4.2.1, and perform the extraction again with a new sample of waste. If the pressure within the device has been maintained, the material in the extractor vessel is once again separated into its component liquid and solid phases. If the waste contained an initial liquid phase, the liquid may be filtered directly into the same filtrate collection container (i.e., TEDLAR® bag) holding the initial liquid phase of the waste. A separate filtrate collection container must be used if combining would create multiple phases, or there is not enough

volume left within the filtrate collection container. Filter through the glass fiber filter, using the ZHE device as discussed in Step 9.9. All extract shall be filtered and collected if the TEDLAR® bag is used, if the extract is multiphasic, or if the waste contained an initial liquid phase (see Steps 4.6 and 9.1).

Note: An in-line glass fiber filter may be used to filter the material within the ZHE if it is suspected that the glass fiber filter has been ruptured.

9.14 If the original waste contained no initial liquid phase, the filtered liquid material obtained from step 9.13 is defined as the TCLP extract. If the waste contained an initial liquid phase, the filtered liquid material obtained from Step 9.13 and the initial liquid phase (Step 9.9) are collectively defined as the TCLP extract.

9.15 Following collection of the TCLP extract, immediately prepare the extract for analysis and store with minimal headspace at 4 °C until analyzed. Analyze the TCLP extract according to the appropriate analytical methods. If the individual phases are to be analyzed separately (i.e., are not miscible), determine the volume of the individual phases (to 0.5%), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final analyte concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phases (l).

C_1 = The concentration of the contaminant of concern in the first phase (mg/l).

V_2 = The volume of the second phase (l).

C_2 = The concentration of the contaminant of concern in the second phase (mg/l).

9.16 Compare the contaminant concentrations in the TCLP extract with the thresholds identified in the appropriate regulations. Refer to section 10.0 for quality assurance requirements.

10.0 Quality Assurance Requirements

10.1 Maintain all data, including quality assurance data, and keep it available for reference or inspection.

10.2 A minimum of one blank (extraction fluid #1) for every 10 extractions that have been conducted in an extraction vessel shall be employed as a check to determine if any memory effects from the extraction equipment are occurring.

10.3 A matrix spike shall be performed for each waste unless the result exceeds the regulatory level and the data is being used solely to demonstrate that the waste property exceeds the regulatory level. If more than one sample of the same waste is being tested, a matrix spike needs to be performed for every twenty samples and the average percent recovery applied to the waste characterization.

10.3.1 Matrix spikes are to be added after filtration of the TCLP extract and before preservation. Matrix spikes should not be added prior to TCLP extraction of the sample.

10.3.2 Matrix spike levels should be made at the appropriate regulatory threshold limits. However, if the extract contaminant concentration is less than one half the threshold limit, the spike level may be one half the contaminant concentration but not less than the quantitation limit or a fifth of the threshold limit.

10.3.3 The purpose of the matrix spike is to monitor the adequacy of the analytical

methods used on the TCLP extract and to determine whether matrix interferences exist in analyte detection. If the matrix spike recoveries are less than 50%, then the analytical methods are not performing adequately or use of the methods is inadequate. Use of internal calibration quantitation methods, modification of the analytical methods, or use of alternate analytical methods may be needed to accurately measure the contaminant concentration in the TCLP extract.

10.3.4 Use of internal quantitation methods is also required when the contaminant concentration is within 20% of the regulatory level. (See section 10.5 concerning the use of internal calibration methods.)

10.3.5 Matrix spike recoveries are calculated by the following formula:

$$\text{Percent recovery} = \frac{A-B}{C} \times 100\%$$

where A = the concentration of the spiked sample,

B = the concentration of the unspiked sample, and

C = the spike level

10.4 All quality control measures described in the appropriate analytical methods shall be followed.

10.5 The use of internal calibration quantitation methods shall be employed for a contaminant if: (1) Recovery of the contaminant from the TCLP extract is not at least 50% and the concentration does not exceed the regulatory level, and (2) The concentration of the contaminant measured in the extract is within 20% of the appropriate regulatory level.

10.5.1 The method of standard additions shall be employed as the internal calibration

quantitation method for each metallic contaminant.

10.5.1.1 The method of standard additions requires preparing calibration standards in the sample matrix rather than reagent water or blank solution. It requires taking four identical aliquots of the solution and adding known amounts of standard to three of these aliquots. The fourth aliquot is the unknown. Preferably, the first addition should be prepared so that the resulting concentration is approximately 50% of the expected concentration of the sample. The second and third additions should be prepared so that the concentrations are approximately 100% and 150% of the expected concentration of the sample. All four aliquots are maintained at the same final volume by adding reagent water or a blank solution, and may need dilution adjustment to maintain the signals in the linear range of the instrumental technique. All four aliquots are analyzed.

10.5.1.2 Prepare a plot, or subject data to linear regression, of instrumental signals or external-calibration-derived concentrations as the dependent variable (y-axis) versus concentrations of the additions of standard as the independent variable (x-axis). Solve for the intercept of the abscissa (the independent variable, x-axis) which is the concentration in the unknown.

10.5.1.3 Alternately, subtract the instrumental signal or external-calibration-derived concentration of the unknown (unspiked) sample from the instrumental signals or external-calibration-derived concentrations of the standard additions. Plot or subject data to linear regression of the corrected instrumental signals or external-calibration-derived concentrations as the dependent variable versus the independent variable. Derive concentrations for unknowns using the internal calibration curve as if it were an external calibration curve.

10.6 Samples must undergo TCLP extraction within the following time periods:

SAMPLE MAXIMUM HOLDING TIMES

[Days]

	From: Field collection To: TCLP extraction	From: TCLP extraction To: Preparative extraction	From: Preparative extraction To: Determinative analysis	Total elapsed time
Volatiles.....	14	NA	14	28
Semi-volatiles	7	7	40	54
Mercury	28	NA	28	56
Metals, except mercury.....	180	NA	180	360

NA = Not applicable.

If sample holding times are exceeded, the values obtained will be considered minimal concentrations. Exceeding the holding time is not acceptable in establishing that a waste does not exceed the regulatory level. Exceeding the holding time will not invalidate characterization if the waste exceeds the regulatory level.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

7. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, and 6925.

8. Section 264.301 is amended by revising paragraph (e)(1) to read as follows:

§ 264.301 Design and operating requirements.

• • • • •

(e) * * *

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in § 261.24 of this chapter, with EPA Hazardous Waste Numbers D004 through D017; and

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT STORAGE, AND DISPOSAL FACILITIES

9. The authority citation of part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

10. Section 265.221 is amended by revising paragraph (d)(1) to read as follows:

§ 265.221 Design requirements.

(d) * * *

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in § 261.24 of this chapter, with EPA Hazardous Waste Numbers D004 through D017; and

11. Section 265.273 is amended by revising paragraph (a) to read as follows:

§ 265.273 Waste analysis.

(a) Determine the concentrations in the waste of any substances which equal or exceed the maximum concentrations contained in Table 1 of § 261.24 of this chapter that cause a waste to exhibit the Toxicity Characteristic;

PART 268—LAND DISPOSAL RESTRICTIONS

12. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

13. Appendix I of part 268 is revised to read as follows:

Appendix I—Toxicity Characteristic Leaching Procedure (TCLP)

Note: The TCLP is published in Appendix II of part 261.

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

14. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

15. Section 271.1, paragraph (j), the heading of Table 1 is republished, and Table 1 is amended by adding the following entry in chronological order by date of promulgation to read as follows:

§ 271.1 Purpose and scope.

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
March 29, 1990.....	Toxicity characteristic.....	[Insert FR reference on date of publication].	September 25, 1990

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

16. The authority citation for part 302 continues to read as follows:

Authority: 42 U.S.C. 9602; 33 U.S.C. 1321 and 1361.

17. Section 302.4 is amended by revising under the column Hazardous Substance the entry "Unlisted Hazardous Wastes Characteristic of EP Toxicity" to read "Unlisted Hazardous

Wastes Characteristics" and by revising the entry "Characteristic of EP Toxicity" and its sub entries to read as follows:

§ 302.4 Designation of hazardous substances.

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code†	RCRA waste number	Category	Pounds (Kg)
Characteristic of Toxicity:							
Arsenic (D004).....	N.A.	.....	*1	4	D004	X	1 (0.454)
Barium (D005).....	N.A.	.....	*1	4	D005	C	1,000 (454)
Benzene (D018).....	N.A.	.....	1000	1, 2, 3, 4	D018	A	10 (4.54)
Cadmium (D006).....	N.A.	.....	*1	4	D006	A	10 (4.54)
Carbon tetrachloride (D019).....	N.A.	.....	5,000	1, 2, 4	D019	A	10 (4.54)
Chlordane (D020).....	N.A.	.....	1	1, 2, 4	D020	X	1 (0.454)
Chlorobenzene (D021).....	N.A.	.....	100	1, 2, 4	D021	B	100 (45.4)
Chloroform (D022).....	N.A.	.....	5,000	1, 2, 4	D022	A	10 (4.54)
Chromium (D007).....	N.A.	.....	*1	4	D007	A	10 (4.54)
o-Cresol (D023).....	N.A.	.....	1,000	1, 4	D023	C	1,000 (454)
m-Cresol (D024).....	N.A.	.....	1,000	1, 4	D024	C	1,000 (454)

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Codet	RCRA waste number	Category	Pounds (Kg)
p-Cresol (D025).....	N.A.	.....	1,000	1, 4	D025	C	1,000 (454)
Cresol (D026).....	N.A.	.....	1,000	1, 4	D026	C	1,000 (454)
2,4-D (D016).....	N.A.	.....	100	1, 4	D016	B	100 (45.4)
1,4-Dichlorobenzene (D027).....	N.A.	.....	100	1, 2, 4	D027	B	100 (45.4)
1,2-Dichloroethane (D028).....	N.A.	.....	5,000	1, 2, 4	D028	B	100 (45.4)
1,1-Dichloroethylene (D029).....	N.A.	.....	5,000	1, 2, 4	D029	B	100 (45.4)
2,4-Dinitrotoluene (D030).....	N.A.	.....	1,000	1, 2, 4	D030	A	10 (4.54)
Endrin (D012).....	N.A.	.....	1	1, 4	D012	X	1 (0.454)
Heptachlor (and hydroxide) (D031).....	N.A.	.....	1	1, 2, 4	D031	X	1 (0.454)
Hexachlorobenzene (D032).....	N.A.	.....	*1	2, 4	D032	A	10 (4.54)
Hexachlorobutadiene (D033).....	N.A.	.....	*1	2, 4	D033	X	1 (0.454)
Hexachloroethane (D034).....	N.A.	.....	*1	2, 4	D034	B	100 (45.4)
Lead (D008).....	N.A.	.....	*1	4	D008		(#)
Lindane (D013).....	N.A.	.....	1	1, 4	D013	X	1 (0.454)
Mercury (D009).....	N.A.	.....	*1	4	D009	X	1 (0.454)
Methoxychlor (D014).....	N.A.	.....	1	1, 4	D014	X	1 (0.454)
Methyl ethyl ketone (D035).....	N.A.	.....	*1	4	D035	D	5,000 (2270)
Nitrobenzene (D036).....	N.A.	.....	1,000	1, 2, 4	D036	C	1,000 (454)
Pentachlorophenol (D037).....	N.A.	.....	10	1, 2, 4	D037	A	10 (4.54)
Pyridine (D038).....	N.A.	.....	*1	4	D038	C	1,000 (454)
Selenium (D010).....	N.A.	.....	*1	4	D010	A	10 (4.54)
Silver (D011).....	N.A.	.....	*1	4	D011	X	1 (0.454)
Tetrachloroethylene (D039).....	N.A.	.....	*1	2, 4	D039	B	100 (45.4)
Toxaphene (D015).....	N.A.	.....	1	1, 4	D015	X	1 (0.454)
Trichloroethylene (D040).....	N.A.	.....	1000	1, 2, 4	D040	B	100 (45.4)
2,4,5-Trichloroethylene (D041).....	N.A.	.....	10	1, 4	D041	A	10 (4.54)
2,4,6-Trichlorophenol (D042).....	N.A.	.....	10	1, 2, 4	D042	A	10 (4.54)
2,4,5-TP (D017).....	N.A.	.....	100	1, 4	D017	B	100 (45.4)
Vinyl chloride (D043).....	N.A.	.....	*1	2, 3, 4	D043	X	1 (0.454)

†—indicates the statutory source as defined by 1, 2, 3, or 4 below.

*1—indicates that the 1-pound RQ is a CERCLA statutory RQ.

#—indicates that the RQ is subject to change when the assessment of potential carcinogenicity is completed.

[FR Doc. 90-6104 Filed 3-28-90; 8:45 am]

BILLING CODE 6560-50-M

Friday
June 29, 1990

Part V

**Environmental
Protection Agency**

**40 CFR Parts 261, 264, 265, 268, 271 and
302**

**Hazardous Waste Management System;
Identification and Listing of Hazardous
Waste; Toxicity Characteristic Revisions;
Final Rule**

**Environmental Protection Agency
Federal Register**

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, 268, 271 and 302

[SWH-FRL-3792-2; EPA/OSW-FR-90-014]

RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic Revisions

AGENCY: Environmental Protection Agency.

ACTION: Final rule; corrections.

SUMMARY: On March 29, 1990 (55 FR 11798), the Environmental Protection Agency (EPA) promulgated a rule to revise the existing toxicity characteristics, which are used to identify those wastes which are hazardous and thus subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. Since promulgation, the Agency has found the need to make corrections to the rule in order to ensure consistency of the toxicity characteristic leaching procedure (TCLP), Method 1311, with other methods contained in Test Methods for Evaluating Solid Waste (Physical/Chemical Methods), SW-846 and to clarify the section on quality assurance. This notice also corrects several errors in the March 29, 1990 notice.

DATES: Effective date: September 25, 1990. The effective date and compliance dates are not changed by this document.

FOR FURTHER INFORMATION CONTACT: For general information about this notice, contact the RCRA/Superfund Hotline at (800) 424-9346 (toll free) or (202) 382-3000 in the Washington, DC metropolitan area. For information on specific aspects of this notice, contact Steve Cochran, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460, (202) 475-8551.

I. SUPPLEMENTARY INFORMATION:

A. Background

On March 29, 1990 (55 FR 11798), EPA promulgated a rule to revise the existing toxicity characteristics, which are used to identify those wastes which are hazardous and thus subject to regulation under subtitle C of RCRA. The rule broadened and refined the scope of the hazardous waste regulatory program and fulfilled specific statutory mandates under the Hazardous and Solid Waste Amendments of 1984.

Today's notice makes corrections to appendix II of the regulatory language of the March 29, 1990 final rule, Method 1311, the TCLP. The method has been reorganized to correspond to the current version of Test Methods for Evaluating Solid Waste (Chemical/Physical Methods), SW-846. In addition, the quality assurance section has been renumbered and has been clarified to eliminate confusion. Today's notice also corrects several typographical errors and other omissions that appeared in the final rule revising the toxicity characteristics.

The preamble to the March 29, 1990 final rule stated that any person that would like to use the TCLP before the effective date of the rule (September 25, 1990) may do so in order to determine whether the eight heavy metals and six pesticides that are currently regulated under the Extraction Procedure (EP) Toxicity Characteristic leach at levels of regulatory concern. This language was included because the TCLP is required for both waste determination (on September 25, 1990, the TC effective date) and the land disposal restrictions program. The Agency today is clarifying that, while it is appropriate to use just one leach test to fulfill both requirements, persons that would like to continue using the EP leach test until the effective date of the TC rule may do so. It should be noted, however, that the EP test may still be required as a matter of state law, and this regulation does not affect such state law requirements.

B. Method 1311 and Quality Assurance

Today's notice makes technical corrections to mistakes made in Method 1311, and to errors made during typesetting, and provides clarifications to specific procedures of the method. The method also is being reorganized by placing the leaching procedure in one section and the quality assurance in a separate section to conform with the format used in SW-846.

A correction is being made in the calculation for the weight of waste to charge the Zero-Head-space Extractor (ZHE). In the final rule published March 29, 1990, the method incorrectly stated that the optimum sample size to charge into the ZHE should be determined for wastes containing >0.5% solids. This calculation results in a charge sample greater than the capacity of the ZHE. The Agency today is correcting the procedure to require a determination on wastes containing >5% solids. The sample holding times and errors made during typesetting are also being corrected by today's notice.

The Agency received inquiries indicating that confusion exists

concerning correction factors and how they should be applied. Therefore, the Agency is making a technical correction in § 8.2.5 of Method 1311, published in today's notice, by adding a formula for correcting measured values for analytical bias. Also, inquiries indicate that EPA's discussion of the appropriate GC and GC/MS methods to be used was improper. The preamble language is corrected by today's notice to indicate the appropriate GC and GC/MS methods to be used.

Method 1311 is also being reorganized by today's notice by placing the leaching procedure itself in one section, 7.0. (The steps of the leaching procedure were previously presented in sections 7, 8, and 9 in the March 29, 1990 final rule.) In addition, this notice makes minor corrections to the quality assurance section and it is renumbered 8.0. This reorganization provides consistency with SW-846.

Appendix II, Method 1311 of the March 29, 1990 final rule is replaced in its entirety by Method 1311 of this notice in order to incorporate the corrections, reorganizations, and clarifications which are being made by today's notice.

The March 29, 1990 final rule provided an exclusion under 40 CFR 261.4 for petroleum-contaminated media and debris that fail the Toxicity Characteristic. This exclusion applies only to petroleum-contaminated media and debris which exhibit the TC for any one or more of the newly identified organic constituents, and which are subject to corrective action under part 280. The regulatory language of this exclusion in the final rule is revised by today's notice to correctly reflect this application.

C. Corrections

1. On page 11798, column one, under "DATES," in the second line of the compliance dates paragraph, change "generators: September 25, 1990. Small" to "generators and treatment, storage, and disposal facilities (TSDFs): September 25, 1990. Small".

2. On page 11804, Table II.2—Toxicity Characteristics Constituents and Regulatory Levels, change the column heading "Constituent (mg/L)" to "Constituent".

3. On page 11804, Table II.2—Toxicity Characteristic Constituents and Regulatory Levels, line twenty, change "Heptachlor (and its hydroxide)" to "Heptachlor (and its epoxide)".

4. On page 11815, column three, Table C-1—Chronic Toxicity Reference Levels, lines nineteen and twenty, change "Heptachlor (and its hydroxide)" to "Heptachlor (and its epoxide)".

5. On page 11825, column one, fourth bullet, first line, change "The data extracted from RFSs" to "The data extracted from RFAs".

6. On page 11829, column one, the first full paragraph (lines twenty-four through thirty-six) is replaced by the following: "The Agency agrees that the GC method (Method 8040) or the GC/MS method (Method 8270) for phenols and the GC/Electron Capture Detection (GC/ECD) for phenoxyacid herbicides (Method 8150) are more advantageous for the analysis of these analytes because the equipment is more readily available than the HPLC, despite the associated difficulties. HPLC methods for phenols and phenoxyacid herbicides are not included in the third edition of SW-846 because of a lack of validation data. The Agency will allow only the use of the previously mentioned GC and GC/MS methods (Methods 8040 or 8270) or their equivalents for phenols and Method 8150 for phenoxyacid herbicides until such time that the Agency proposes an HPLC method."

7. On page 11831, column two, paragraph b, seventh line, change "rule of 40 CFR 262.3(a)(2)(iv) or the" to "rule of 40 CFR 261.3(a)(2)(iv) or the".

8. On page 11835, column one, first and second line, change "July 25, 1985" to "July 15, 1985".

9. On page 11837, column one, third complete paragraph, thirteenth line, change "for TSDFs on February 5, 1987 (53 FR)" to "for TSDFs on February 5, 1987 (52 FR)".

10. On page 11840, column three, first bullet of second complete paragraph, first line, change "Solid waste that is a hazardous waste" to "Used oil that is a hazardous waste".

11. On page 11844, Table IV-1.—TC Constituent and Regulatory Levels Proposed June 13, 1986—Continued, fourth line, change the CASNO for D034 from "76-44-2" to "76-44-8".

12. On page 11844, Table IV-1.—TC Constituent and Regulatory Levels Proposed June 13, 1986—Continued, line twenty-one, change to read as follows: D045 . . . 1,1,1,2-Tetrachloroethane . . . 630-20-6 . . . 10.0.

13. On page 11844, column two, Table IV-2.—Organic Constituents, fourth line, change the CASNO for D021 from "106-90-7" to "108-90-7".

14. On page 11844, column three, Table IV-2.—Organic Constituents—Continued, first line, change "D031 . . . Heptachlor (and its hydroxide) . . . 76-44-2" to "D031 . . . Heptachlor (and its epoxide) . . . 76-44-8".

15. On page 11846, Table IV-3—Toxicity Characteristic Constituents and Regulatory Levels—Continued, tenth line, change "Heptachlor (and its

hydroxide)" to "Heptachlor (and its epoxide)".

16. Also on page 11846, column two, third line, change "270 of chapter 40." to "270 of title 40."

PART 261—[AMENDED]

§ 261.4 [Corrected]

17. On page 11862, column two, in § 261.4 paragraph (b)(10), is corrected to read as follows:

10. Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic of § 261.24 (Hazardous Waste Codes D018 through D043 only) and are subject to the corrective action regulations under part 280 of this chapter.

§ 261.24 [Corrected]

18. Also on page 11862, column three, in § 261.24 Table 1.—Maximum Concentration of Contaminants for the Toxicity Characteristic, lines twenty-eight and twenty-nine, change "Heptachlor (and its hydroxide)" to "Heptachlor (and its epoxide)".

PART 271—[AMENDED]

§ 271.1 [Corrected]

19. On page 11876, in § 271.1(j) Table 1—Regulations Implementing the Hazardous and Solid Waste Amendments of 1984, the Federal Register reference should be "55 FR 11798-11877".

PART 302—[AMENDED]

§ 302.4 [Corrected]

20. On page 11877, in § 302.4, Table 302.4, List of Hazardous Substances and Reportable Quantities, in the first column, make the following corrections:

A. In the ninth line, change "Heptachlor (and hydroxide) (D031)" to "Heptachlor (and epoxide) (D031)".

B. In line twenty-five, change "Trichloroethylene (D040)" to "Trichloroethylene (D040)".

C. In line twenty-six, change "2,4,5-Trichloroethylene (D041)" to "2,4,5-Trichlorophenol (D041)".

Dated: June 22, 1990.

Mary A. Gade,
Acting Assistant Administrator.

In addition to the corrections made above, part 261 is amended by revising appendix II to read as follows:

Appendix II—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)

1.0 Scope and Application

1.1 The TCLP is designed to determine the mobility of both organic and inorganic

analytes present in liquid, solid, and multiphasic wastes.

1.2 If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run.

1.3 If an analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high concentrations that, even after accounting for dilution from the other fractions of the extract, the concentration would be equal to or above the regulatory level for that compound, then the waste is hazardous and it is not necessary to analyze the remaining fractions of the extract.

1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile analyte equals or exceeds the regulatory level for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compounds is below the regulatory level.

2.0 Summary of Method

2.1 For liquid wastes (i.e., those containing less than 0.5% dry solid material), the waste, after filtration through a 0.6 to 0.8 μ m glass fiber filter, is defined as the TCLP extract.

2.2 For wastes containing greater than or equal to 0.5% solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the particle size of the solid phase is reduced, if necessary. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile analytes (see Table 1 for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8 μ m glass fiber filter.

2.3 If compatible (i.e., multiple phases will not form on combination), the initial liquid phase of the waste is added to the liquid extract, and these are analyzed together. If incompatible, the liquids are analyzed separately and the results are mathematically combined to yield a volume-weighted average concentration.

3.0 Interferences

3.1 Potential interferences that may be encountered during analysis are discussed in the individual analytical methods.

4.0 Apparatus and Materials

4.1 Agitation apparatus: The agitation apparatus must be capable of rotating the extraction vessel in an end-over-end fashion (see Figure 1) at 30 ± 2 rpm. Suitable devices known to EPA are identified in Table 2.

4.2 Extraction Vessels.

4.2.1 Zero-Headspace Extraction Vessel (ZHE). This device is for use only when the waste is being tested for the mobility of

volatile analytes (i.e., those listed in Table 1). The ZHE (depicted in Figure 2) allows for liquid/solid separation within the device, and effectively precludes headspace. This type of vessel allows for initial liquid/solid separation, extraction, and final extract filtration without opening the vessel (see section 4.3.1). The vessels shall have an internal volume of 500–600 mL, and be equipped to accommodate a 90–110 mm filter. The devices contain VITON®¹ O-rings which should be replaced frequently. Suitable ZHE devices known to EPA are identified in Table 3.

For the ZHE to be acceptable for use, the piston within the ZHE should be able to be moved with approximately 15 pounds per square inch (psi) or less. If it takes more pressure to move the piston, the O-rings in the device should be replaced. If this does not solve the problem, the ZHE is unacceptable for TCLP analyses and the manufacturer should be contacted.

The ZHE should be checked for leaks after every extraction. If the device contains a built-in pressure gauge, pressurize the device to 50 psi, allow it to stand unattended for 1 hour, and recheck the pressure. If the device does not have a built-in pressure gauge, pressurize the device to 50 psi, submerge it in water, and check for the presence of air bubbles escaping from any of the fittings. If pressure is lost, check all fittings and inspect and replace O-rings, if necessary. Retest the device. If leakage problems cannot be solved, the manufacturer should be contacted.

Some ZHEs use gas pressure to actuate the ZHE piston, while others use mechanical pressure (see Table 3). Whereas the volatiles procedures (see section 7.3) refers to pounds per square inch (psi), for the mechanically actuated piston, the pressure applied is measured in torque-inch-pounds. Refer to the manufacturer's instructions as to the proper conversion.

4.2.2 Bottle Extraction Vessel. When the waste is being evaluated using the nonvolatile extraction, a jar with sufficient capacity to hold the sample and the extraction fluid is needed. Headspace is allowed in this vessel.

The extraction bottles may be constructed from various materials, depending on the analytes to be analyzed and the nature of the waste (see section 4.3.3). It is recommended that borosilicate glass bottles be used instead of other types of glass, especially when inorganics are of concern. Plastic bottles, other than polytetrafluoroethylene, shall not be used if organics are to be investigated. Bottles are available from a number of laboratory suppliers. When this type of extraction vessel is used, the filtration device discussed in section 4.3.2 is used for initial liquid/solid separation and final extract filtration.

4.3 Filtration Devices: It is recommended that all filtrations be performed in a hood.

4.3.1 Zero-Headspace Extractor Vessel (ZHE): When the waste is evaluated for volatiles, the zero-headspace extraction vessel described in section 4.2.1 is used for filtration. The device shall be capable of supporting and keeping in place the glass

fiber filter and be able to withstand the pressure needed to accomplish separation (50 psi).

Note: When it is suspected that the glass fiber filter has been ruptured, an in-line glass fiber filter may be used to filter the material within the ZHE.

4.3.2 Filter Holder: When the waste is evaluated for other than volatile analytes, any filter holder capable of supporting a glass fiber filter and able to withstand the pressure needed to accomplish separation may be used. Suitable filter holders range from simple vacuum units to relatively complex systems capable of exerting pressures of up to 50 psi or more. The type of filter holder used depends on the properties of the material to be filtered (see section 4.3.3). These devices shall have a minimum internal volume of 300 mL and be equipped to accommodate a minimum filter size of 47 mm (filter holders having an internal capacity of 1.5 L or greater, and equipped to accommodate a 142 mm diameter filter, are recommended). Vacuum filtration can only be used for wastes with low solids content (<10%) and for highly granular, liquid-containing wastes. All other types of wastes should be filtered using positive pressure filtration. Suitable filter holders known to EPA are shown in Table 4.

4.3.3 Materials of Construction: Extraction vessels and filtration devices shall be made of inert materials which will not leach or absorb waste components. Glass, polytetrafluoroethylene (PTFE), or type 316 stainless steel equipment may be used when evaluating the mobility of both organic and inorganic components. Devices made of high density polyethylene (HDPE), polypropylene (PP), or polyvinyl chloride (PVC) may be used only when evaluating the mobility of metals. Borosilicate glass bottles are recommended for use over other types of glass bottles, especially when inorganics are analytes of concern.

4.4 Filters: Filters shall be made of borosilicate glass fiber, shall contain no binder materials, and shall have an effective pore size of 0.6 to 0.8 μ m, or equivalent. Filters known to EPA which meet these specifications are identified in Table 5. Pre-filters must not be used. When evaluating the mobility of metals, filters shall be acid-washed prior to use by rinsing with 1N nitric acid followed by three consecutive rinses with deionized distilled water (a minimum of 1 L per rinse is recommended). Glass fiber filter are fragile and should be handled with care.

4.5 pH Meters: The meter should be accurate to ± 0.05 units at 25°C.

4.6 ZHE Extract Collection Devices: TEDLAR®² bags or glass, stainless steel or PTFE gag-tight syringes are used to collect the initial liquid phase and the final extract of the waste when using the ZHE device. The devices listed are recommended for use under the following conditions:

4.6.1 If a waste contains an aqueous liquid phase or if a waste does not contain a significant amount of nonaqueous liquid (i.e., <1% of total waste), the TEDLAR® bag or a

600 mL syringe should be used to collect and combine the initial liquid and solid extract.

4.6.2 If a waste contains a significant amount of nonaqueous liquid in the initial liquid phase (i.e., >1% of total waste), the syringe or the TEDLAR® bag may be used for both the initial liquid/solid separation and the final extract filtration. However, analysts should use one or the other, not both.

4.6.3 If the waste contains no initial liquid phase (is 100% solid) or has no significant solid phase (is 100% liquid), either the TEDLAR® bag or the syringe may be used. If the syringe is used, discard the first 5 mL of liquid expressed from the device. The remaining aliquots are used for analysis.

4.7 ZHE Extraction Fluid Transfer Devices: Any device capable of transferring the extraction fluid into the ZHE without changing the nature of the extraction fluid is acceptable (e.g., a positive displacement or peristaltic pump, a gas tight syringe, pressure filtration unit (see section 4.3.2), or other ZHE device).

4.8 Laboratory Balance: Any laboratory balance accurate to within ± 0.01 grams may be used (all weight measurements are to be within ± 0.1 grams).

4.9 Beaker or Erlenmeyer flask, glass, 500 mL.

4.10 Watchglass, appropriate diameter to cover beaker or erlenmeyer flask.

4.11 Magnetic stirrer.

5.0 Reagents

5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 Reagent water. Reagent water is defined as water in which an interferant is not observed at or above the methods detection limit of the analyte(s) of interest. For nonvolatile extractions, ASTM Type II water or equivalent meets the definition of reagent water. For volatile extractions, it is recommended that reagent water be generated by any of the following methods. Reagent water should be monitored periodically for impurities.

5.2.1 Reagent water for volatile extractions may be generated by passing tap water through a carbon filter bed containing about 500 grams of activated carbon (Calgon Corp., Filtrasorb-300 or equivalent).

5.2.2 A water purification system (Millipore Super-Q or equivalent) may also be used to generate reagent water for volatile extractions.

5.2.3 Reagent water for volatile extractions may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the water temperature at 90 + 5 degrees C, bubble a contaminant-free inert gas (e.g., nitrogen) through the water for 1 hour. While still hot, transfer the water to a narrow mouth screw-cap bottle under zero-

¹ VITON® is a registered trademark of DuPont.

² TEDLAR® is a registered trademark of Dupont.

headspace and seal with a Teflon-lined septum and cap.

5.3 Hydrochloric acid (1N), HCl, made from ACS reagent grade.

5.4 Nitric acid (1N), HNO₃, made from ACS reagent grade.

5.5 Sodium hydroxide (1N), NaOH, made from ACS reagent grade.

5.6 Glacial acetic acid, CH₃COOH, ACS reagent grade.

5.7 Extraction fluid.

5.7.1 Extraction fluid #1: Add 5.7 mL glacial CH₃COOH to 500 mL of reagent water (See section 5.2), add 64.3 mL of 1N NaOH, and dilute to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 4.93 ± 0.05.

5.7.2 Extraction fluid #2: Dilute 5.7 mL glacial CH₃COOH with reagent water (See section 5.2) to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 2.88 ± 0.05.

Note: These extraction fluids should be monitored frequently for impurities. The pH should be checked prior to use to ensure that these fluids are made up accurately. If impurities are found or the pH is not within the above specifications, the fluid shall be discarded and fresh extraction fluid prepared.

5.8 Analytical standards shall be prepared according to the appropriate analytical method.

6.0 Sample Collection, Preservation, and Handling

6.1 All samples shall be collected using an appropriate sampling plan.

6.2 The TCLP may place requirements on the minimal size of the field sample, depending upon the physical state or states of the waste and the analytes of concern. An aliquot is needed for preliminary evaluation of which extraction fluid is to be used for the nonvolatile analyte extraction procedure. Another aliquot may be needed to actually conduct the nonvolatile extraction (see section 1.4 concerning the use of this extract for volatile organics). If volatile organics are of concern, another aliquot may be needed. Quality control measures may require additional aliquots. Further, it is always wise to collect more samples just in case something goes wrong with the initial attempt to conduct the test.

6.3 Preservatives shall not be added to samples before extraction.

6.4 Samples may be refrigerated unless refrigeration results in irreversible physical change to the waste. If precipitation occurs, the entire sample (including precipitate) should be extracted.

6.5 When the waste is to be evaluated for volatile analytes, care shall be taken to minimize the loss of volatiles. Samples shall be collected and stored in a manner intended to prevent the loss of volatile analytes (e.g.,

samples should be collected in Teflon-lined septum capped vials and stored at 4 °C. Samples should be opened only immediately prior to extraction).

6.6 TCLP extracts should be prepared for analysis and analyzed as soon as possible following extraction. Extracts or portions of extracts for metallic analyte determinations must be acidified with nitric acid to a pH < 2, unless precipitation occurs (see section 7.2.14 if precipitation occurs). Extracts should be preserved for other analytes according to the guidance given in the individual analysis methods. Extracts or portions of extracts for organic analyte determinations shall not be allowed to come into contact with the atmosphere (i.e., no headspace) to prevent losses. See section 8.0 (QA requirements) for acceptable sample and extract holding times.

7.0 Procedure

7.1 Preliminary Evaluations. Perform preliminary TCLP evaluations on a minimum 100 gram aliquot of waste. This aliquot may not actually undergo TCLP extraction. These preliminary evaluations include: (1) Determination of the percent solids (section 7.1.1); (2) determination of whether the waste contains insignificant solids and is, therefore, its own extract after filtration (section 7.1.2); (3) determination of whether the solid portion of the waste requires particle size reduction (section 7.1.3); and (4) determination of which of the two extraction fluids are to be used for the nonvolatile TCLP extraction of the waste (section 7.1.4).

7.1.1 Preliminary determination of percent solids: Percent solids is defined as that fraction of a waste sample (as a percentage of the total sample) from which no liquid may be forced out by an applied pressure, as described below.

7.1.1.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solids) proceed to section 7.1.3.

7.1.1.2 If the sample is liquid or multiphase, liquid/solid separation to make a preliminary determination of percent solids is required. This involves the filtration device described in section 4.3.2 and is outlined in sections 7.1.1.3 through 7.1.1.9.

7.1.1.3 Pre-weigh the filter and the container that will receive the filtrate.

7.1.1.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure.

7.1.1.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight.

7.1.1.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Centrifugation is to be used only as an aid to filtration. If used, the liquid should be decanted and filtered followed by filtration of

the solid portion of the waste through the same filtration system.

7.1.1.7 Quantitatively transfer the waste sample to the filter holder (liquid and solid phases). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature then allow the sample to warm up to room temperature in the device before filtering.

Note: If waste material (>1% of original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in section 7.1.1.5 to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is not reached under 10 psi, and if no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within any 2 minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.1.1.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in section 7.1.1.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

7.1.1.9 Determine the weight of the liquid phase by subtracting the weight of the filtrate container (see section 7.1.1.3) from the total weight of the filtrate-filled container. Determine the weight of the solid phase of the waste sample by subtracting the weight of the liquid phase from the weight of the total waste sample, as determined in section 7.1.1.5 or 7.1.1.7.

Record the weight of the liquid and solid phases. Calculate the percent solids as follows:

$$\text{Percent solids} = \frac{\text{Weight of solid (section 7.1.1.9)}}{\text{Total weight of waste (section 7.1.1.5 or 7.1.1.7)}} \times 100$$

7.1.2 If the percent solids determined in section 7.1.1.9 is equal to or greater than 0.5%, then proceed either to section 7.1.3 to determine whether the solid material requires particle size reduction or to section 7.1.2.1 if it is noticed that a small amount of the filtrate is entrained in wetting of the filter. If the percent solids determined in section 7.1.1.9 is less than 0.5%, then proceed to section 7.2.9 if

the nonvolatile TCLP is to be performed and to section 7.3 with a fresh portion of the waste if the volatile TCLP is to be performed.

7.1.2.1 Remove the solid phase and filter from the filtration apparatus.

7.1.2.2 Dry the filter and solid phase at $100 \pm 20^\circ\text{C}$ until two successive weighings yield the same value within $\pm 1\%$. Record the final weight.

Note: Caution should be taken to ensure that the subject solid will not flash upon heating. It is recommended that the drying oven be vented to a hood or other appropriate device.

7.1.2.3 Calculate the percent dry solids as follows:

$$\% \text{ dry solids} = \frac{(\text{Weight of dry waste + filter}) - \text{tared weight of filter}}{\text{Initial weight of waste (section 7.1.1.5 or 7.1.1.7)}} \times 100$$

7.1.2.4 If the percent dry solids is less than 0.5%, then proceed to section 7.2.9 if the nonvolatile TCLP is to be performed, and to section 7.3 if the volatile TCLP is to be performed. If the percent dry solids is greater than or equal to 0.5%, and if the nonvolatile TCLP is to be performed, return to the beginning of this section (7.1) and, with a fresh portion of waste, determine whether particle size reduction is necessary (section 7.1.3) and determine the appropriate extraction fluid (section 7.1.4). If only the volatile TCLP is to be performed, see the note in section 7.1.4.

7.1.3 Determination of whether the waste requires particle size reduction (particle size is reduced during this step): Using the solid portion of the waste, evaluate the solid for particle size. Particle size reduction is required, unless the solid has a surface area per gram of material equal to or greater than 3.1 cm^2 , or is smaller than 1 cm in its narrowest dimension (i.e., is capable of passing through a 9.5 mm (0.375 inch) standard sieve). If the surface area is smaller or the particle size larger than described above, prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described above. If the solids are prepared for organic volatiles extraction, special precautions must be taken (see section 7.3.6).

Note: Surface area criteria are meant for filamentous (e.g., paper, cloth, and similar) waste materials. Actual measurement of surface area is not required, nor is it recommended. For materials that do not obviously meet the criteria, sample-specific methods would need to be developed and employed to measure the surface area. Such methodology is currently not available.

7.1.4 Determination of appropriate extraction fluid: If the solid content of the waste is greater than or equal to 0.5% and if the sample will be extracted for nonvolatile constituents (section 7.2), determine the appropriate fluid (section 5.7) for the nonvolatiles extraction as follows:

Note: TCLP extraction for volatile constituents uses only extraction fluid #1 (section 5.7.1). Therefore, if TCLP extraction for nonvolatiles is not required, proceed to section 7.3.

7.1.4.1 Weigh out a small subsample of the solid phase of the waste, reduce the solid (if necessary) to a particle size of approximately 1 mm in diameter or less, and transfer 5.0 grams of the solid phase of the

waste to a 500 mL beaker or Erlenmeyer flask.

7.1.4.2 Add 96.5 mL of reagent water to the beaker, cover with a watchglass, and stir vigorously for 5 minutes using a magnetic stirrer. Measure and record the pH. If the pH is < 5.0 , use extraction fluid #1. Proceed to section 7.2.

7.1.4.3 If the pH from section 7.1.4.2 is > 5.0 , add 3.5 mL 1N NCl, slurry briefly, cover with a watchglass, heat to 50°C , and hold at 50°C for 10 minutes.

7.1.4.4 Let the solution cool to room temperature and record the pH. If the pH is < 5.0 , use extraction fluid #1. If the pH is > 5.0 , use extraction fluid #2. Proceed to section 7.2.

7.1.5 If the aliquot of the waste used for the preliminary evaluation (sections 7.1.1–7.1.4) was determined to be 100% solid at section 7.1.1.1, then it can be used for the section 7.2 extraction (assuming at least 100 grams remain), and the section 7.3 extraction (assuming at least 25 grams remain). If the aliquot was subjected to the procedure in section 7.1.1.7, then another aliquot shall be used for the volatile extraction procedure in section 7.3. The aliquot of the waste subjected to the procedure in section 7.1.1.7 might be appropriate for use for the section 7.2 extraction if an adequate amount of solid (as determined by section 7.1.1.9) was obtained. The amount of solid necessary is dependent upon whether a sufficient amount of extract will be produced to support the analyses. If an adequate amount of solid remains, proceed to section 7.2.10 of the nonvolatile TCLP extraction.

7.2 Procedure When Volatiles are not Involved. A minimum sample size of 100 grams (solid and liquid phases) is recommended. In some cases, a larger sample size may be appropriate, depending on the solids content of the waste sample (percent solids). See section 7.1.1, whether the initial liquid phase of the waste will be miscible with the aqueous extract of the solid, and whether inorganics, semivolatile organics, pesticides, and herbicides are all analytes of concern. Enough solids should be generated for extraction such that the volume of TCLP extract will be sufficient to support all of the analyses required. If the amount of extract generated by a single TCLP extraction will not be sufficient to perform all of the analyses, more than one extraction may be performed and the extracts from each combined and aliquoted for analysis.

7.2.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solid, see section 7.1.1), weigh out a subsample of the waste (100 gram minimum) and proceed to section 7.2.9.

7.2.2 If the sample is liquid or multiphase, liquid/solid separation is required. This involves the filtration device described in section 4.3.2 and is outlined in sections 7.2.3 to 7.2.8.

7.2.3 Pre-weigh the container that will receive the filtrate.

7.2.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure. Acid-wash the filter if evaluating the mobility of metals (see section 4.4).

Note: Acid-washed filters may be used for all nonvolatile extractions even when metals are not of concern.

7.2.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight. If the waste contains $< 0.5\%$ dry solids (section 7.1.2), the liquid portion of the waste, after filtration, is defined as the TCLP extract. Therefore, enough of the sample should be filtered so that the amount of filtered liquid will support all of the analyses required of the TCLP extract. For wastes containing $> 0.5\%$ dry solids (sections 7.1.1 or 7.1.2), use the percent solids information obtained in section 7.1.1 to determine the optimum sample size (100 gram minimum) for filtration. Enough solids should be generated by filtration to support the analyses to be performed on the TCLP extract.

7.2.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Use centrifugation only as an aid to filtration. If the waste is centrifuged, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.

7.2.7 Quantitatively transfer the waste sample (liquid and solid phases) to the filter holder (see section 4.3.2). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4°C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering.

Note: If waste material ($> 1\%$ of the original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of

this residue and subtract it from the sample weight determined in section 7.2.5, to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is reached under 10 psi, and if no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when the liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within a 2 minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.2.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase. Weigh the filtrate. The liquid phase may now be either analyzed (See section 7.2.12) or stored at 4°C until time of analysis.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in section 7.2.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the extraction as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

7.2.9 If the waste contains <0.5% dry solids (see section 7.1.2), proceed to section 7.2.13. If the waste contains >0.5% dry solids (see section 7.1.1 or 7.1.2), and if particle size reduction of the solid was needed in section 7.1.3, proceed to section 7.2.10. If the waste as received passes a 9.5 mm sieve,

quantitatively transfer the solid material into the extractor bottle along with the filter used to separate the initial liquid from the solid phase, and proceed to section 7.2.11.

7.2.10 Prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described in section 7.1.3. When the surface area or particle size has been appropriately altered, quantitatively transfer the solid material into an extractor bottle. Include the filter used to separate the initial liquid from the solid phase.

Note: Sieving of the waste is not normally required. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended. If sieving is necessary, a Teflon-coated sieve should be used to avoid contamination of the sample.

7.2.11 Determine the amount of extraction fluid to add to the extractor vessel as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (section 7.1.1)} \times \text{weight of waste filtered (section 7.2.5 or 7.2.7)}}{100}$$

Slowly add this amount of appropriate extraction fluid (see section 7.1.4) to the extractor vessel. Close the extractor bottle tightly (it is recommended that Teflon tape be used to ensure a tight seal), secure in rotary agitation device, and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction takes place) shall be maintained at $23 \pm 2^\circ\text{C}$ during the extraction period.

Note: As agitation continues, pressure may build within the extractor bottle for some types of wastes (e.g., limed or calcium carbonate containing waste may evolve gases such as carbon dioxide). To relieve excess pressure, the extractor bottle may be periodically opened (e.g., after 15 minutes, 30 minutes, and 1 hour) and vented into a hood.

7.2.12 Following the 18 ± 2 hour extraction, separate the material in the extractor vessel into its component liquid and solid phases by filtering through a new glass fiber filter, as outlined in section 7.2.7. For final filtration of the TCLP extract, the glass fiber filter may be changed, if necessary, to facilitate filtration. Filter(s) shall be acid-washed (see section 4.4) if evaluating the mobility of metals.

7.2.13 Prepare the TCLP extract as follows:

7.2.13.1 If the waste contained no initial liquid phase, the filtered liquid material obtained from section 7.2.12 is defined as the TCLP extract. Proceed to section 7.2.14.

7.2.13.2 If compatible (e.g., multiple phases will not result on combination), combine the filtered liquid resulting from section 7.2.12 with the initial liquid phase of the waste obtained in section 7.2.7. This combined liquid is defined as the TCLP extract. Proceed to section 7.2.14.

7.2.13.3 If the initial liquid phase of the waste, as obtained from section 7.2.7, is not

or may not be compatible with the filtered liquid resulting from section 7.2.12, do not combine these liquids. Analyze these liquids, collectively defined as the TCLP extract, and combine the results mathematically, as described in section 7.2.14.

7.2.14 Following collection of the TCLP extract, the pH of the extract should be recorded. Immediately aliquot and preserve the extract for analysis. Metals aliquots must be acidified with nitric acid to pH < 2. If precipitation is observed upon addition of nitric acid to a small aliquot of the extract, then the remaining portion of the extract for metals analyses shall not be acidified and the extract shall be analyzed as soon as possible. All other aliquots must be stored under refrigeration (4°C) until analyzed. The TCLP extract shall be prepared and analyzed according to appropriate analytical methods. TCLP extracts to be analyzed for metals shall be acid digested except in those instances where digestion causes loss of metallic analytes. If an analysis of the undigested extract shows that the concentration of any regulated metallic analyte exceeds the regulatory level, then the waste is hazardous and digestion of the extract is not necessary. However, data on undigested extracts alone cannot be used to demonstrate that the waste is not hazardous. If the individual phases are to be analyzed separately, determine the volume of the individual phases (to $\pm 0.5\%$), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phase (L).
 C_1 = The concentration of the analyte of concern in the first phase (mg/L).
 V_2 = The volume of the second phase (L).
 C_2 = The concentration of the analyte of concern in the second phase (mg/L).

7.2.15 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to section 8.0 for quality assurance requirements.

7.3 Procedure When Volatiles are Involved. Use the ZHE device to obtain TCLP extract for analysis of volatile compounds only. Extract resulting from the use of the ZHE shall not be used to evaluate the mobility of nonvolatile analytes (e.g., metals, pesticides, etc.).

The ZHE device has approximately a 500 mL internal capacity. The ZHE can thus accommodate a maximum of 25 grams of solid (defined as that fraction of a sample from which no additional liquid may be forced out by an applied pressure of 50 psi), due to the need to add an amount of extraction fluid equal to 20 times the weight of the solid phase.

Charge the ZHE with sample only once and do not open the device until the final extract (of the solid) has been collected. Repeated filling of the ZHE to obtain 25 grams of solid is not permitted.

Do not allow the waste, the initial liquid phase, or the extract to be exposed to the atmosphere for any more time than is absolutely necessary. Any manipulation of these materials should be done when cold (4°C) to minimize loss of volatiles.

7.3.1 Pre-weigh the (evacuated) filtrate collection container (See section 4.6) and set aside. If using a TEDLAR® bag, express all liquid from the ZHE device into the bag.

whether for the initial or final liquid/solid separation, and take an aliquot from the liquid in the bag for analysis. The containers listed in section 4.6 are recommended for use under the conditions stated in sections 4.6.1-4.6.3.

7.3.2 Place the ZHE piston within the body of the ZHE (it may be helpful first to moisten the piston O-rings slightly with extraction fluid). Adjust the piston within the ZHE body to a height that will minimize the distance the piston will have to move once the ZHE is charged with sample (based upon sample size requirements determined from section 7.3, section 7.1.1 and/or 7.1.2). Secure

the gas inlet/outlet flange (bottom flange) onto the ZHE body in accordance with the manufacturer's instructions. Secure the glass fiber filter between the support screens and set aside. Set liquid inlet/outlet flange (top flange) aside.

7.3.3 If the waste is 100% solid (see section 7.1.1), weigh out a subsample (25 gram maximum) of the waste, record weight, and proceed to section 7.3.5.

7.3.4 If the waste contains <5% dry solids (section 7.1.2), the liquid portion of waste, after filtration, is defined as the TCLP extract. Filter enough of the sample so that the amount of filtered liquid will support all

of the volatile analyses required. For wastes containing >5% dry solids (sections 7.1.1 and/or 7.1.2), use the percent solids information obtained in section 7.1.1 to determine the optimum sample size to charge into the ZHE. The recommended sample size is as follows:

7.3.4.1 For wastes containing <5% solids (see Section 7.1.1), weigh out a 500 gram subsample of waste and record the weight.

7.3.4.2 For wastes containing >5% solids (see Section 7.1.1), determine the amount of waste to charge into the ZHE as follows:

$$\text{Weight of waste to charge ZHE} = \frac{25}{\text{percent solids (section 7.1.1)}} \times 100$$

Weigh out a subsample of the waste of the appropriate size and record the weight.

7.3.5 If particle size reduction of the solid portion of the waste was required in section 7.1.3, proceed to section 7.3.6. If particle size reduction was not required in section 7.1.3, proceed to section 7.3.7.

7.3.6 Prepare the waste for extraction by crushing, cutting, or grinding the solid portion of the waste to a surface area or particle size as described in section 7.1.3.1. Wastes and appropriate reduction equipment should be refrigerated, if possible, to 4°C prior to particle size reduction. The means used to effect particle size reduction must not generate heat in and of itself. If reduction of the solid phase of the waste is necessary, exposure of the waste to the atmosphere should be avoided to the extent possible.

Note: Sieving of the waste is not recommended due to the possibility that volatiles may be lost. The use of an appropriately graduated ruler is recommended as an acceptable alternative. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended.

When the surface area or particle size has been appropriately altered, proceed to section 7.3.7.

7.3.7 Waste slurries need not be allowed to stand to permit the solid phase to settle. Do not centrifuge wastes prior to filtration.

7.3.8 Quantitatively transfer the entire sample (liquid and solid phases) quickly to the ZHE. Secure the filter and support screens onto the top flange of the device and

secure the top flange to the ZHE body in accordance with the manufacturer's instructions. Tighten all ZHE fittings and place the device in the vertical position (gas inlet/outlet flange on the bottom). Do not attach the extract collection device to the top plate.

Note: If waste material (>1% of original sample weight) has obviously adhered to the container used to transfer the sample to the ZHE, determine the weight of this residue and subtract it from the sample weight determined in section 7.3.4 to determine the weight of the waste sample that will be filtered.

Attach a gas line to the gas inlet/outlet valve (bottom flange) and, with the liquid inlet/outlet valve (top flange) open, begin applying gentle pressure of 1-10 psi (or more if necessary) to force all headspace slowly out of the ZHE device into a hood. At the first appearance of liquid from the liquid inlet/outlet valve, quickly close the valve and discontinue pressure. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering. If the waste is 100% solid (see section 7.1.1), slowly increase the pressure to a maximum of 50 psi to force most of the headspace out of the device and proceed to section 7.3.12.

7.3.9 Attach the evacuated pre-weighed filtrate collection container to the liquid inlet/outlet valve and open the valve. Begin applying gentle pressure of 1-10 psi to force the liquid phase of the sample into the filtrate

collection container. If no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When liquid flow has ceased such that continued pressure filtration at 50 psi does not result in any additional filtrate within a 2 minute period, stop the filtration. Close the liquid inlet/outlet valve, discontinue pressure to the piston, and disconnect and weigh the filtrate collection container.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.3.10 The material in the ZHE is defined as the solid phase of the waste and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying pressure filtration, this material will not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the TCLP extraction as a solid.

If the original waste contained <0.5% dry solids (see section 7.1.2), this filtrate is defined as the TCLP extract and is analyzed directly. Proceed to section 7.3.15.

7.3.11 The liquid phase may now be either analyzed immediately (See sections 7.3.13 through 7.3.15) or stored at 4°C under minimal headspace conditions until time of analysis.

Determine the weight of extraction fluid #1 to add to the ZHE as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (section 7.1.1)} \times \text{weight of waste filtered (section 7.3.4 or 7.3.8)}}{100}$$

7.3.12 The following sections detail how to add the appropriate amount of extraction fluid to the solid material within the ZHE and agitation of the ZHE vessel. Extraction fluid #1 is used in all cases (See section 5.7).

7.3.12.1 With the ZHE in the vertical position, attach a line from the extraction fluid reservoir to the liquid inlet/outlet valve. The line used shall contain fresh extraction fluid and should be preflushed with fluid to eliminate any air pockets in the line. Release gas pressure on the ZHE piston (from the gas inlet/outlet valve), open the liquid inlet/outlet valve, and begin transferring extraction fluid (by pumping or similar means) into the ZHE. Continue pumping extraction fluid into the ZHE until the appropriate amount of fluid has been introduced into the device.

7.3.12.2 After the extraction fluid has been added, immediately close the liquid inlet/outlet valve and disconnect the extraction fluid line. Check the ZHE to ensure that all valves are in their closed positions. Manually rotate the device in an end-over-end fashion 2 or 3 times. Reposition the ZHE in the vertical position with the liquid inlet/outlet valve on top. Pressurize the ZHE to 5-10 psi (if necessary) and slowly open the liquid inlet/outlet valve to bleed out any headspace (into a hood) that may have been introduced due to the addition of extraction fluid. This bleeding shall be done quickly and shall be stopped at the first appearance of liquid from the valve. Re-pressurize the ZHE with 5-10 psi and check all ZHE fittings to ensure that they are closed.

7.3.12.3 Place the ZHE in the rotary agitation apparatus (if it is not already there) and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction occurs) shall be maintained at $22 \pm 3^\circ\text{C}$ during agitation.

7.3.13 Following the 18 ± 2 hour agitation period, check the pressure behind the ZHE piston by quickly opening and closing the gas inlet/outlet valve and noting the escape of gas. If the pressure has not been maintained (i.e., no gas release observed), the device is leaking. Check the ZHE for leaking as specified in section 4.2.1, and perform the extraction again with a new sample of waste. If the pressure within the device has been maintained, the material in the extractor vessel is once again separated into its component liquid and solid phases. If the waste contained an initial liquid phase, the liquid may be filtered directly into the same filtrate collection container (i.e., TEDLAR® bag) holding the initial liquid phase of the waste. A separate filtrate collection container must be used if combining would create multiple phases, or there is not enough

volume left within the filtrate collection container. Filter through the glass fiber filter, using the ZHE device as discussed in section 7.3.9. All extract shall be filtered and collected if the TEDLAR® bag is used, if the extract is multiphasic, or if the waste contained an initial liquid phase (see sections 4.6 and 7.3.1).

Note: An in-line glass fiber filter may be used to filter the material within the ZHE if it is suspected that the glass fiber filter has been ruptured.

7.3.14 If the original waste contained no initial liquid phase, the filtered liquid material obtained from section 7.3.13 is defined as the TCLP extract. If the waste contained an initial liquid phase, the filtered liquid material obtained from section 7.3.13 and the initial liquid phase (section 7.3.9) are collectively defined as the TCLP extract.

7.3.15 Following collection of the TCLP extract, immediately prepare the extract for analysis and store with minimal headspace at 4°C until analyzed. Analyze the TCLP extract according to the appropriate analytical methods. If the individual phases are to be analyzed separately (i.e., are not miscible), determine the volume of the individual phases (to 0.5%), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phases (L).

C_1 = The concentration of the analyte of concern in the first phase (mg/L).

V_2 = The volume of the second phase (L).

C_2 = The concentration of the analyte of concern in the second phase (mg/L).

7.3.16 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to section 8.0 for quality assurance requirements.

8.0 Quality Assurance

8.1 A minimum of one blank (using the same extraction fluid as used for the samples) must be analyzed for every 20 extractions that have been conducted in an extraction vessel.

8.2 A matrix spike shall be performed for each waste type (e.g., wastewater treatment sludge, contaminated soil, etc.) unless the

result exceeds the regulatory level and the data is being used solely to demonstrate that the waste property exceeds the regulatory level. A minimum of one matrix spike must be analyzed for each analytical batch. The bias determined from the matrix spike determination shall be used to correct the measured values. (See sections 8.2.4 and 8.2.5.) As a minimum, follow the matrix spike addition guidance provided in each analytical method.

8.2.1 Matrix spikes are to be added after filtration of the TCLP extract and before preservation. Matrix spikes should not be added prior to TCLP extraction of the sample.

8.2.2 In most cases, matrix spikes should be added at a concentration equivalent to the corresponding regulatory level. If the analyte concentration is less than one half the regulatory level, the spike concentration may be as low as one half of the analyte concentration, but may not be not less than five times the method detection limit. In order to avoid differences in matrix effects, the matrix spikes must be added to the same nominal volume of TCLP extract as that which was analyzed for the unspiked sample.

8.2.3 The purpose of the matrix spike is to monitor the performance of the analytical methods used, and to determine whether matrix interferences exist. Use of other internal calibration methods, modification of the analytical methods, or use of alternate analytical methods may be needed to accurately measure the analyte concentration of the TCLP extract when the recovery of the matrix spike is below the expected analytical method performance.

8.2.4 Matrix spike recoveries are calculated by the following formula:

$$\%R (\% \text{ Recovery}) = 100 (X_s - X_u) / K$$

where:

X_s = measured value for the spiked sample, and

X_u = measured value for the unspiked sample,

and

K = known value of the spike in the sample.

8.2.5 Measured values are corrected for analytical bias using the following formula:

$$X_c = 100 (X_u / \%R)$$

where:

X_c = corrected value, and

X_u = measured value of the unspiked sample.

8.3 All quality control measures described in the appropriate analytical methods shall be followed.

8.4 Samples must undergo TCLP extraction within the following time periods:

SAMPLE MAXIMUM HOLDING TIMES (DAYS)

	From: Field collection to: TCLP extraction	From: TCLP extraction to: Preparative extraction	From: preparative extraction to: determinative analysis	Total elapsed time
Volatiles.....	14	NA	14	28
Semivolatiles.....	14	7	40	61
Mercury.....	28	NA	28	56
Metals, except mercury.....	180	NA	180	360

NA=Not applicable.

If sample holding times are exceeded, the values obtained will be considered minimal concentrations. Exceeding the holding time is not acceptable in establishing that a waste does not exceed the regulatory level. Exceeding the holding time will not invalidate characterization if the waste exceeds the regulatory level.

TABLE 1.—VOLATILE ANALYTES ^{1,2}

Compound	CAS No.
Acetone.....	67-64-1
Benzene.....	71-43-2
n-Butyl alcohol.....	71-36-3
Carbon disulfide.....	75-15-0
Carbon tetrachloride.....	56-23-5
Chlorobenzene.....	108-90-7
Chloroform.....	67-66-3
1,2-Dichloroethane.....	107-06-2
1,1-Dichloroethylene.....	75-35-4
Ethyl acetate.....	141-78-6
Ethyl benzene.....	100-41-4
Ethyl ether.....	60-29-7
Isobutanol.....	78-83-1
Methanol.....	67-56-1
Methylone chloride.....	75-09-2
Methyl ethyl ketone.....	78-93-3
Methyl isobutyl ketone.....	108-10-1
Tetrachloroethylene.....	127-18-4
Toluene.....	108-88-3
1,1,1-Trichloroethane.....	71-55-8
Trichloroethylene.....	79-01-6
Trichlorofluoromethane.....	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane.....	76-13-1
Vinyl chloride.....	75-01-4
Xylene.....	1330-20-7

¹ When testing for any or all of these analytes, the zero-headspace extractor vessel shall be used instead of the bottle extractor.

² Benzene, carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichloroethane, 1,1-dichloroethylene, methyl ethyl ketone, tetrachloroethylene, trichloroethylene, and vinyl chloride are toxicity characteristic constituents.

TABLE 2.—SUITABLE ROTARY AGITATION APPARATUS ¹

Company	Location	Model No.
Analytical Testing and Consulting Services, Inc.	Warrington, PA, (215) 343-4490.	4-vessel (DC20S), 8-vessel (DC20), 12-vessel (DC20B).

TABLE 2.—SUITABLE ROTARY AGITATION APPARATUS ¹—Continued

Company	Location	Model No.
Associated Design and Manufacturing Company.	Alexandria, VA, (703) 549-5999.	2-vessel (3740-2), 4-vessel (3740-4), 6-vessel (3740-6), 8-vessel (3740-8), 12-vessel (3740-12), 24-vessel (3740-24).
Environmental Machine and Design, Inc.	Lynchburg, VA, (804) 845-6424.	8-vessel (08-00-00) 4-vessel (04-00-00).
IRA Machine Shop and Laboratory.	Santurce, PR, (809) 752-4004.	8-vessel (011001).
Lars Lande Manufacturing.	Whitmore Lake, MI, (313) 449-4116.	10-vessel (01VRE), 5-vessel (5VRE).
Millipore Corp.	Bedford, MA, (800) 225-3384.	4-ZHE or 4-1-Rtr, bottle extractor, (YT300RAHW).

¹ Any device that rotates the extraction vessel in an end-over-end fashion at 30 ± 2 rpm is acceptable.

TABLE 3.—SUITABLE ZERO-HEADSPACE EXTRACTOR VESSELS ¹

Company	Location	Model No.
Analytical Testing & Consulting Services, Inc.	Warrington, PA, (215) 343-4490.	C102, Mechanical Pressure Device.
Associated Design and Manufacturing Company.	Alexandria, VA, (703) 549-5999.	3745-ZHE, Gas Pressure Device.
Lars Lande Manufacturing.	Whitmore Lake, MI, (313) 449-4116.	ZHE-11, Gas Pressure Device.
Millipore Corporation.	Bedford, MA, (800) 225-3384.	YT30090HW, Gas Pressure Device.
Environmental Machine and Design, Inc.	Lynchburg, VA, (804) 845-6424.	VOLA-TOX1, Gas Pressure Device.

¹ Any device that meets the specifications listed in section 4.2.1. of the method is acceptable.

² This device uses a 110 mm filter.

TABLE 4.—SUITABLE FILTER HOLDERS ¹

Company	Location	Model/catalogue No.	Size
Nucleopore Corporation.	Pleasanton, CA, (800) 882-7711.	425910 410400	142mm, 47 mm.
Micro Filtration Systems.	Dublin, CA, (800) 334-7132, (415) 828-6010.	302400 311400	142 mm, 47 mm.
Millipore Corporation.	Bedford, MA, (800) 225-3384.	YT30142HW XX1004700	142 mm, 47 mm.

¹ Any device capable of separating the liquid from the solid phase of the waste is suitable, providing that it is chemically compatible with the waste and the constituents to be analyzed. Plastic devices (not listed above) may be used when only inorganic analytes are of concern. The 142 mm size filter holder is recommended.

TABLE 5.—SUITABLE FILTER MEDIA ¹

Company	Location	Model	Pore Size (µm)
Millipore Corporation.	Bedford, MA, (800) 225-3384.	AP40	0.7
Nucleopore Corporation.	Pleasanton, CA, (415) 463-2530.	211625	0.7
Whatman Laboratory Products, Inc.	Clifton, NJ, (201) 773-5800.	GFF	0.7
Micro Filtration Systems.	Dublin, CA, (800) 334-7132, (415) 828-6010.	GF75	0.7

¹ Any filter that meets the specifications in section 4.4 of the Method is suitable.

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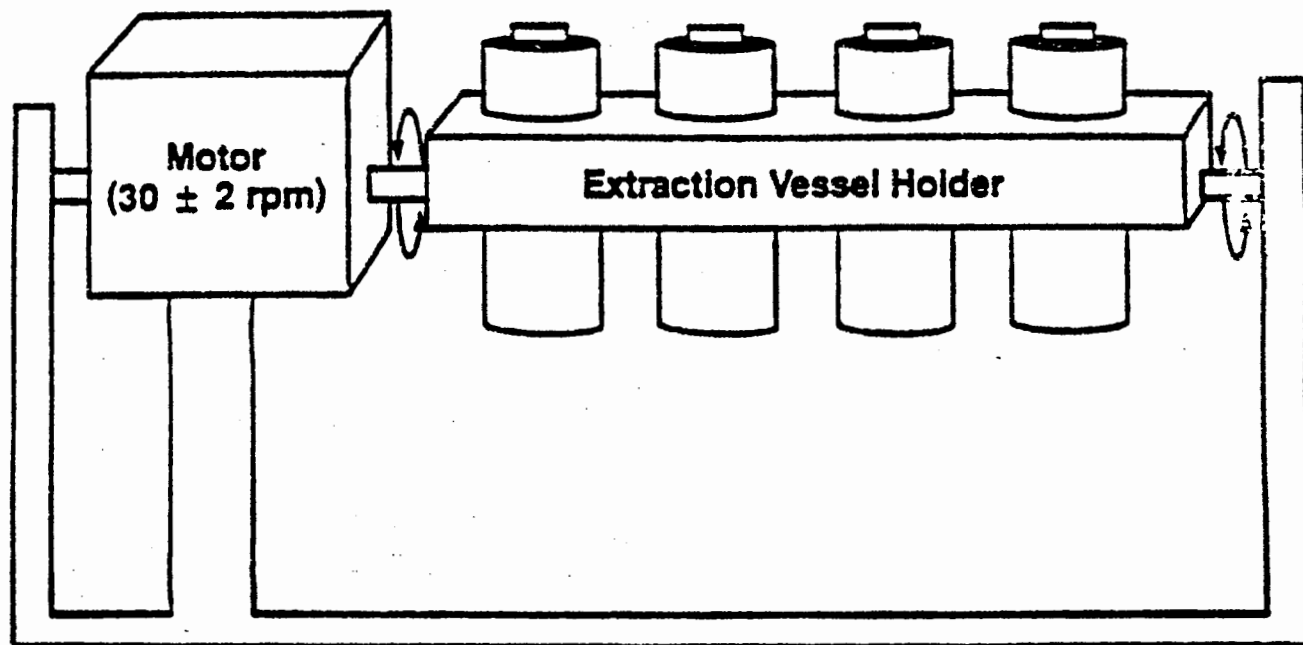


Figure 1. Rotary Agitation Apparatus

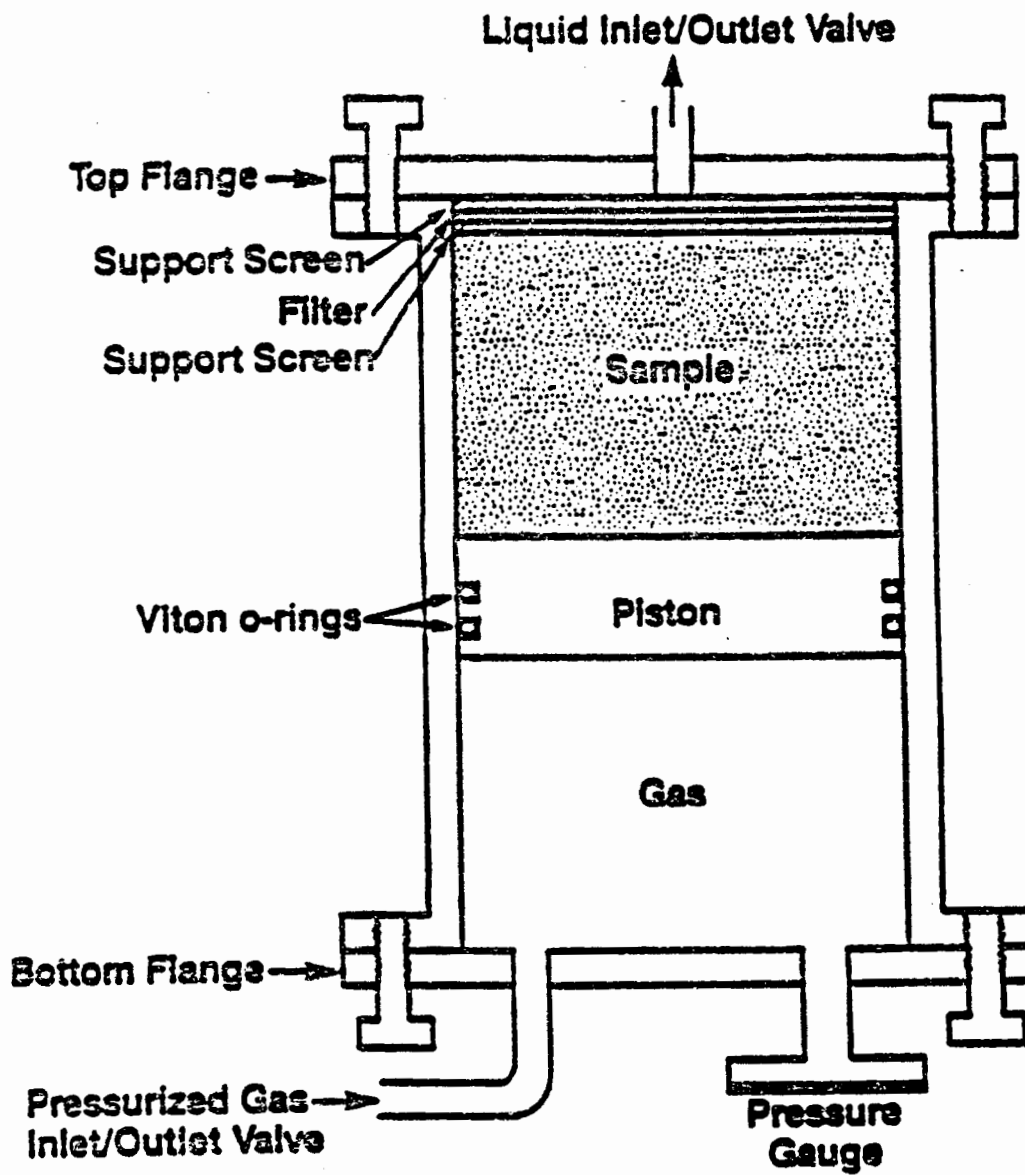
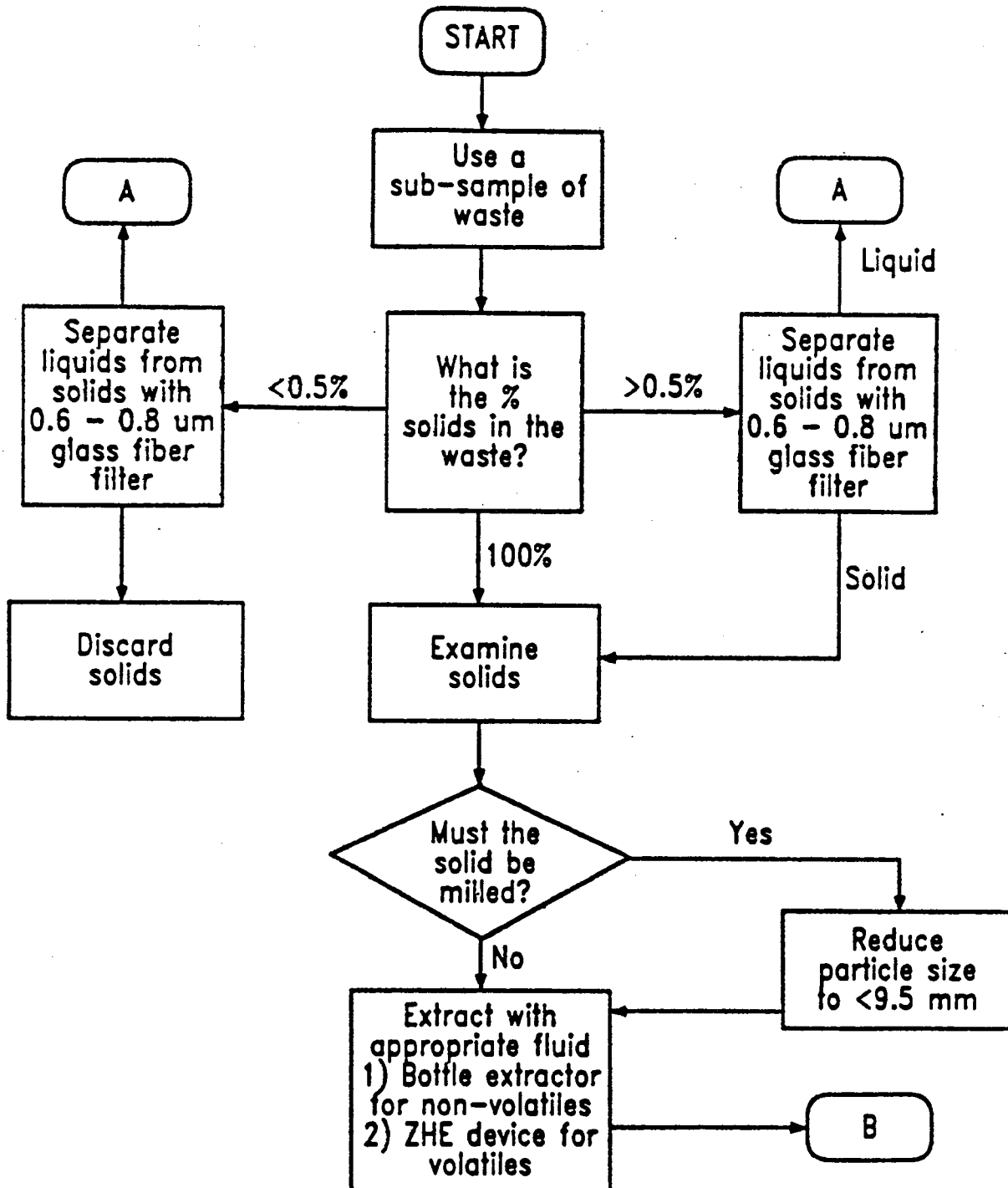


Figure 2. Zero-Headspace Extractor (ZHE)

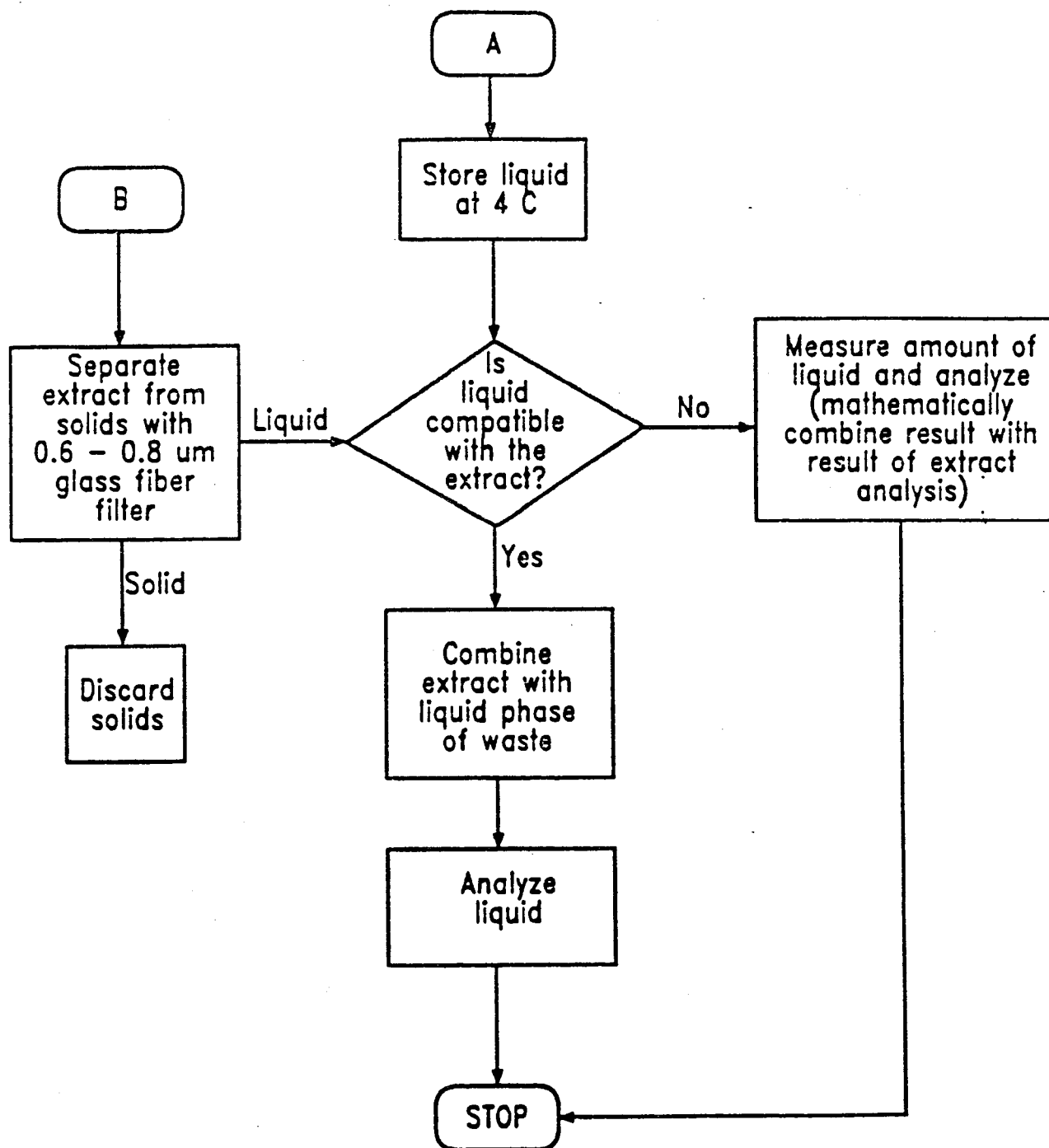
METHOD 1311

TOXICITY CHARACTERISTIC LEACHATE PROCEDURE



METHOD 1311 (CONTINUED)

TOXICITY CHARACTERISTIC LEACHATE PROCEDURE



release of the Secretary's right to collect a debt owing to the United States under this paragraph and/or under paragraph (a) of this section provided such official determines:

(i) The loan default was caused by circumstances beyond the control of the obligor;

(ii) There are no indications of fraud, material fault, misrepresentation or bad faith on the part of the obligor in obtaining the loan or in connection with the loan default;

(iii) The obligor cooperated with VA in exploring all realistic alternatives to termination of the loan through foreclosure; and, either

(iv) Review of the obligor's current financial situation and prospective earning potential and obligations indicates there are no realistic prospects that the obligor could repay all or part of the anticipated debt within six years of the liquidation sale while providing the necessities of life for himself or herself and his or her family; or,

(v) In consideration for a release of the Secretary's collection rights the obligor completes, or VA is enabled to authorize, an action which reduces the Government's claim liability sufficiently to offset the amount of the anticipated indebtedness which would otherwise be established pursuant to this paragraph and likely be collectable by VA after foreclosure in view of the obligor's financial situation; such actions would include termination of the loan by means of a deed in lieu of foreclosure, private sale of the property for less than the indebtedness with a reduced claim paid by VA for the balance due the loan holder or enabling VA to authorize the holder to elect a more expeditious foreclosure procedure when such an election would result in the legal release of the obligor's liability.

(2) Prior to a liquidation sale, an official authorized to act for the Secretary under provisions of section 4342 of this part may approve a partial release of the Secretary's right to collect a debt owing to the United States under this paragraph and/or under paragraph (a) of this section provided such official determines:

(i) The loan default was caused by circumstances beyond the control of the obligor;

(ii) There are no indications of fraud, material fault, misrepresentation or bad faith on the part of the obligor in obtaining the loan or in connection with the loan default;

(iii) The obligor cooperated with VA in exploring all realistic alternatives to termination of the loan through foreclosure;

(iv) Review of the obligor's current financial situation and prospective earning potential and obligations indicates there are no realistic prospects that the obligor could repay all of the anticipated debt within six years of the liquidation sale while providing the necessities of life for himself or herself and his or her family; and,

(v) The obligor executes a written agreement acknowledging his or her liability to VA under this paragraph and executes a promissory note which provides for regular amortized monthly payments of an amount determined by VA in accordance with paragraph (e)(3) of this section including interest on the total amount payable at the rate in effect for Loan Guaranty liability accounts at the time of execution, or, the obligor agrees to other terms of repayment acceptable to VA including payment of a lump sum in settlement of his or her obligation under this paragraph;

(3) For purposes of this paragraph a review of an obligor's financial situation will take into consideration:

(i) The obligor's current and anticipated family income based on employment skills and experience;

(ii) The obligor's current short-term and long-term financial obligations, including the obligation to repay the Government which must be afforded consideration at least equal to his or her consumer debt obligations;

(iii) A current credit report on the obligor;

(iv) The obligor's assets and net worth; and,

(v) The required balance available for family support used in underwriting VA guaranteed loans in the area.

The amount of indebtedness established will be such that the obligor's financial situation permits repayment of the debt to the Government in regular monthly installments of principal plus interest over a five year period commencing within one year after the date the promissory note is executed, except in those cases in which a lump sum settlement appears to be in the best interest of the Government or in which it appears the obligor may reasonably expect significant changes in his or her financial situation which would permit higher payments to be made during later periods of the life of the note.

(4) Determinations made under paragraphs (e)(2) and (e)(3) of this section are intended for the benefit of the Government in reducing the amount of claim payable by VA and/or avoiding the establishment of uncollectable debts owing to the United States. Such determinations are discretionary on the

part of VA and shall not constitute a defense to any legal action to terminate the loan nor vest any appellate right in an obligor which would require further review of the case.

(Authority: 38 U.S.C. 210(c), 1803(c)(1))

[FR Doc. 90-17936 Filed 8-1-90; 8:45 am]

BILLING CODE 8320-01-M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, 268, 271, and 302

[SWH-FRL-3816-F, EPA/OSW-FR-90-FFF]

RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic Revisions

AGENCY: EPA.

ACTION: Final rule; corrections.

SUMMARY: On March 29, 1990, the Environmental Protection Agency (EPA) promulgated a rule (55 FR 11798) to revise the existing toxicity characteristics (TC), which are used to identify wastes defined as hazardous and that are subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. The preamble to these regulations included implementation guidance to assist the regulated community in understanding their regulatory obligation for managing new TC wastes. An implementation timetable included in this section contained a typographical error that created confusion among small quantity generators regarding their notification responsibilities for TC wastes. This rule corrects that typographical error and extends the period of time within which affected small quantity generators must comply with the new notification requirements.

DATES: This correction is effective August 2, 1990. Generators of 100 to 1000 kg/mo of total hazardous waste who are newly regulated by the Toxicity Characteristic must notify the appropriate EPA Regional office October 31, 1990.

FOR FURTHER INFORMATION CONTACT: For general information about this notice, contact the RCRA/Superfund Hotline at (800) 424-9346 (toll free) or (202) 382-3000 in the Washington, DC metropolitan area. For information on specific aspects of this notice, contact

Steve Cochran, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-8551.

SUPPLEMENTARY INFORMATION:

Background

Today's rule corrects a typographical error that appeared in the final rule revising the toxicity characteristic. At the time of promulgation, an error was made in the implementation timeline for the toxicity characteristic. Table V-1.—Implementation Timeline for the Toxicity Characteristic (55 FR 11846) indicates that generators of 1,000 kilograms per month (kg/mo) or more and Treatment, Storage, and Disposal Facilities (TSDFs) who have not previously notified EPA must submit a Notification of Regulated Waste Activity (Form 8700-12, dated 7/90) to the EPA pursuant to RCRA section 3010 within three months of publication of the final rule in the Federal Register. Although language in the preamble to the rule specifically required all generators to notify EPA by June 27, 1990 (54 FR 11849), it has come to the Agency's attention that small quantity generators (SQGs), those that generate a total of between 100 kg and 1,000 kg of hazardous waste in a calendar month, have relied on the timeline provided in Table V-1, which suggests no such notification requirement exists for SQGs.

The timeline in Table V-1 is being revised to reflect our intent, as specified in the preamble, that generators of 100 kg/mo or more of hazardous waste and TSDFs who have not previously notified

must submit a section 3010 notification (Form 8700-12, dated 7/90) to EPA by June 27, 1990. Since some SQGs may have missed the original notification deadline because of reliance on the information in Table V-1, the Agency is, in this notice, providing SQGs with an additional three months to submit notifications. This extension applies to SQGs only. A copy of the notification form is included herein.

In addition, the Agency wishes to clarify the appropriate use of the toxicity characteristic leaching procedure (TCLP) and the extraction procedure (EP) toxicity test by SQGs. The regulatory language states that any person that would like to use the TCLP before the effective date may do so in order to determine whether the eight heavy metals and six pesticides covered by the EP characteristic leach at levels of regulatory concern. This language was included because the TCLP is required for both waste determination (on September 25, 1990, the TC effective date) and the land disposal restrictions program. The Agency clarified in an earlier corrections notice (55 FR 26986, June 29, 1990) that, while it is appropriate to use just one leach test to fulfill both requirements, persons that would like to continue using the EP leach test until the effective date of the rule may do so. It should be noted, however, that the EP test may still be required as a matter of state law (*i.e.*, in authorized states), and this regulation does not affect such state law requirements.

For SQGs, the compliance date of the rule is March 29, 1991; this is the date on which SQGs must use the TCLP for

waste characterization purposes relative to the TC. SQGs who wish to continue to use the EP toxicity test until that time may do so. SQGs should be aware that if they decide to test their waste, they must continue to use one test or the other. However, because the EP test is no longer to be used for any other purpose, EPA has removed the procedure from the regulations; therefore the 1990 version of the Code of Federal Regulations (CFR) will no longer contain the EP toxicity test. The test can be located in the current CFR (40 CFR part 261, Appendix II), as well as under Method 1310 in SW-846, "Test Methods for Evaluating Solid Waste (Physical/Chemical Methods)," Third Edition and Update I, November 1986, available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, (703) 487-4600, document number PB-89-148-076 (\$87.00 paper, \$16.50 microfiche).

Correction

On page 11846, column two, Table V-1, the bullet under 3 Months should read:

- Generators of 100 kg/mo or more and TSDFs who have not previously notified submit § 3010 Notification (Form 8700-12, dated 7/90) to the appropriate EPA regional office.

Note: Generators of 100 kg/mo to 1,000 kg/mo of hazardous waste have until [insert date three months from publication] to submit § 3010 Notification (Form 8700-12, dated 7/90) to the appropriate EPA Regional office.

Dated: July 28, 1990.


Mary A. Gade,

Acting Assistant Administrator.

BILLING CODE 6560-50-M

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved OMB No. 2050-0028, Expires 10-31-91
GSA No. 0746-EPA-07

Please refer to the instructions for Filing Notification before completing this form. The information requested here is required by law (Section 3010 of the Resource Conservation and Recovery Act).		<h2 style="margin: 0;">Notification of Regulated Waste Activity</h2> <p style="margin: 0;">United States Environmental Protection Agency</p>	Date Received (For Official Use Only)
I. Installation's EPA ID Number (Mark 'X' in the appropriate box)			
<input type="checkbox"/> A. First Notification	<input type="checkbox"/> B. Subsequent Notification (complete item C)	C. Installation's EPA ID Number	
II. Name of Installation (Include company and specific site name)			
III. Location of Installation (Physical address not P.O. Box or Route Number)			
Street			
Street (continued)			
City or Town		State	ZIP Code
County Code	County Name		
IV. Installation Mailing Address (See instructions)			
Street or P.O. Box			
City or Town		State	ZIP Code
V. Installation Contact (Person to be contacted regarding waste activities at site)			
Name (last)		(first)	
Job Title		Phone Number (area code and number)	
VI. Installation Contact Address (See instructions)			
A. Contact Address Location	B. Street or P.O. Box		
City or Town		State	ZIP Code
VII. Ownership (See instructions)			
A. Name of Installation's Legal Owner			
Street, P.O. Box, or Route Number			
City or Town		State	ZIP Code
Phone Number (area code and number)		B. Land Type	C. Owner Type
		D. Change of Owner Indicator	(Date Changed) Month Day Year

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved: OMB No. 2050-0028, Expires 10-31-91
GSA No. 0246-EPA-07

ID - For Official Use Only

VIII. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. Refer to instructions.)

A. Hazardous Waste Activity

1. Generator (See instructions)
- ☐ a. Greater than 1000kg/mo (2,200 lbs.)
- ☐ b. 100 to 1000 kg/mo (220 - 2,200 lbs.)
- ☐ c. Less than 100 kg/mo (220 lbs.)
2. Transporter (Indicate Mode in boxes 1-5 below)
- ☐ a. For own waste only
- ☐ b. For commercial purposes
- Mode of Transportation
- ☐ 1. Air
- ☐ 2. Rail
- ☐ 3. Highway
- ☐ 4. Water
- ☐ 5. Other - specify
- ☐ 3. Treater, Storer, Disposer (at installation)
Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
- ☐ a. Generator Marketer to Burner
- ☐ b. Other Marketers
- ☐ c. Burner - indicate device(s) - Type of Combustion Device
- ☐ 1. Utility Boiler
- ☐ 2. Industrial Boiler
- ☐ 3. Industrial Furnace
- ☐ 5. Underground Injection Control

B. Used Oil Fuel Activities

1. Off-Specification Used Oil Fuel
- ☐ a. Generator Marketer to Burner
- ☐ b. Other Marketer
- ☐ c. Burner - indicate device(s) - Type of Combustion Device
- ☐ 1. Utility Boiler
- ☐ 2. Industrial Boiler
- ☐ 3. Industrial Furnace
2. Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification
- ☐

IX. Description of Regulated Wastes (Use additional sheets if necessary)

A. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. (See 40 CFR Parts 261.20 - 261.24)

1. Ignitable (D001)
2. Corrosive (D002)
3. Reactive (D003)
4. Toxicity Characteristic (D000)

☐☐☐☐

(List specific EPA hazardous waste number(s) for the Toxicity Characteristic contaminant(s))

☐☐☐☐☐☐☐☐☐

B. Listed Hazardous Wastes. (See 40 CFR 261.31 - 33. See instructions if you need to list more than 12 waste codes.)

1	2	3	4	5	6
7	8	9	10	11	12

C. Other Wastes. (State or other wastes requiring an I.D. number. See instructions.)

1	2	3	4	5	6

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Signature

Name and Official Title (type or print)

Date Signed

XI. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (See Section III of the booklet for addresses.)

Corrections

Federal Register

Vol. 55, No. 155

Friday, August 10, 1990

This section of the FEDERAL REGISTER contains editorial corrections of previously published Presidential, Rule, Proposed Rule, and Notice documents. These corrections are prepared by the Office of the Federal Register. Agency prepared corrections are issued as signed documents and appear in the appropriate document categories elsewhere in the issue.

COMMITTEE FOR PURCHASE FROM THE BLIND AND OTHER SEVERELY HANDICAPPED

Procurement List 1990; Additions

Correction

In notice document 90-18159 beginning on page 31620 in the issue of Friday, August 3, 1990, make the following correction:

On page 31620, in the second column, the **COMMENTS** date should read "September 4, 1990."

BILLING CODE 1505-01-D

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, 265, 266, 271, and 302

[SWH-FRL-3816-1, EPA/OSW-FR-90-FFF]
RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic Revisions

Correction

In rule document 90-18073 beginning on page 31387 in the issue of Thursday, August 2, 1990, make the following corrections:

1. On page 31387, in the third column the docket line was incorrect and should read as set forth above.

2. On the same page, in the third column, under **DATES**, in the last line, "October 31, 1990" should read "November 2, 1990".

3. On page 31388, in the third column, in the note, in the second and third lines, the bracketed phrase should be removed and the date "November 2, 1990" should be inserted.

4. On page 31390, in the third column at the end of the document, the file line was omitted and should read:

[FR Doc. 90-18073 Filed 8-1-90; 8:45am]

BILLING CODE 6560-50-M

BILLING CODE 1505-01-D

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Social Security Administration

20 CFR Part 416

RIN 0960-AC48

Subpart L; Resources and Exclusions; Exclusion From Resources of Funds Set Aside for Burial and Burial Spaces

Correction

In rule document 90-16145 beginning on page 28373 in the issue of Wednesday, July 11, 1990, make the following corrections:

1. On page 28373, in the second column, in the first paragraph of the **SUPPLEMENTARY INFORMATION**, in the third line from the end, "to" should read "for".

2. On page 28374, in the first column, in the eighth line from the top, "10" should read "100".

3. On the same page, in the second column, in the first full paragraph, in the sixth line, "and" should read "through".

BILLING CODE 1505-01-D

DEPARTMENT OF TRANSPORTATION

Coast Guard

33 CFR Parts 175 and 181

[CGD 81-023]

RIN 2115-AA58

Equipment Requirements for Recreational Boats; Personal Flotation Devices

Correction

In rule document 90-17731 beginning on page 32032 in the issue of Monday, August 6, 1990, make the following corrections:

§ 175.17 [Corrected]

1. On page 32034, in the second column, in § 175.17, in the first line of the introductory text, "Type PFD" should read "Type V PFD".

PART 181—MANUFACTURER REQUIREMENTS

2. On the same page, at the bottom of the same column, the heading for part 181 should read as set forth above.

BILLING CODE 1505-01-D

§ 185.2275 M,N-dimethylpiperidinium chloride

(a) A tolerance of 6 parts per million (ppm) is established for residues of the plant growth regulator *N,N*-dimethylpiperidinium chloride in the processed fraction raisins, resulting from application of the plant regulator to the growing crop groups. Such residues may be present therein only as a result of the application of the plant growth regulator to the growing grapes in accordance with an experimental use permit that expires June 30, 1991.

(b) Residues in or on raisins not in excess of 6 ppm resulting from the use described in paragraph (a) of this section remaining after expiration of the experimental use program will not be

considered actionable if the pesticide is legally applied during the term of and in accordance with the provisions of the emergency use permit and food additive tolerance.

(c) BASF Corporation shall immediately notify the Environmental Protection Agency (EPA) of any findings from the experimental use that have a bearing on safety. The firm shall also keep records of production, distribution, and performance and on request make the records available to any authorized officer or employee of EPA or the Food and Drug Administration (FDA).

PART 186—[AMENDED]

2. In part 186:

a. The authority citation for part 186 continues to read as follows:

Authority: 21 U.S.C. 348.

b. In § 186.2275, by adding new paragraph (b), to read as follows:

§ 186.2275 N,N-dimethylpiperidinium chloride.

(b) A feed additive regulation is established permitting the combined residues of the plant growth regulator *N,N*-dimethylpiperidinium chloride in or on the following feeds resulting from application of the plant growth regulator to grapes in accordance with an experimental use program. The conditions set forth below shall be met.

Feeds	Parts per million	Expiration date
Grape pomace (wet and dry).....	3.0	6/30/91
Raisin waste.....	25.0	6/30/91

(1) Residues in the feed not in excess of the established tolerance resulting from the use described in this paragraph remaining after expiration of the experimental program will not be considered to be actionable if the plant growth regulator is applied during the term of and in accordance with the provisions of the experimental use program and feed additive regulation.

(2) The company concerned shall immediately notify EPA of any findings from the experimental use that have a bearing on safety. The firm shall also keep records of production, distribution, and performance, and on request make the records available to any authorized officer or employee of EPA or FDA.

(3) These temporary tolerances expire June 30, 1991.

[FR Doc. 90-22905 Filed 9-26-90; 8:45 am]

BILLING CODE 5550-50-F

40 CFR Parts 261, 264, 265, 268, 271 and 302

[EPA/OSW-FR-90-020; SWH-FRL-3836-3]

RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic Clarifications

AGENCY: EPA.

ACTION: Final rule; clarification.

SUMMARY: On March 29, 1990 (55 FR 799), the Environmental Protection

Agency (EPA) promulgated the Toxicity Characteristics (TC) rule to revise the existing EP toxicity characteristics, which are used to identify those wastes defined as hazardous and that are subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA) due to their potential to leach significant concentrations of specific toxic constituents. The preamble to these regulations included implementation guidance to assist the regulated community in understanding their regulatory obligation for managing new TC wastes. This notice is intended to clarify for the regulated community the following issues: (1) The regulatory status of surface impoundments managing newly regulated TC wastes, (2) ground-water monitoring requirements for newly regulated land disposal facilities, (3) section 3010 notification requirements, and (4) permit modification requirements.

DATES: Effective September 25, 1990.

FOR FURTHER INFORMATION CONTACT:

For general information about this notice, contact the RCRA/Superfund Hotline at (800) 424-9346 (toll free) or (202) 382-3000 in the Washington, DC metropolitan area. For information on specific aspects of this notice, contact Steve Cochran, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-8551.

SUPPLEMENTARY INFORMATION:**A. Background**

On March 29, 1990 (55 FR 11798), EPA promulgated a rule to revise the existing EP toxicity characteristics, which are used to identify those wastes which are hazardous and thus subject to regulation under subtitle C of RCRA. The rule broadened and refined the scope of the hazardous waste regulatory program and fulfilled specific statutory mandates under the Hazardous and Solid Waste Amendments of 1984.

Today's notice provides clarification regarding four implementation issues brought to the Agency's attention since the publication of the final rule. First, this notice provides clarification regarding the compliance options for surface impoundments managing newly regulated TC wastes. Secondly, this notice addresses the ground-water monitoring requirements that owner/operators of land disposal facilities managing newly regulated TC wastes must meet. Third, the Agency is providing additional clarification regarding § 3010 notification responsibilities for generators and owner/operators of treatment, storage, and/or disposal facilities (TSDFs) managing newly regulated TC wastes. Finally, the Agency is clarifying the permit modification requirements for hazardous waste management facilities with newly regulated wastes under the TC.

B. Surface Impoundments

The universe of newly regulated Toxicity Characteristic (TC) wastes includes (along with other wastes) both wastewaters and wastes generated from the treatment of wastewaters. Some of these wastewaters and wastewater treatment wastes are generated or managed in surface impoundments. Surface impoundments receiving, generating, or actively managing newly regulated TC wastes on or after September 25, 1990 are subject to all applicable regulations for surface impoundments managing RCRA hazardous wastes. Some of the factors that determine the regulatory status of these surface impoundments for permitting purposes and the various compliance options are discussed below.

1. Impoundments ceasing operation prior to effective date.

Facilities with impoundments in which newly regulated TC wastes currently are generated, stored, and/or disposed may cease operation of the units prior to the effective date of the TC (i.e., September 25, 1990). If these units have wastes in place but are not being used for waste management after the TC effective date, these inactive units would not be subject to regulation under 40 CFR parts 264 or 265. However, it should be noted that inactive units that are located at facilities otherwise subject to subtitle C's interim status or permitting requirements are solid waste management units subject to corrective action requirements under sections 3003(h) and 3004(u) of RCRA. All facilities, of course, may be subject to CERCLA cleanup authorities.

In some cases facilities will choose to remove some or all of the wastes from the impoundments. If the removed wastes are not managed on or after the effective date of the TC rule, they will not be subject to subtitle C. However, any TC waste contained in inactive impoundments that is removed (i.e., actively managed) after the effective date would be subject to regulation. For example, if the TC waste was excavated for treatment and disposal, it would be regulated as hazardous waste at the time of excavation and would be required to be managed at a subtitle C facility. Such a removal activity in and of itself, however, does not subject the inactive impoundment to subtitle C.

2. Conversion to non-hazardous waste impoundment.

A facility with surface impoundments in which TC wastes have been generated and/or managed may choose

to redesign or reconfigure the existing wastewater treatment system prior to the effective date such that only non-hazardous wastes are generated or managed in some or all units of the treatment train on or after the effective date of the rule. If all TC sludges are removed from the surface impoundments prior to the effective date of the rule, the units may continue to be used and will not be subject to subtitle C of RCRA (provided no other hazardous wastes are generated, managed, or disposed in the unit).

Under another scenario, there may be surface impoundments that (1) contain TC wastes deposited prior to the effective date, and (2) receive or generate only non-hazardous wastes by the effective date as a result of system reconfiguration or modification. The regulatory status of such units depends on how the residual TC waste is managed after the effective date of the rule. If (1) the TC wastes remain in the surface impoundment on or after the effective date of the rule, and (2) the unit does not receive or generate any other hazardous wastes on or after the effective date, and (3) the impoundment is the final disposal site for the wastes, then the unit is not subject to subtitle C. Note that EPA does not consider one time removal of waste from a unit on or after the TC effective date, in and of itself, to make the unit a storage unit and thus subject to subtitle C. The Agency does not view one time removal of waste as part of a closure as changing the status of the unit, as long as there has not been ongoing management of the waste in the impoundment. Removal of waste in the context of a closure provides human health and environmental benefits since it eliminates potential sources of ground water pollution. This approach is also consistent with current operational procedures for landfills under identical circumstances with respect to newly regulated TC wastes.

3. Active hazardous waste management impoundments.

Facilities with units in which TC wastes are managed on or after the effective date of the rule may continue to use these units to manage TC wastes if all applicable subtitle C requirements are satisfied. These facilities are required to obtain interim status and apply for a permit (or submit a change in interim status or a permit modification, if appropriate) in accordance with the appropriate compliance dates. The units will be subject to the applicable requirements of 40 CFR parts 264 and 265 as of the effective date of the TC.

As described in section 2 above, facility owners or operators may elect to manage only non-hazardous wastes in surface impoundments so that the unit will not be subject to subtitle C. However, there are a number of scenarios where these impoundments could become regulated. For example, if any TC waste remains in the surface impoundment on the TC's effective date and the impoundment is not the final disposal site for the wastes, then the impoundment is considered to be actively managing (e.g., storing) hazardous wastes and therefore is subject to the Subtitle C requirements upon the effective date of the rule. If a facility plans to remove on a periodic basis all or some of the TC waste from the unit on or after the effective date of the TC rule, the unit would be subject to subtitle C (including permitting, facility-wide corrective action, financial responsibility) on the effective date of the rule.

A second example would be where the non-hazardous wastewater influent to a unit causes a TC hazardous sludge (disposed prior to the effective date) to be scoured from the unit so that the effluent from the unit exhibits the TC on or after the effective date. In that case, the unit generating this TC wastewater and any surface impoundment receiving that hazardous effluent would be subject to the subtitle C management standards and would need to be under interim status or obtain a permit.

A third example is where a TC waste is generated within the unit from non-hazardous wastewater on or after the TC effective date. This could occur where the hazardous constituents in the wastewater become concentrated, or if a new TC sludge is formed by settling. In these examples, once the TC waste is generated and stored or disposed of in the unit, the unit is subject to subtitle C.

C. Ground-Water Monitoring Requirements

The Agency is aware of confusion regarding the timing of the subtitle C ground-water monitoring requirements as they apply to land disposal units or facilities that are newly regulated as a result of the final TC. Subpart F of 40 CFR part 265 describes the ground-water monitoring requirements for interim status land disposal facilities managing hazardous wastes. The applicability section of subpart F (see § 265.90) is not clear as to whether such units or facilities newly regulated under the toxicity characteristic must comply with the ground-water monitoring requirements on the effective date of th

TC (i.e., September 25, 1990) or one year later on September 25, 1991.

In 1980, the Agency promulgated the interim status program, including the part 265, subpart F ground water monitoring requirements. The Agency allowed affected facilities an additional year from the effective date of the regulations for compliance with the groundwater monitoring requirements as codified at § 265.90(a): "within one year after the effective date of these regulations, the owner or operator . . . must implement a ground water monitoring program capable of determining the facility's impact on the quality of ground water. . . ." EPA provided this delayed compliance schedule for groundwater monitoring requirements in order to allow facilities sufficient time to properly plan and install groundwater monitoring systems (45 FR 33161, May 19, 1980). EPA believes that the rationale for allowing an additional year after the effective date of the initial regulations for full implementation of groundwater monitoring requirements is also applicable to newly regulated facilities. EPA believes that the 6 month effective date provided for RCRA regulations is insufficient to allow for proper site characterization and well placement. Thus, EPA interprets § 265.90(a) to provide a one year timeframe from the effective date of new listings or characteristics rules for the implementation of a complete groundwater monitoring program at newly regulated units or facilities. The Agency intends to codify this in a future rulemaking by modifying the appropriate sections of the regulations.

Consistent with EPA's implementation of the loss of interim status requirement for land disposal facilities in 1985 (50 FR 38946, September 25, 1985), land disposal facilities newly subject to the ground-water monitoring requirements must complete site characterization and design and installation of groundwater monitoring systems capable of determining the facility's impact on ground water quality by September 25, 1991. Therefore, owner/operators who have not already done so should immediately commence characterizing their facility's hydrogeology and designing and installing their groundwater monitoring systems to meet this deadline. As in 1985, EPA intends to rigorously enforce both the part 265 subpart F requirements and the loss of interim status requirements.

To certify compliance with these requirements, facilities must submit a ground-water monitoring system certification, certifications of financial responsibility and part B permit

applications by September 25, 1991.

D. Section 3010 Notifications

In the preamble to the TC final rule (55 FR 11849), the Agency indicated that, pursuant to RCRA section 3010, the Administrator may require all persons who handle hazardous wastes to notify the Agency of their hazardous waste management activity within 90 days after the wastes are identified as hazardous. For the TC rule, the notification date was June 27, 1990. However, the Agency waived notification for those facilities that already have notified EPA of their hazardous waste activity under section 3010 of RCRA and have obtained an EPA identification number.

Based on inquiries received by various EPA offices concerning the notification requirements, and a review of the preamble language, the Agency understands that a significant number of regulated facilities may have been confused by certain language in the notification section of the TC preamble. As a result, the Agency is today clarifying the notification requirements for generators and TSDFs, and is also providing additional time for such notification.

Notification requirements for large quantity generators (those that generate more than 1,000 kg per month of total hazardous waste) and TSDFs, as specified in the TC final rule, required notification by June 27, 1990 unless they had already notified EPA of hazardous waste activity and obtained an EPA identification number. Based on inquiries received by various EPA offices, it is apparent that many persons did not understand that in order to have the notification requirement waived, a generator must have met two criteria: (1) They must have previously notified the Agency of hazardous waste management activity, and (2) they must have received an EPA identification number (see § 262.12). Some persons interpreted this section to mean that any previous notification under any Agency program (rather than under the RCRA program) was sufficient. Others took the interpretation that if they had an EPA identification number for any Agency program, that was sufficient to take advantage of the notification waiver. Both interpretations are incorrect. Due to this apparent confusion, the Agency is today allowing large quantity generators and TSDFs newly regulated by the TC additional time to notify the appropriate EPA Regional Office of their hazardous waste activity. Large quantity generators and TSDFs have until October 29, 1990 to notify the Agency of their hazardous waste management activity. This is done by completing a

section 3010 notification form (EPA Form 8700-12, dated 7/90; see 55 FR 31389, August 2, 1990 for a copy of the form) and sending it to the appropriate EPA Regional Office. It is important to note that this extension applies only to the notification requirement, and does not provide an extension for any other requirement under TC rule, including the date by which an EPA ID number must be obtained.

For newly regulated TSDFs, RCRA specifies that in order for a newly regulated TSDF to be granted interim status, three conditions must be met: (1) The facility/unit must be in existence on the effective date of the rule; (2) the facility must submit a section 3010 notification (if required by the Agency) within the required time frame (for the TC the date was June 27, 1990); and (3) the facility must submit a part A by September 25, 1990. As indicated above, the Agency is today extending the time by which TSDFs must notify the Agency in order to be eligible for interim status to October 29, 1990. This is done by completing a section 3010 notification form (EPA Form 8700-12 as described above) and sending it to the appropriate EPA Regional Office. This extension of the section 3010 notification date does not affect the date part A applications are due, which remains September 25, 1990. It also does not affect the compliance date for any other requirement other than the section 3010 notification.

Notification requirements for small quantity generators (generators of between 100 and 1,000 kg of total hazardous waste per month) newly regulated as a result of the TC were already clarified in a TC correction notice published in the Federal Register on August 2, 1990 (see page 31387; see also editorial correction notice dated August 10, 1990, page 32733). Small quantity generators that are newly regulated by the TC are required to notify their respective EPA Regional Office by November 2, 1990 of their hazardous waste management activity. This is done by completing a section 3010 notification form (EPA Form 8700-12 as described above) and sending it to the appropriate EPA Regional Office.

E. Permit Modifications

The Toxicity Characteristic (TC) rule is expected to cause many permitted facilities to seek modifications to their permits. The TC is the first major expansion of regulated wastes under part 261 since the new permit modification rule was promulgated on September 28, 1988 (53 FR 37912). In the

preamble to the TC rule, the Agency generally described the implementation of the permit modification procedures for newly regulated wastes (see 55 FR 11849, March 29, 1990). However, the Agency has received questions asking for clarification of certain provisions of the new modification rule.

Under the new permit modification procedures, permitted facilities that manage TC wastes must submit Class 1 permit modifications to the appropriate EPA Regional Office by the TC rule effective date, September 25, 1990, if they are to continue managing the newly regulated TC wastes in units that require a permit (see § 270.42(g)). A number of people have expressed confusion about the type and extent of information permitted facilities must submit with these Class 1 permit modifications. This confusion stems from the fact that § 270.42(g) does not clearly define what information must be contained in the Class 1 submission. The rule language for Class 1 modifications in § 270.42(a) suggests that facilities must also submit the detailed part B application information specified in §§ 270.13 through 270.21, 270.62 and 270.63. However, this is not the intent of the requirements under § 270.42(g) because there would be insufficient time for facilities to develop the necessary data by the effective date. Furthermore, the more extensive information requirements under § 270.42(a) are intended for facility changes initiated by an owner/operator, not for changes under § 270.42(g) resulting from new regulatory requirements imposed by the Agency.

The new waste provision of § 270.42(g) is analogous to the procedures required for interim status facilities or newly regulated facilities, where a facility can continue to manage newly regulated wastes by submitting basic information about the affected waste streams and units and then complying with the part 265 management standards for any newly regulated units until final permit conditions are developed. Therefore, the Class 1 submission would comprise a revised part A form clearly indicating all activities that are newly regulated as a result of the TC rule, and any other description that will clarify which units at the facility are managing the new wastes. This Class 1 permit modification serves as a notification to the Agency and the public of the newly regulated activities.

A subsequent Class 2 or 3 permit modification (if necessary) must be submitted 180 days after the TC effective date (i.e., March 24, 1991), and

it is at this time that the detailed part B information must be submitted. It is expected that a Class 2 for 3 permit change will be necessary for virtually every facility that has wastestreams which are newly regulated as hazardous under the TC. In situations where a wastestream was already regulated as hazardous under the permit but now has additional waste codes associated with it due to the TC rule, only a Class 1 modification may be required.

Dated: September 24, 1990.

Henry L. Longest II,
Acting Assistant Administrator, Office of
Solid Waste and Emergency Response.
[FR Doc. 90-22981 Filed 9-26-90; 8:45 am]
BILLING CODE 6550-50-M

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Part 2

Information Collection Requirements Approved by the Office of Management and Budget

AGENCY: Federal Emergency
Management Agency (FEMA).

ACTION: Final rule.

SUMMARY: This amendment updates and displays the Office of Management and Budget (OMB) control numbers assigned by OMB for collections of information contained in, or authorized by, FEMA regulations. The update is necessary to make corrections to parts and sections and control numbers listed incorrectly, add new requirements, and delete requirements no longer needed or controlled.

EFFECTIVE DATE: September 27, 1990.

FOR FURTHER INFORMATION CONTACT:
Linda S. Borrer, (202) 646-2625.

SUPPLEMENTARY INFORMATION: The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*) seeks, in part, to minimize the Federal paperwork burden. The Act requires that agencies obtain OMB review and clearance of certain reporting and recordkeeping requirements/collections of information and give public notice of such clearance numbers. This rule amends 44 CFR part 2, subpart C to update and display the control numbers assigned by OMB to FEMA's collections of information which are contained in, or authorized by, FEMA regulations.

Because this is a nonsubstantive amendment dealing with procedural matters, it is not subject to the provisions of the Administrative Procedure Act (5 U.S.C. 551-553 *et seq.*) requiring advance notice and comment.

FEMA has determined that this regulation will not impose unnecessary burdens on the economy or on individuals, and therefore, is not significant for the purposes of Executive Order 12291; that a regulatory analysis is not required; that environmental impact documents under the National Environmental Policy Act of 1969 are not required since the action is administrative and categorically exempt from 44 CFR part 10; and that the updated cumulative list of assigned OMB control numbers is not subject to further review and clearance by OMB under the Paperwork Reduction Act of 1980.

List of Subjects in 44 CFR Part 2

Authority delegations (government agencies), Organization and functions (government agencies), Reporting and recordkeeping requirements.

Accordingly, title 44, chapter I, subchapter A of the Code of Federal Regulations, part 2, subpart C is amended as follows:

PART 2—[AMENDED]

Subpart C—[Amended]

1. The authority citation for part 2, subpart C continues to read as follows:

Authority: 49 FR 36503, Sept. 18, 1984; as amended at 50 FR 40008, Oct. 1, 1985; 51 FR 34604, Sept. 30, 1986

§ 2.81 OMB control numbers assigned to information collections.

2. Section 2.81 is amended by revising the cumulative list of parts and sections in 44 CFR which identifies or describes FEMA's information collection requirements that have been assigned OMB control numbers as follows:

	Current OMB Control No.
44 CFR part or section where identified or described:	
7 Subpart E	3067-0177
11.35	3067-0122
11.54	3067-0122
11 Subpart D	3067-0167
59.22(a)	3067-0020
59.22(b)(2)	3067-0018
60.3, 60.4, 60.5	3067-0022
61, 61 App. A(1), 61 App. A(2)	3067-0022
62 Subpart C, 62 App. A, 62 App. B	3067-0160
63 Subpart B	3067-0198
64.3(c)	3067-0020
65	3067-0147
66, 67	3067-0143
70	3067-0147
71	3067-01
75 Subpart B	3067-01
80, 81, 83	3067-00
151 Subpart B	3067-014

request for revision to any state implementation plan. Each request for revision to the state implementation plan shall be considered separately in light of specific technical, economic, and environmental factors and in relation to relevant statutory and regulatory requirements.

List of Subjects in 40 CFR Part 52

Air pollution control, Particulate matter.

Dated: September 25, 1990.

Kerrigan Clough,

Acting Regional Administrator.

40 CFR Part 52, Subpart QQ is amended as follows:

PART 52—[AMENDED]

1. The authority citation for Part 52 continues to read as follows:

Authority: 42 U.S.C. 7401-7642.

Subpart QQ—South Dakota

2. Add a new § 52.218 to read as follows:

§ 52.2182 PM₁₀ Committal SIP.

On July 12 1988, the State submitted a Committal SIP for the Rapid City Group II PM₁₀ area, as required by the PM₁₀ implementation policy. The SIP commits the State to continue to monitor for PM₁₀ and to submit a full SIP if a violation of the PM₁₀ National Ambient Air Quality Standards is detected. It also commits the State to make several revisions related to PM₁₀ to the existing SIP.

[FR Doc. 90-23264 Filed 10-4-90; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Part 61

[FRL-3850-7]

National Emission Standards for Radon Emissions from Phosphogypsum Stacks

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of compliance waiver.

SUMMARY: Today's action announces the continuation of a limited compliance waiver, pending reconsideration and rulemaking, of subpart R of 40 CFR part 61 ("Subpart R"), National Emission Standards for Radon Emissions from Phosphogypsum Stacks (54 FR 51054 December 15, 1989). EPA is issuing this compliance waiver pursuant to its authority under Clean Air Act 112(c)(1)(B)(ii) and 40 CFR 60.10-60.11. Today's limited compliance waiver, which permits the distribution and use of phosphogypsum for agricultural

purposes, temporarily continues the existing limited compliance waiver, originally issued by the Administrator on April 10, 1990 (55 FR 13480 (April 10, 1990)), pending final action on the ongoing rulemaking proceedings, but in no event beyond June 1, 1991.

EFFECTIVE DATE: Effective October 1, 1990, the requirement of subpart R of 40 CFR part 61 that phosphogypsum be disposed in stacks or mines is temporarily waived to permit the distribution and use of phosphogypsum for agricultural purposes, pending final action on the ongoing rulemaking proceedings (55 FR 13480 April 10, 1990)), but in no event beyond June 1, 1991.

FOR FURTHER INFORMATION CONTACT: Craig Conklin, Environmental Standards Branch, Criteria and Standards Division (ANR-460), Office of Radiation Programs, Environmental Protection Agency, Washington, DC 20460, (202) 475-9610.

SUPPLEMENTARY INFORMATION:

A. Background

On October 31, 1989, EPA promulgated a final rule controlling radionuclide air emissions from several source categories, including phosphogypsum stacks (to be codified at 40 CFR part 61, subpart R ("Subpart R")). 54 FR 51653 (December 15, 1989). The standard requires, in part, the disposal of phosphogypsum in stacks or mines, thereby precluding alternative uses of the material. EPA received petitions from several parties, including The Fertilizer Institute ("TFI"), Consolidated Minerals, Inc. ("CMI"), and U.S. Gypsum Co. ("USG") that EPA reconsider this portion of the phosphogypsum NESHAP. On April 10, 1990, EPA published in the Federal Register a notice of limited reconsideration of subpart R, a rulemaking proposal which included several alternatives to modify or maintain subpart R, and a limited compliance waiver which waived the requirements of subpart R for those owners or operators engaged in the distribution or use of phosphogypsum for agricultural purposes during the current growing season (not to extend beyond October 1, 1990). 55 FR 13480. The waiver was issued upon the finding of the Administrator that such activity presents no imminent endangerment to public health, that the immediate prohibition of such use would cause great injury to many small farmers who rely upon phosphogypsum, and that it would be burdensome and impracticable to issue limited waivers to each affected owner or operator. In

addition, it was issued in light of the scope of the simultaneously granted limited reconsideration of subpart R and in recognition that such waiver was necessary to allow time for implementation of alternative means of soil conditioning.

EPA has received well over 100 comments on the proposed rule. EPA is presently evaluating each comment and plans to issue a final rule shortly. Today's action by EPA does not, and should by no means be construed to, indicate any Agency predisposition on the pending rulemaking.

B. Issuance of Compliance Waiver

For the same reasons announced in its original limited compliance waiver, EPA today continues in place the limited compliance waiver for subpart R, as originally issued on April 10, 1990, 55 FR 13480, pending final action on the rulemaking proceeding also commenced on April 10, 1990, but in no event beyond June 1, 1991. Authority for this waiver exists in Clean Air Act section 112(C)(1)(B)(ii) and 40 CFR 61.10-61.11. EPA is accumulating and analyzing the information necessary to issue a final decision on the rulemaking proceeding, and expects to take final action shortly. Pending that final decision, the waiver bars enforcement against the use and distribution of phosphogypsum for agricultural purposes during this period.

Dated: September 28, 1990.

William K. Reilly,

Administrator.

[FR Doc. 90-23541 Filed 10-4-90; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Part 261

[EPA/OSW-FR-90-FFF; SWM-FRL-3836-8]

RIN 2050-AA78

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic; Hydrocarbon Recovery Operations

AGENCY: EPA.

ACTION: Interim final rule with request for comments.

SUMMARY: On March 29, 1990, the Environmental Protection Agency (EPA) promulgated revisions to the toxicity characteristic, one of the tests used to determine whether particular wastes are regulated as hazardous under subtitle C of the Resource Conservation and Recovery Act (RCRA). New information acquired by the Agency since the promulgation of the Toxicity

Characteristic (TC) rule indicates that immediate application of the TC could prevent continued operation of hydrocarbon recovery and remediation activities currently being conducted at a number of petroleum refineries and marketing terminals or bulk plants handling crude petroleum and immediate products of petroleum refining. The hydrocarbon recovery and remediation activities of concern are those that recover free-floating hydrocarbons from the contaminated aquifer, and include as part of the recovery, reinjection of contaminated ground water via underground injection wells or reinfiltration via an infiltration gallery into the same aquifer from which it was withdrawn.

The Agency believes that cessation of these activities may pose a substantially greater risk to human health and the environment than their continued operation under the existing regulatory authorities. As a result of this new information, the Agency is today promulgating an interim final rule which extends the compliance date of the TC rule for petroleum refining facilities, marketing terminals and bulk plants engaged in this specific recovery and remediation operation for 120 days. The period of the extension being promulgated today will allow the Agency to solicit public comment on issues related to these facilities, and to consider all available, pertinent information, and to develop the best solution to protect human health and the environment.

EFFECTIVE DATE: September 25, 1990.

ADDRESSES: The public docket for this rulemaking is located at Room M2427, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. The docket number assigned to this notice is F-90-PRAS-FFFFF. Persons who wish to comment on the notice should place the docket number on their comments and provide an original and two copies.

The EPA RCRA docket is open from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. To review docket materials, the public must make an appointment by calling (202) 475-9372. A maximum of 50 pages may be copied from any regulatory docket at no cost. Additional copies cost \$0.20 per page.

FOR FURTHER INFORMATION CONTACT: For general information about this notice, contact the RCRA/Superfund Hotline at (800) 424-9346 toll free, or (202) 382-3000 in Washington, DC metropolitan area. For information on specific aspects of this notice, contact David Topping of the Waste

Identification Branch, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street SW. Washington DC 20460, (202) 382-4770.

SUPPLEMENTARY INFORMATION:

A. Background

On March 29, 1990 (55 FR 11798), the Environmental Protection Agency (EPA) promulgated the Toxicity Characteristic final rule to revise the existing EP toxicity characteristic. The TC is one of several characteristic used to identify wastes which are defined as hazardous and, as a consequence, are subject to the subtitle C requirements of the Resource Conservation and Recovery Act (RCRA).

In today's notice, the Agency, invoking good cause under the Administrative Procedure Act, is promulgating an extended compliance date for the TC requirements to petroleum refining facilities, marketing terminals and bulk plants engaged in hydrocarbon recovery and remediation operations which involve the reinjection of contaminated ground water into underground injection wells or infiltration galleries for 120 days. As discussed below, EPA believes: (1) Good cause, under 5 U.S.C. 553, exists for a short change in compliance date for this narrow class of TC wastes without prior notice and comment; and (2) under 5 U.S.C. 705, justice so requires a postponement of the compliance date. During the 120 day period, these wastes will not be a Federal hazardous waste. This extended compliance date results from new information that was brought to the attention of the Agency after the promulgation of the TC final rule. The extended compliance date allows the immediate continued operation of existing activities while careful consideration is given to all pertinent information.

B. Hydrocarbon Recovery and ReInjection of Contaminated Ground Water

Subsurface investigations have revealed that large quantities of free-floating and dissolved hydrocarbons are contained in the shallow aquifers beneath a number of petroleum refineries marketing terminals and bulk plants. Many of these facilities have undertaken operations to remove the free-floating hydrocarbons and remediate the contamination. Follow-on phases of the operation may involve the remediation of contaminated subsurface soils and ground water. These recovery and remediation activities are currently being conducted under the direction of various State and local environmental and water quality authorities.

It is the first phase of such operations that is of immediate concern to the Agency. This phase primarily consists of pumping the free-floating hydrocarbons from the aquifer beneath the facility. Some of these operations involve two pumping systems. One pumping system is used to bring the free-floating hydrocarbons to the surface while the second pumping system reinjects contaminated ground water to facilitate the pumping of the free-floating hydrocarbons and prevent further migration of the contaminants in the aquifer. In two pump systems, the ground water is pumped to create a cone of depression to promote collection of free-floating hydrocarbons and thereby facilitate recovery/removal of the hydrocarbons from the aquifer. This pumped ground water, with its high saturation concentrations of dissolved hydrocarbon (particularly benzene, due to the equilibration between the free-floating hydrocarbons and the water), is returned to the aquifer via an injection well or infiltration gallery. The reinjection/infiltration establishes a hydraulic gradient that helps to contain the contamination and maintains the water table for purposes of the hydrocarbon recovery. Because of the significantly high quantities of dissolved hydrocarbons in the water that is returned to the aquifer, immediate application of the TC to this ground water may result in classification of the reinjection/infiltration as disposal of a hazardous waste. If this occurs, use of UIC Class V wells (which many of these operations currently use) would no longer be authorized. Automatic reclassification of the well as Class IV wells (injection of hazardous waste into or above an underground source of drinking water (USDW) would occur; in most cases, Class IV wells are prohibited under section 3020 of RCRA.

C. Environmental Benefits

The extended compliance date being promulgated in today's notice will allow the Agency to seek and consider all pertinent information concerning hydrocarbon recovery operations, and will provide time for the Agency to develop the best long-term solution to protect human health and the environment. The impacts that RCRA may have on these operations as a result of application of the TC (i.e., permit requirements, corrective action notices, etc.) may prohibit temporarily, if not permanently, the reinjection/infiltration of ground water which industry asserts is an integral part of the recovery phase of the operation. ReInjection of the ground water may serve two main

purposes: it facilitates pumping, thus increasing the recovery rate for free-floating product, and lessens further migration of the contaminant plume within the aquifer. Without reinjection, industry argues that the recovery phase may take longer to complete, there is probable risk of further contamination of subsurface soils, and the plume of contaminated ground water is likely to spread. Furthermore, they argue that it is not practicable to treat the contaminated ground water to levels below those specified in the TC before its reinjection during the recovery phase since the water is returned to the aquifer mixes and equilibrates with the remaining contaminated ground water and free-floating product. Therefore, it attains the same saturation concentration of dissolved hydrocarbon as was present before pumping and treatment. The ground water will continue to attain the high saturation levels of dissolved hydrocarbon once returned to the aquifer until the source of contamination (i.e., the free-floating product) is removed. Industry argues that it is both environmentally beneficial and technically feasible to continue operation in this manner and, once recovery of free product is complete, begin ground water and soil remediation.

D. Interim Final Rule

EPA is invoking two authorities for this immediate effective interim final action. First, EPA is invoking the good cause exemptions in sections 553(b)(3) and 553(d)(3) of the Administrative Procedure Act to immediately change the compliance date with requirements imposed by the TC for wastes involved in specific product recovery activities. Second, EPA is invoking the authority in 5 U.S.C. 705. The ground water will not be a Federal hazardous waste during the period of the extension. EPA has only very recently received information regarding these operations and believes that continued operation of these actions are important for environmental protection. As discussed above, without the immediate change of the compliance date for these operations, such activities might cease. EPA believes that requiring these facilities to meet all applicable RCRA and SDWA requirements by the September 25, 1990 effective date of the TC rule is both impracticable and contrary to public interest. Therefore, at petroleum refineries and marketing terminals or bulk plants currently engaged in hydrocarbon recovery operations stemming from handling crude petroleum and immediate products of petroleum refining, the compliance date for the TC is extended

until January 25, 1991. Facilities with existing contracts for construction of these operations are also included within the scope of today's notice.

EPA is today soliciting comments on regulatory approaches for issues involved in today's notice and is considering further extending the compliance requirements under a separate regulatory proposal. Until EPA evaluates fully the issues involved in activities, the Agency believes that the current State oversight of these activities and continuing Agency involvement in these issues will provide adequate assurances against development of any imminent threat to human health and the environment. As discussed above, if such a change is not made, environmentally beneficial activities would, at a minimum, be suspended for many months, possibly increasing the potential threat to human health and the environment due to further migration of the contamination.

E. State Authority

1. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under section 3003, 3013, and 7003 of RCRA although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR part 271.

Prior to HSWA, a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law. In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law

to retain final authorization, HSWA applies in authorized States in the interim.

2. Effect on State Authorizations

EPA will implement the provisions of today's interim final rule in authorized States until their programs are modified to adopt the final toxicity characteristic and the modification to the State's program is approved by EPA. Implementation of today's interim final rule beyond the date of a State's receiving final authorization for the toxicity characteristic depends upon actions taken by the State, as discussed below. EPA will implement the provisions of today's rule in nonauthorized States. Today's rule extends the compliance date for requirements imposed in the final Toxicity Characteristic final regulation (see 55 FR 11798, March 29, 1990) for certain hydrocarbon recovery operations.

The Toxicity Characteristic was promulgated pursuant to a HSWA provision and must be adopted by States which intend to retain final authorization. However, today's rule provides, for 120 days, a less stringent standard for certain hydrocarbon recovery and remediation operations than would be imposed in the final Toxicity Characteristic as promulgated. In order to promote environmentally beneficial hydrocarbon recovery operations, today's interim final rule provides that these wastes would not be hazardous wastes under the Federal regulations until January 25, 1991, and States would not be required to mandate their management as such in order to retain RCRA authorization. However, Section 3009 of RCRA provides that States may impose more stringent requirements than those imposed under Federal regulations. States, whether using RCRA authorities (e.g., authorities under State law where States have received final authorization to implement the toxicity characteristic provisions in lieu of their implementation by EPA), or other State authorities under other statutes, may impose hazardous waste requirements on such operations, or may require other more stringent conditions upon management of these wastes.

F. Regulatory Requirements

1. Regulatory Impact Analysis

Under Executive Order 12291, EPA must determine whether a regulation is "major," and therefore subject to the requirement of a Regulatory Impact Analysis. The overall effect of today's

rule is to extend the compliance date for requirements imposed by the final Toxicity Characteristic rule for certain limited hydrocarbon recovery operations. No sampling or analysis requirements are imposed in today's rule. The net effect of this proposal is to extend cost savings on a temporary basis to certain segments of the regulated community. Consequently, no regulatory impact analysis is required.

2. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601-612, whenever an agency is required to publish a General Notice of Rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). No regulatory flexibility analysis is required, however, if the head of the Agency certifies that the rule will not have a significant impact on a substantial number of small entities.

The extension of the compliance date for the Toxicity Characteristic requirements promulgated today for certain limited hydrocarbon recovery activities in this rule is deregulatory in nature and thus will only provide beneficial opportunities for entities that may be affected by the rule. Accordingly, I hereby certify that this regulation will not have a significant economic impact of a substantial number of small entities. This regulation, therefore, does not require a regulatory flexibility analysis.

3. Paperwork Reduction Act

There are no reporting, notification, or recordkeeping (information) provisions in this rule. Such provisions, were they included, would be submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

List of Subjects in 40 CFR Part 261

Hazardous waste, recycling.

Dated: September 24, 1990.

William K. Reilly,
Administrator.

For reasons set out in the preamble, chapter I of title 40 of the CFR part 261 is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

2. Section 261.4 is amended by adding paragraph (b)(11) to read as follows:

§ 261.4 Exclusions.

(b) * * *

(11) Ground water that exhibits the Toxicity Characteristic in § 261.24 of this part that is reinjected or infiltrated pursuant to existing hydrocarbon recovery operations undertaken at petroleum refineries, and marketing terminals or bulk plants handling crude petroleum and immediate products of petroleum refining until January 25, 1991.

(FR Doc. 90-23542 Filed 10-4-90; 8:45 am)

BILLING CODE 6560-50-M

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MM Docket No. 89-560; RM-6952]

Radio Broadcasting Services; Dillingham, AK

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document allots FM Channel 256A to Dillingham, Alaska, as that community's first local broadcast service, in response to a petition for rule making filed by Jackson McCormick. See 54 FR 51424, December 15, 1989. Coordinates utilized for Channel 256A at Dillingham are 59-02-30 and 158-27-30. (See Supplementary Information, *infra*.) With this action, the proceeding is terminated.

DATES: Effective November 16, 1990; the window period for filing applications on Channel 256A at Dillingham, Alaska, will open on November 17, 1990, and close on December 17, 1990.

FOR FURTHER INFORMATION CONTACT: Nancy Joyner, Mass Media Bureau, (202) 634-6530. Questions related to the window application filing process should be addressed to the Audio Services Division, FM Branch, Mass Media Bureau, (202) 632-0394.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Report and Order, MM Docket No. 89-560, adopted September 19, 1990, and released October 2, 1990. The full text of this Commission decision is available for inspection and copying during normal business hours in the FCC Dockets Branch (room 230), 1919 M Street, NW., Washington, DC. The complete text of this decision may also be purchased from the Commission's

copy contractors, International Transcription Service, (202) 857-3800, 2100 M Street, NW., suite 140, Washington, DC 20037.

Interested parties should note that the petition for rule making in this proceeding was filed prior to October 2, 1989, and therefore, applicants for Channel 256A at Dillingham may avail themselves of the provisions of Section 73.213(c) of the Commission's Rules. See 47 CFR 73.213(c).

List of Subjects in 47 CFR Part 73

Radio broadcasting.

47 CFR PART 73—[AMENDED]

1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303.

§ 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments, is amended under Alaska, by adding Dillingham, Channel 256A.

Federal Communications Commission.

Kathleen B. Levitz,

Deputy Chief, Policy and Rules Division,
Mass Media Bureau.

(FR Doc. 90-23666 Filed 10-4-90; 8:45 am)

BILLING CODE 6712-01-M

47 CFR Part 73

[MM Docket No. 89-456; RM-6831]

Radio Broadcasting Services; Vero Beach, FL

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document, at the request of Media VI Florida, (formerly Treasure Coast Media, Inc.), substitutes Channel 269C3 for Channel 269A at Vero Beach, Florida, and modifies its license for Station WAVW(FM) to specify operation on the higher powered channel. See 54 FR 43087, October 20, 1989. Channel 269C3 can be allotted to Vero Beach in compliance with the Commission's minimum distance separation requirements. The coordinates for this allotment are North Latitude 27-38-18 and West Longitude 80-23-54. With this action, this proceeding is terminated.

EFFECTIVE DATE: November 16, 1990.

FOR FURTHER INFORMATION CONTACT: Nancy J. Walls, Mass Media, (202) 634-6530.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Report and Order, MM Docket No. 89-456,

RCRA REVISION CHECKLIST 75

Listing of 1,1-Dimethylhydrazine Production Wastes

55 FR 18496-18506

May 2, 1990

HSWA Cluster II

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART D - LISTS OF HAZARDOUS WASTES

HAZARDOUS WASTES FROM SPECIFIC SOURCES

1 add K107-K110 to the subgroup "Organic Chemicals"	261.32				
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Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
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* * * * *

Organic chemicals:

* * * * *

K107.....	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(C,T)
K108.....	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(I,T)
K109.....	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)

RCRA REVISION CHECKLIST 75: Listing of 1,1-Dimethylhydrazine Production Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
K110.....	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				(T)
*	*	*	*	*	*

APPENDIX III TO PART 261

CHEMICAL ANALYSIS TEST METHODS

add compound and analysis method to Table 1	Appendix III				
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TABLE 1. - ANALYSIS METHODS FOR ORGANIC CHEMICALS CONTAINED IN SW-846

* * * * *

Compound	Method No.
* * * * *	*
1,1-Dimethylhydrazine (UDMH).....	8250
* * * * *	*

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add, in numerical order, K107-K110	Appendix VII				
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2.2.2

RCRA REVISION CHECKLIST 75: Listing of 1,1-Dimethylhydrazine Production Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

EPA hazardous
waste No.

Hazardous constituents for
which listed

*	*	*	*	*	*
K107.....	1,1-Dimethylhydrazine (UDMH).				
K108.....	1,1-Dimethylhydrazine (UDMH).				
K109.....	1,1-Dimethylhydrazine (UDMH).				
K110.....	1,1-Dimethylhydrazine (UDMH).				
*	*	*	*	*	*

¹ The Federal Register for this Rule contains two typographical errors in the description of the K107 hazardous waste (55 FR 18505). "1,1-dimethyl-hydrazine" should be "1,1-dimethylhydrazine" and "hydrazines" should be "hydrazides." This revision checklist contains the corrected description for K107.

Wednesday
May 2, 1990

Part IV

Environmental Protection Agency

Hazardous Waste Management System:
Identification and Listing of Hazardous
Waste and CERCLA Hazardous
Substance Designation and Reportable
Quantity Adjustment—1,1-
Dimethylhydrazine Production Wastes;
Final Rule and Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 271, and 302

[SWH-FRL-3719-6]

RIN 2050-AC91

Hazardous Waste Management System: Identification and Listing of Hazardous Waste and CERCLA Hazardous Substance Designation and Reportable Quantity Adjustment—1,1-Dimethylhydrazine Production Wastes

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) today is amending the regulations for hazardous waste management under the Resource Conservation and Recovery Act (RCRA) by listing as hazardous four wastes generated during the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides. The effect of this regulation is that these wastes will be subject to regulation under 40 CFR parts 262-266, and parts 270, 271, and 124.

In addition, the Agency also is making final amendments to regulations promulgated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 40 CFR part 302 that are related to today's hazardous waste listings. In particular, EPA is making final the designation as CERCLA hazardous substances all of the wastes made final in today's rule and the final reportable quantities that would be applicable to those wastes.

EFFECTIVE DATE: This regulation becomes effective on November 2, 1990.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F-90-DMHF-F1FFF and is located in the EPA RCRA Docket, Room 2427, 401 M Street SW., Washington, DC 20460. The public must make an appointment to review docket materials by calling (202) 475-9327. Copies of the non-CBI version of the listing background document, the Health and Environmental Effects Profiles (HEEPs), and not readily available references are available for viewing and copying only in the OSW docket. Copies of materials relevant to the CERCLA portions of this rulemaking are also located in Room 2427, U.S. EPA, 401 M Street SW., Washington, DC 20460. Both dockets are available for inspection from 9:00 a.m. to 4:00 p.m. Monday through Friday, excluding Federal holidays. The public may copy a maximum of 100 pages from

the docket at no charge; additional copies are available at \$0.15 per page.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline at (800) 424-9346 or at (202) 302-3000. For technical information on the RCRA hazardous waste listings, contact Dr. Cate Jenkins, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-4786. For technical information on the CERCLA final rule, contact Ms. Ivette Vega, Response Standards and Criteria Branch, Emergency Response Division (OS-210), U.S. EPA, 401 M St. SW., Washington, DC 20460, (202) 382-2463.

SUPPLEMENTARY INFORMATION: The contents of today's preamble are listed in the following outline:

- I. Legal Authority
- II. Background
- III. Summary of the Final Regulation
- IV. Response to Comments
 - A. Concentration Level Criteria for Listing Waste as Hazardous
 - B. Assessment Risk for UDMH in the Wastes
 - C. Regulatory Impact Analysis
 - D. Additional Waste Streams
- V. Relation to Other Regulations
- VI. Test Methods for Compound Added to Appendix VII
- VII. CERCLA Impacts
- VIII. State Authority
 - A. Applicability of Rules in Authorized States
 - B. Effect on State Authorizations
- IX. Compliance Dates
 - A. Notification
 - B. Interim Status
- X. Regulatory Impact Analysis
- XI. Regulatory Flexibility Act
- XII. Paperwork Reduction Act

I. Legal Authority

These regulations are being promulgated under the authority of sections 2002(a) and 3001 (b) and (e)(2) of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912(a) and 6921 (b) and (e)(2) (commonly referred to as RCRA), and section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602(a).

II. Background

Pursuant to section 3001 of subtitle C of the Resource Conservation and Recovery Act (RCRA), EPA today promulgates final rules listing four wastes generated during the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides. The following discussion provides a brief overview of regulatory actions affecting the wastes being finalized today.

On December 20, 1984, EPA proposed to amend the regulations for hazardous

waste management under RCRA by listing as hazardous four wastes generated during the production of 1,1-dimethylhydrazine (see 49 FR 49550). These wastes are: (1) Column bottoms from product separation (EPA Hazardous Waste No. K107), (2) condensed column overheads from product separation and condensed reactor vent gases (EPA Hazardous Waste No. K100), (3) spent filter cartridges from product purification (EPA Hazardous Waste No. K109), and (4) condensed column overheads from intermediate separation (EPA Hazardous Waste No. K110).

The basis for this action was a determination by the Agency that these wastes contained significant concentrations of 1,1-dimethylhydrazine (UDMH). UDMH is carcinogenic, mutagenic, and teratogenic. UDMH is typically present in each waste at significant levels. In addition, UDMH is mobile and persistent, and can reach environmental receptors in harmful concentrations if these wastes are mismanaged. (See the preamble to the proposed listing for those wastes (49 FR 49556) and the Listing Background Document, available from the **ADDRESSES** section, for more information on the hazards of these wastes.)

On August 17, 1989, the Agency made available for public comment additional data which supports the conclusion that UDMH should be considered a potential human carcinogen (54 FR 33942). The Agency requested comments on the use of this new data as part of the basis for listing wastes generated from the manufacture of UDMH. The comments received on the December 20, 1984 proposal to list the four wastes and on the use of this new data are responded to in this Federal Register notice. These comments do not refute the Agency's conclusion that UDMH is carcinogenic, mutagenic and teratogenic.

In addition, in a document published elsewhere in today's Federal Register, EPA is proposing to list as hazardous two additional wastes generated during the production of UDMH from carboxylic acid hydrazides. These wastes are: (1) Flush water from the catalyst removal system, and (2) spent catalyst and filter media. As a result of comments received from a manufacturer of UDMH in response to the proposed listing of four wastes generated during the manufacture of UDMH (December 20, 1984, 49 FR 49556), the Agency received data that supports a preliminary determination that these two additional wastes also should be listed as hazardous.

On November 8, 1984, the Hazardous and Solid Waste Amendments of 1984 (HSWA) were enacted. These amendments had far reaching ramifications for EPA's hazardous waste regulatory program. Section 3001(e)(2), which was one of the many provisions added by HSWA, directed EPA to make a decision on whether or not to list certain specified wastes, including wastes from the manufacture of UDMH, as hazardous. Today's rule fulfills this mandate, in part, by promulgating the final listing for four UDMH production wastes. EPA also plans to decide, within the next several years, whether to list as hazardous wastes generated during a different UDMH manufacturing process, namely that used by the Olin corporation. After EPA has (1) made that final decision, and (2) taken final action on today's proposal to list as hazardous two additional wastes generated during the manufacture of UDMH from carboxylic acid hydrazides, the Agency will have fulfilled its mandate under section 3001(e) of RCRA.

III. Summary of the Final Regulation

This regulation designates as RCRA hazardous wastes the following wastes generated during the manufacture of UDMH from carboxylic acid hydrazides:

- K107—Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines
- K108—Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines
- K109—Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines
- K110—Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines.

The hazardous constituent of concern in these wastes is UDMH. UDMH is carcinogenic, mutagenic, and teratogenic. UDMH is typically present in each waste at significant levels (*i.e.*, these wastes contain up to 50 percent UDMH). In addition, UDMH is mobile and persistent, and can reach environmental receptors in harmful concentrations if these wastes are mismanaged.

In addition to its toxicity, the flash point of the condensed column overheads from product separation and condensed vent gases from the reactors (EPA Waste No. K108) has been measured to be between 11 to 14 °C (52

to 55 °F), which makes this waste ignitable according to the criteria in 40 CFR 261.21(a)(1). Also, the pH of the column bottoms from product separation (EPA Waste No. K107) has been measured to be between 13 and 14, which makes this waste corrosive according to the criteria in 40 CFR 261.22(e)(1).

EPA has evaluated these wastes against the criteria for listing hazardous wastes (40 CFR 261.11(a)), and has determined that they typically contain high concentrations of the constituent of concern (UDMH), that this toxicant is mobile and persistent in the environment, and that the toxicant in the wastes is regulated by other EPA regulations, as well as by regulations of other government agencies. In addition, one of the wastes is corrosive, and another is ignitable, and thus these wastes are also being listed as hazardous based on these characteristics. The Agency, therefore, believes that these wastes are capable of posing a substantial present or potential threat to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed, and thus are hazardous wastes. (Additional information on the hazards and the toxic constituents of these wastes may be found in the listing background document and the Health and Environmental Effects Profiles, available as described in the "ADDRESSES" section.)

The Agency received comments on the proposed listings from the generator of the wastes (Uniroyal Corporation) as well as another manufacturer of UDMH that uses a different process not subject to these listings. Uniroyal also submitted comments on the new data on UDMH made available on August 17, 1989. We have evaluated these comments carefully, and have modified the supporting documentation accordingly. This notice makes final the regulations proposed on December 20, 1984, and provides EPA's response to the comments received.

The manufacturer of UDMH from carboxylic acid hydrazides, Uniroyal Corporation, also supplied the Agency with information on the generation of two additional wastes from the manufacture of UDMH as part of their comments—namely (1) flush water from the catalyst removal system, and (2) spent catalyst and filter media. As a result, the Agency is proposing to add these two wastes to the list of hazardous wastes in 40 CFR 261.32 in a document published elsewhere in today's Federal Register.

IV. Response to Comments

EPA received comments on several aspects of the proposed regulations (and on the use of the data made available for public comment on August 17, 1989) from the generator of these wastes, Uniroyal Corporation; the Agency also received comments on the proposed regulations from another manufacturer of UDMH that uses a different process not subject to these listings, Olin Corporation. The Agency has evaluated these comments carefully, and has modified the supporting documentation to this regulation accordingly, as well as proposing new hazardous waste listings based on these comments. This section presents the comments received, as well as the Agency's response.

A. Concentration Level Criteria for Listing Waste as Hazardous

One commenter requested that the Agency's listing of UDMH include a "delisting threshold" so that industry would have criteria for determining whether a waste containing UDMH (or any other toxicant) is considered hazardous, and could use this as a basis for a petition pursuant to 40 CFR 260.22 to exclude a particular UDMH manufacturing waste from the list of hazardous waste, the "delisting" process.

When evaluating delisting petitions, the Agency considers a number of factors, including the presence of any additional toxicants other than those for which the waste was listed and the behavior of the toxicants in the environment. See 40 CFR 260.22(a). Therefore, the delisting process is more complex than a simple evaluation of the concentration of the toxicant(s) for which the relevant waste was listed. The Agency has described its general approach to evaluating delisting petitions in the Federal Register. See 50 FR 48006, November 27, 1985. In that notice and in many subsequent proposed and final delisting determinations, the Agency described its evaluation process in detail and explained how it uses information provided by the petitioner (*e.g.*, see 54 FR 14101, April 7, 1989). For the reasons described in those notices and above, the Agency is not including a concentration level of UDMH in the wastes below which the wastes would not be considered hazardous.

B. Assessment of Risk for UDMH in the Wastes

Uniroyal challenged the Agency's evaluation of the carcinogenicity of UDMH for several reasons. In response to the December 20, 1984 proposed

UDMH listings (49 FR 49556), Uniroyal contended that a study by Toth,¹ which was used by EPA to conclude that UDMH should be considered a probable human carcinogen (a B2 carcinogen using EPA's weight-of-evidence classification system), was so flawed as to be invalid for any risk assessment. Uniroyal also challenged the validity of EPA's conclusions on the carcinogenicity of UDMH based on the interim results of new studies currently being conducted by Uniroyal. These new studies were conducted by Uniroyal pursuant to requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (U.S.C. part 136 *et seq.*), and were proposed to be used as a partial basis for the UDMH listing regulations under RCRA on August 17, 1989 (54 FR 22942).

The response to challenges by Uniroyal on the use of either the earlier Toth study or the new interim results of the studies conducted by Uniroyal are provided below.

1. Use of the Toth Study to Establish Carcinogenic Risk of UDMH

Uniroyal stated that EPA based its risk assessment of the carcinogenicity of UDMH solely on a study by Toth.² Uniroyal contended that this study deviated from scientifically valid protocols, thus invalidating the use of the study for establishing the carcinogenic risk of UDMH to humans.

The specific areas where Uniroyal claimed that the Toth study was not in conformance with EPA Guidelines for oncogenicity studies,³ and the Agency's specific responses to these comments are given below. In general, however, while noting that there are certain deficiencies in the methodological conduct of the Toth study, the Agency's Human Health Assessment Group (HHAG) (formerly the Carcinogen Assessment Group (CAG)) made a final determination in 1988 that the Toth study may be used as the basis for a carcinogenicity determination for UDMH.⁴ This determination was made

after evaluating the results of an audit performed on the Toth study by the Agency in 1985.⁵ The CAG noted that although the study had certain deficiencies, the increases in the tumor incidence was striking and that the evidence from the Toth study was more than adequate to classify UDMH as a carcinogen in animal test systems, and as a B2 category carcinogen (a probable human carcinogen) using EPA's weight-of-evidence system.

The Agency notes that even if the Toth study were as flawed as Uniroyal alleges, subsequent results of new studies also confirm the Agency's determination that UDMH is carcinogenic. These studies, conducted by Uniroyal as part of the requirements of the Registration Process under FIFRA, were noticed for public comment on August 17, 1989 for their potential use to support these UDMH listing regulations under RCRA (54 FR 33942). The results of this new interim study are also discussed in this Response to Comments section.

a. Uniroyal asserted that one deficiency in the Toth study was that there were no concurrent controls (animals maintained under the same test conditions, but not administered UDMH, which provide a reference point for comparison of any statistical increase in tumors) for any particular animals. The control group that Dr. Toth described in his publication actually lived over a different time span than those animals which were administered UDMH, and thus could not be assured to have lived under the exact same laboratory conditions as the animals which were administered UDMH.

Response: As a result of an audit of the Toth study performed by the Agency,⁶ data was located to establish the existence of as well as records for concurrent controls that were maintained by Dr. Toth's laboratory during the UDMH bioassay. These concurrent controls were found to have essentially the same tumor incidence as in the non-concurrent control group reported upon by Dr. Toth in his original publication of his study. Thus, the Agency does not believe there are problems in utilizing the Toth study because of Uniroyal's allegations

concerning lack of concurrent control animals.

b. Uniroyal stated that only one dose level of UDMH was tested, and this dose level exceeded the Maximum Tolerated Dose (MTD). The MTD is an administered level of substance that significantly shortens the life span of test animals, due to toxicological effects of the test substance (such as suppression of the immune system, endocrine disturbances, and organ damage). Thus, an exceedance of the MTD could interfere with any assessment of the carcinogenic effects of an administered substance. Uniroyal contended that any observed carcinogenicity findings in the Toth study were therefore likely to have been caused by metabolic overload and/or cytotoxicity (exceedance of the MTD), and not due to a genuine carcinogenic response to UDMH. Uniroyal pointed out that after 15 months, there were only 26 percent survivors among the treated mice instead of the allegedly required 50 percent. The company also stated that there were no survivors at the end of 18 months, although it alleged that the Guidelines require a survival rate of 25 percent, thus allegedly providing further evidence that the dose was in excess of the MTD.

Response: First, according to the EPA Guidelines for Carcinogenic Risk Assessment, only one dose is required to determine qualitatively the carcinogenicity of an agent if the results are positive and if the MTD has not been exceeded.⁷ Even if the MTD has been exceeded, the study is not necessarily invalidated, but instead must be evaluated closely to determine if concomitant pathology and/or metabolic overload have influenced results.⁸ Second, contrary to Uniroyal's suggestion, there is nothing in the Guidelines for Carcinogenic Risk Assessment,⁹ the uniform procedures

¹ Toth, B. (1973) 1,1-Dimethylhydrazine (Unsymmetrical) Carcinogenesis in Mice. Light Microscopic and Ultrastructural Studies on Neoplastic Blood Vessels. *J. Natl. Cancer Inst.* 50:181.

² Toth, B. (1973). *ibid.*

³ Pesticide Assessment Guidelines, Subdivision F, 1982.

⁴ U.S. EPA, CAG (June, 1988) Evaluation of the Potential Carcinogenicity of 1,1-Dimethylhydrazine (57-14-7), in Support of Reportable Quantity Adjustments Pursuant to CERCLA section 102 (OHEA-C-073-95, June 1988, Final); W. Pepelko through Wm. Farland, Director, CAG, to E. Claussen, Director, Characterization and Assessment Division, OSW (January 9, 1987) Evidence for Carcinogenicity of 1,1-

Dimethylhydrazine (DMZ). (Both documents are in the docket for this final rule, available as indicated in the ADDRESSES section.)

⁵ U.S. EPA, OPP (April 22, 1985) Report of the Audits of the Studies on the Carcinogenic Potential of Succinic Acid 2,2-Dimethylhydrazide (Diminonide) and 1,1-Dimethylhydrazine in Swiss Mice, Studies Conducted at the Eppey Institute, the University of Nebraska Medical Center, Omaha, Nebraska.

⁶ U.S. EPA, OPP (April 22, 1985), *ibid.*

⁷ U.S. EPA (September 24, 1986) Guidelines for Carcinogenic Risk Assessment, EPA Publication No. EPA/000/8-87/045. These guidelines were published in the Federal Register on September 24, 1986 (51 FR 33992), and were products of a two-year Agency development and review process, where drafts were peer-reviewed by experts from academia, industry, public interest groups, and other governmental agencies. Proposed guidelines were published in the Federal Register (49 FR 46294, November 23, 1984), reviewed by special panels of EPA's Science Advisory Board, and revised to take into account public and SAB comments, as well as being reviewed by the Office of Management and Budget.

⁸ U.S. EPA (September 24, 1986) Guidelines for Carcinogenic Risk Assessment, *ibid.*

⁹ U.S. EPA (September 24, 1986) Guidelines for Carcinogenic Risk Assessment, *ibid.*

that EPA uses to evaluate the effects of toxicants, that require any minimal survival rate at different stages of a bioassay.

In addition, survival rates in the Toth study did not demonstrate that the MTD was exceeded. Among male mice, the survival rate was lower than in the untreated animals, but only after more than 50 weeks of exposure. Since 84 percent of the animals in this group developed vascular tumors and 78 percent lung tumors, with average latencies of 42 and 53 weeks, respectively, it is highly likely that cancer induction itself was responsible for mortality after 50 weeks. Among male hamsters, in which the latency for tumor development was longer with fewer incidences, the survival rate was the same for treated and control animals. If adjustments are made for very early mortality in female hamsters, then the long term survival rate was also equivalent in treated animals and controls.

Excessive noncancer liver pathology was not reported in the Toth study, nor was it found by the EPA audit of this study, as would be expected if the MTD were exceeded.¹⁰ Based upon the mortality results and lack of reported pathology, there is little direct evidence that the MTD was exceeded.

c. Uniroyal challenged the validity of the Toth study because complete necropsy records were not maintained, and portions of the study were conducted by technicians in the absence of direct supervision.

Response: The audit performed by EPA considered in detail this problem with the Toth study, noting that there was a large turnover of technicians, and that none of the observations, calculations or other records for the necropsy histopathology report sheets were dated, signed, or initialed. Despite these deficiencies noted by the auditors, the CAG¹¹ concluded that the Toth study was still adequate for a risk assessment, since no evidence was found to suggest that errors were made by the technicians under these conditions.

d. Uniroyal contended that animal randomization was inadequate to prevent in-breeding (a condition that could lead to heightened sensitivity to carcinogens as a result of genetic drift).

Response: According to the EPA Guidelines,¹² humans are assumed to be

as sensitive to the agent as the most sensitive strains of animal species, unless there is knowledge otherwise. As a result, this allegedly possible change in sensitivity of the colony of mice maintained by Dr. Toth's laboratory would not alter the weight-of-evidence determination for UDMH.

Furthermore, there is no evidence from pathological data on the control animals evaluated in Dr. Toth's laboratory to suggest that any genetically enhanced susceptibility to spontaneous carcinogenesis (carcinogenesis that occurs without the intentional administration of a test substance) has occurred due to genetic drift. If there was such heightened sensitivity, then increased spontaneous carcinogenesis in the control animals would be expected to accompany any genetically enhanced susceptibility to exogenously induced carcinogenesis (carcinogenesis that occurs as the result of the administration of a test substance). The EPA audit of the Toth study did not reveal any increased rate of spontaneous carcinogenesis in the control animals maintained by Dr. Toth's laboratory compared to animals of the same species maintained by other laboratories and the supplier. This fact discredits Uniroyal's theory of in-breeding leading to enhanced susceptibility to carcinogenesis to exogenous carcinogens.

In addition, the rate of spontaneous carcinogenesis was seen to be identical for the control groups maintained by Dr. Toth's laboratory two years prior to the UDMH bioassay as at the same time as the UDMH bioassay. This further supports the conclusion that there was no genetic drift over time due to in-breeding or other factors in the animals tested.

Furthermore, the Swiss albino strain of mice used in the Toth study are highly susceptible to carcinogenesis. This facilitates the development of tumors over the short life span of this rodent species. As a result, any genetic drift that would occur in these mice is likely to lead to decreased sensitivity, not the other way around. Thus, the results of the Toth study are not compromised by any alleged enhanced sensitivity of the animals to carcinogens.

e. Uniroyal contended that another deficiency in the Toth study was a lack of suitable analytical verification of the test material during the study.

Response: The EPA auditors recognized that the overall analytical verification of the study did not conform to today's General Laboratory Practice

standards,¹³ but concluded that despite the deficiencies, there was no reason to doubt that the mice received the test substances (UDMH and Alar[®]) at the indicated dosage levels. The EPA auditors found, however, that the UDMH purchased from Aldrich Chemical Company had been analyzed for chemical composition by Aldrich. In addition, the auditors found that the UDMH mixed with water in known proportions were in fact analyzed for chemical composition, and that these were the mixtures that were administered to the animals in the Toth study.

The EPA auditors as well as CAG concluded that despite the uncertainties with the analytical method, there was no evidence to suggest that the UDMH/water solutions did not contain the concentrations reported in the study. This is because even in the absence of analytical verification, laboratory methods for making solutions of known concentrations by the addition of accurately measured portions of a substance (UDMH in this instance) have historically been found to be capable of great accuracy, in the absence of any decomposition or other losses of the substance from the water. Any deterioration of the UDMH/water solutions, through hydrolysis or volatilization of the UDMH, would have resulted in decreased cancer rates, not the other way around.

In addition, even if the analysis of the UDMH obtained from Aldrich Chemical Company, the supplier, were inaccurate, as impliedly alleged by Uniroyal, it was known that Aldrich itself had analyzed the UDMH for purity. There is no evidence that the UDMH contained any toxic contaminants, or that any toxic contaminants were present in sufficient concentration or of sufficient potency to have confounded the observations of the carcinogenic effects of UDMH.

f. Uniroyal contended that even if the Toth study were valid, then the estimated risk from UDMH exposure was lower than the value derived by EPA, based on that study. The q_1^* (carcinogenic potency) value of 8.60 (mg/kg/day)⁻¹ was calculated using an observed carcinogenic response of 42 out of 50 mice by EPA. Uniroyal claimed, however, that only 25 of 48 mice were diagnosed as having blood vessel tumors, basing this contention on an audit performed for Uniroyal.¹⁴

¹⁰ U.S. EPA (September 24, 1980) Guidelines for Carcinogenic Risk Assessment, *ibid.*

¹¹ U.S. EPA, CAG (January 7, 1987), *ibid.*

¹² U.S. EPA (September 24, 1980), *ibid.*

¹³ U.S. EPA, OPP (April 22, 1985), *ibid.*

¹⁴ Vesselinovitch, S.D., Report to Uniroyal, Inc. (1984).

Response: EPA's audit ¹⁵ of the Toth study confirmed the tumor incidence found by Dr. Toth. In addition, CAG ¹⁶ has concluded that since the control animals lived longer (not suffering the acute toxic effects from UDMH that resulted in premature death, thus presumably having more time to develop tumors) the potency of UDMH as a carcinogen may even be underestimated using data from the Toth study. Moreover, even if the incidence of tumors was the lower rate contended by Uniroyal, that rate is still highly significant and would not alter the determination that UDMH is a category B2 carcinogenic.

g. Uniroyal expressed the position that EPA cannot list the UDMH manufacturing wastes as hazardous until the scientific validity of the carcinogenicity study conducted by Toth was ascertained or repeated. Uniroyal noted that EPA itself was currently conducting an audit of the Toth study as a result of comments on the study submitted by Uniroyal regarding proposed regulations under FIFRA, and suggested that EPA should take the results of this audit into account.

Response: The results of the EPA audit ¹⁷ referred to by Uniroyal became available after Uniroyal submitted its comments on the proposed UDMH listings. As discussed earlier, this audit, although acknowledging certain deficiencies in the Toth study, noted that the increases in the tumor incidences were so striking that even if the controls had been dropped from the study, it would not weaken the findings of the study in any regard. The audit team found that data obtained from missing pathology slides that were subsequently located further substantiated the tumor incidences stated in the publication by Dr. Toth. Thus, this audit does not provide any support for Uniroyal's position that the Toth study is invalid for performing a carcinogenic risk assessment.

2. Use of the Interim Results of Studies on UDMH Carcinogenicity Currently Being Conducted by Uniroyal

As part of its review of the pesticide manufactured from UDMH, Daminozide (Alar®), under the Re-registration Process under FIFRA, EPA required Uniroyal Corporation to conduct additional studies on the health effects of both UDMH AND Daminozide. Based on the interim results of the data submitted by Uniroyal, EPA proposed to

cancel certain pesticide product registrations under FIFRA.¹⁸

On August 17, 1989, EPA announced its intent to use this new interim data developed by Uniroyal as part of the basis for listing wastes from the manufacture of UDMH as hazardous under RCRA,¹⁹ since EPA believed that this data provided strong evidence that UDMH is a carcinogen. Uniroyal responded to the August 17, 1989 Notice of Data Availability with the following contentions that the data did not support a determination that UDMH was a probable human carcinogen. The specific challenges to the significance of these data for a carcinogenicity determination are given below.

a. Uniroyal claimed that the biological significance of the interim results of the UDMH and Daminozide study are questionable. For example, while positive tumorigenic results were seen in mice, no significant increases in tumor incidences were detected in any of the exposed groups of rats.

Response: The lack of detectable effects in rats cannot be construed as evidence for noncarcinogenicity. Only an extremely potent carcinogen would be expected to induce an increase in tumor incidence as early as 12 months from the start of exposure. In fact, the positive results seen in mice as early as 8 months, suggest that UDMH is not only a carcinogen, but a rather potent one. Furthermore, it is generally recognized that species may differ in sensitivity to an applied dose, so the interim results with rats is not inconsistent with this expectation.

b. Uniroyal argued that there was no increase in the number and severity of liver islands, as would be expected if an agent was a carcinogen.

Response: The liver is made up of liver cells called hepatocytes. In the liver island assay most of the liver is removed to stimulate rapid cell division among the remaining hepatocytes. Subsequent administration of a potentially carcinogenic agent may induce genetic changes resulting in the gain or loss of specific enzyme systems in the hepatocytes. Since the cells are rapidly dividing, one enzymatically altered cell will reproduce to form an "island" of similar cells. These islands can be made visible by differential staining techniques. The assay is regarded as a test for probable carcinogenicity since the enzymatic changes are considered by many investigators to be early steps in the

progression of cellular changes leading to cancer.

The tumors resulting from exposure to UDMH, however, occur in blood vessels, a different type of tissue than located in the liver. Thus, the lack of any increase or severity of the liver islands does not negate the carcinogenicity determination.

c. Uniroyal argued that since positive results were seen in mice only at 40 and 80 ppm, dosages that Uniroyal claims are clearly in excess of the maximum tolerated dose (MTD), any conclusions on the carcinogenicity of UDMH based on results from tests which exceeded the MTD are not valid.

Response: According to established Guidelines²⁰ using body weight gains, survival, etc., EPA believes that the MTD was not exceeded. Mortality that did occur during the first 12 months of exposure was considered by the EPA reviewers²¹ to more likely be the result of cancer rather than liver necrosis. Since tumor increases were detected in intermediate dosed males as well as in females, in which the pathological effects and other toxic signs were minimal, the results are not considered to be invalidated by the alleged overdosage.

Even if the MTD was exceeded, the data can be used in assessing carcinogenicity according to EPA's risk assessment Guidelines, if the results are carefully reviewed to ensure that responses are not due to factors operating only at levels above MTD.²² These include effects such as metabolic activation at high concentrations and hormonal changes. There is little information to indicate that UDMH requires this type of activation, however, which would call into question the possibility that the observed effects were due to an exceedance of the MTD. In addition, there is also no data to indicate that important hormonal changes are taking place, another effect that could be caused if the MTD were exceeded.

The pathological changes in the liver would be of serious concern in evaluating whether the MTD had been exceeded if the liver itself was the primary target organ for the carcinogenic effects of UDMH. The possible genetic alterations with increased cell turnover rates resulting from the pathological changes could lead to tumor induction in some cases.

¹⁵ U.S. EPA. OPP (April 22, 1985), *ibid.*

¹⁶ U.S. EPA. CAG (January 7, 1987), *ibid.*

¹⁷ U.S. EPA. OPP (April 22, 1985), *ibid.*

¹⁸ 54 FR 22558, May 24, 1989.

¹⁹ 54 FR 33942.

²⁰ U.S. EPA (September 24, 1980), *ibid.*

²¹ U.S. EPA. OPP (May 15, 1989), Second Peer Review of Daminozide (Alar) and UDMH (Unsymmetrical 1,1-dimethylhydrazine).

²² U.S. EPA (September 24, 1986), *ibid.*, pp. 1-5

UDMH, however induces tumors in blood vessels and not in the liver itself. As a result, the changes in the liver do not confound the observations of carcinogenic effects in other organs, the blood vessels.

Thus, EPA does not believe that the MTD was exceeded in the recent Uniroyal studies. Secondly, even if the MTD has been exceeded, EPA's careful review of the data has ascertained that the carcinogenic effects were independent of any physiological changes which could have been caused by an exceedance of the MTD. The results, therefore, still may be used to determine that UDMH is a carcinogen.

d. Uniroyal claimed that the carcinogenic effects were accompanied by a variety of hematological, liver enzyme and liver pathology changes that may well have been responsible for the tumor induction. Thus, the commenter contended that the tumors should not be considered to be the result of a carcinogenic effect of UDMH.

Response: The hematological, liver enzyme, and liver pathology changes are considered by EPA to be a result of tumor growth, and thus not responsible for their induction. In other words, these changes in the liver and blood are considered to be the result of the carcinogenic effects of UDMH, and not due to any direct action of UDMH by a toxicological mechanism unrelated to carcinogenesis. In addition, it should be noted that tumors were induced in females in which alterations of liver enzyme activity and hematological parameters were minimal. Finally, increased tumor incidences were also seen in the lungs, an organ showing few indications of pathological changes. Thus, the Agency does not agree that the observation of hematological and liver changes negates a conclusion that UDMH should be considered a causative agent for carcinogenesis.

e. In general, Uniroyal contended that the weight-of-evidence from the interim results of the studies on UDMH carcinogenicity did not support a determination that UDMH should be classified as a category "B2" carcinogen, a "probable human carcinogen."

Response: Given that significant increases in tumor incidences were seen at more than one site, in both sexes of mice, and to occur very early, and because the responses occurred in the lungs even at lower, relatively non-toxic doses, the newer, interim data is considered by the Agency to be consistent with the earlier data regarding the carcinogenicity of UDMH.

According to EPA's Guidelines for cancer risk assessment, a chemical is classified into category B2 when there is

sufficient evidence for carcinogenicity in animals, but insufficient data in humans. Sufficient evidence for carcinogenicity in animals occurs when there is an increased incidence of malignant or combined benign and malignant tumors (a) in multiple strains or species (b) in multiple experiments (e.g., with different dose levels) or (c) to an unusual degree in a single experiment. The interim results of the studies satisfy both categories "a" and "c" in that significant tumor increases occurred in both mice and hamsters and the response occurred to an unusual degree, e.g., 84 percent incidence of hemangiosarcomas in male mice. Thus, since human data is inadequate, while animal data is sufficient, UDMH is still considered to fit the classification weight-of-evidence category B2.

f. Uniroyal claimed that the interim data were also inadequate to establish a quantitative, or dose-response, risk estimate for UDMH.

Response: The Agency need not develop quantitative weight-of-evidence for a potential carcinogen as a necessary basis for a determination that a toxicant of concern or wastes containing that toxicant should be regulated as hazardous under RCRA. The available study on UDMH does indicate that it is a potent carcinogen. The final studies on UDMH carcinogenicity to be submitted to EPA in the future are not likely to alter this evaluation.

g. Uniroyal also claimed that the results from the interim studies being conducted by Uniroyal demonstrated that UDMH was not mutagenic.

Response: A total of 5 mutagenicity studies were submitted by Uniroyal to EPA during 1989 as part of the interim results on UDMH oncogenicity. The following three tests were considered to be negative and acceptable: (1) The Ames Salmonella test, (2) unscheduled DNA synthesis, and (3) primary rat hepatocyte and C100/aberration. The use of an unusual solvent (0.25 Normal hydrochloric acid) in these tests, however, limits the use of the results of these tests to predict mutagenesis that may occur under more usual test conditions.

Two C100/hprt gene mutation assays have also been submitted by Uniroyal, one using the hydrochloric acid solvent. In the second, an attempt was made to buffer the solution. In these latter two studies there were enough instances of elevated frequencies to suggest that there may be mutagenic activity. Taken as a whole, therefore, the results must be considered to be equivocal, rather than negative.

The interim results of the mutagenicity studies being conducted by Uniroyal also do not call into question the validity of the earlier UDMH tests that were positive for mutagenicity, since the conditions used by Uniroyal differed from those in earlier tests. The positive results of earlier mutagenicity studies are discussed in the background documentation for this final rule as well as in the May, 1988 technical support document developed by EPA as part of the FIFRA reregistration review of Alar.²³

In summary, after carefully evaluating the comments, the Agency believes that the available evidence supports a determination that UDMH is carcinogenic, mutagenic, and teratogenic.

C. Additional Waste Streams

The commenter, the generator of the four wastes covered by today's rulemaking, supplied information on the generation of two additional wastestreams, both having the potential for significant UDMH contamination. As a result of this new information, the Agency, in an accompanying action in today's Federal Register, is proposing to add two additional waste streams from the manufacture of UDMH from carboxylic acid hydrazides to the list of hazardous wastes.

V. Relation to Other Regulations

A. Toxicity Characteristics (TC)

As one of the mandates of HSWA, the Agency expanded the toxicity characteristics (TC) by including additional toxic organic chemicals. Under the March 29, 1990 final rule (55 FR 11796), hazardous waste listings will not be affected by the toxicity characteristic—that is, all the listings will remain in effect, including those listings that were based on the presence of TC constituents. It is EPA's intention that the hazardous waste listings will continue to complement the TC. Although the TC currently does not include UDMH as a toxicity characteristic contaminant, any future addition of UDMH to the TC may capture other wastes contaminated by UDMH that are not covered by wastes K107, K108, K109 and K110. In addition, the recently promulgated TC may capture other wastes generated by the UDMH manufacturing industry that contain the current toxicity characteristic contaminants that are not covered by wastes K107, K108, K109 and K110.

²³ U.S. EPA, OIR (May, 1989), *ibid.*

B. Land Disposal Restrictions

HSWA mandated that EPA promulgate under a specific schedule land disposal restrictions for all wastes listed or identified as hazardous prior to the enactment of HSWA (see RCRA section 3004(g)(4)(C)). HSWA also requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed after November 8, 1984, within six months of the date of identification or listing (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for an automatic prohibition of the land disposal of such wastes if EPA fails to meet this deadline. The Agency is evaluating treatment standards for newly listed wastes K107, K108, K109, and K110.

VI. Test Methods to Be Added to Appendix III

Appendix III of 40 CFR part 261 is a list of test methods that are approved for use in demonstrating that the constituents of concern in listed wastes are not present at concentrations of concern. The Agency is designating Method 8250 for testing for UDMH, and is adding this method to Appendix III of part 261. The proposed regulation proposed the use of Method 8250 for testing for UDMH in the wastes (49 FR 49556); no comments were received regarding the use of this method for this purpose. Method 8270 is also believed to be a suitable method since most commercial laboratories now prefer to use the capillary column chromatography specified in this method to improve the chromatographic resolution. The only difference between these two methods is the use of a capillary column gas chromatography technique instead of a packed column technique.

Persons wishing to submit delisting petitions must use one of these methods (or an equivalent one) to demonstrate the concentration of UDMH in their wastes.²⁴ (See 40 CFR 260.22(d)(1).) As part of their petitions, EPA requests submission of quality control data demonstrating that the methods they have used yield acceptable recovery (i.e., >80% recovery at concentrations above 1 µg/g) on spiked aliquots of their waste.

The above methods are in "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods," SW-846,

3rd Ed., as updated, available from: Superintendent of Documents, Government Printing Office, Washington, DC 20402, (202) 783-3238, Document Number: 055-002-81001-2.

VII. CERCLA Impacts

All listed hazardous wastes, as well as any solid waste that exhibits one or more of the characteristics of a hazardous waste (as defined in 40 CFR 261.21 through 261.24), are hazardous substances under section 101(14)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA). (CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4, along with their reportable quantities (RQs).) CERCLA section 103(a) requires that persons in charge of vessels or facilities from which a hazardous substance has been released in a quantity that is equal to or greater than its RQ immediately notify the National Response Center of the release [at (800) 424-8802 or in the Washington, DC metropolitan area at (202) 426-2675]. In addition, section 304 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires the owner or operator of a facility to report the release of a hazardous substance to the appropriate state emergency response commission (SERC) and to the local emergency planning committee (LEPC) when the amount released equals or exceeds the RQ for the substance.

According to the "mixture rule" used for notification under CERCLA and SARA (50 FR 13463, April 4, 1985), the release of mixtures must be reported when the amount released equals or exceeds the RQ for the waste, unless the concentrations of the constituents of the waste are known. When the concentrations of the individual constituents of a hazardous waste are known, the release of the hazardous waste would need to be reported to the NRC and to the appropriate LEPC and SERC when the RQ of any of the hazardous constituents is equaled or exceeded. RQs of different hazardous substances are not additive under the mixture rule (except for radionuclides, see 54 FR 22536, May 24, 1989), so that spilling a mixture containing half an RQ of one hazardous substance and half an RQ of another hazardous substance does not require a report.

Under Section 102 of CERCLA, all hazardous wastes newly designated under RCRA will have a statutorily-imposed RQ of one pound unless and until adjusted by regulation under CERCLA. In order to coordinate the RCRA and CERCLA rulemaking with respect to new waste listings, the

Agency also proposed on December 20, 1984 regulatory amendments under CERCLA authority in connection with the proposed listings to: (1) Designate wastes K107 to K110 based on the hazardous substances under section 102 of CERCLA; and (2) adjust the RQs of wastes K107 to K110 based on the application of the RQ adjustment methodology under section 102(a) (49 FR 49556).

The RQs for each waste and for each of the hazardous constituents are identified in the table below. The constituent of concern, UDMH, has an RQ that has undergone adjustment since the proposed listing of UDMH production wastes. On August 14, 1989, EPA adjusted the RQ for UDMH from one pound to 10 pounds (54 FR 33426).

The adjustment of the RQs of wastes K107, K108, K109 and K110 from the statutory one-pound level is based on the current RQ of the constituent in these listings. Because the only toxic constituent of concern in the wastes (UDMH) has an RQ of 10 pounds, the RQs of the four wastes likewise are being set today as 10 pounds. These RQs will become effective on the effective date of today's action, when the wastes simultaneously become hazardous substances under CERCLA.

Hazardous substance	Con- stituent	RQ
Waste No. K107	UDMH	10 lbs.
Waste No. K108	UDMH	10 lbs.
Waste No. K109	UDMH	10 lbs.
Waste No. K110	UDMH	10 lbs.

VIII. State Authority

A. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3007, 3008, 3013, and 7003 of RCRA, although authorized States have primary enforcement responsibility.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no

²⁴ Petitioners may use other methods to analyze for UDMH if, among other things, they demonstrate the equivalency of these methods by submitting their quality control and assurance information along with their analysis data. (See 40 CFR 260.21.)

longer applied in the authorized State, and EPA could not issue permits for any facilities in the State that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to implement those requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, the HSWA applies in authorized States in the interim.

Today's rule is promulgated pursuant to section 3001(c)(2) of RCRA, a provision added by the HSWA. Therefore, these wastes have been added to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA, and that take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1, as discussed in the following section of this preamble. Because EPA promulgated rules regarding the timing for HSWA listings after this rule was proposed, the existing regulatory time frames supersede the discussions in the preamble to the proposed rule.

B. Effect on State Authorizations

As noted above, EPA will implement today's rule in authorized States until they modify their programs to adopt these rules, and the modification is approved by EPA. Because the rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under section 3006(g)(2) or 3006(b), respectively, on the basis of regulations that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications under section 3006(b) are described in 40 CFR 271.21. The same procedures should be followed for section 3006(g)(2).

Section 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes and must subsequently submit the modifications

to EPA for approval. State program modifications to conform to today's rule must be made by July 1, 1991, if only regulatory changes are necessary, or by July 1, 1992, if statutory changes are necessary. See 40 CFR 271.21(c)(2)(iv) and 271.21(c)(2)(v). These deadlines can be extended in exceptional cases. See 40 CFR 271.21(e)(3).

States with authorized RCRA programs already may have regulations similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these regulations in lieu of EPA until the State program modification is approved. Of course, States with existing regulations may continue to administer and enforce their regulations as a matter of State law. In implementing the Federal program, EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs, rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after the effective date of these regulations are not required to include standards equivalent to these standards in their applications. However, a State must modify its program by the deadlines set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards in their application. Section 271.3 sets forth the requirements a State must meet when submitting its final authorization application.

IX. Compliance Dates

A. Notification

Under section 3010 of RCRA, EPA may waive the notification requirement otherwise applicable to persons managing newly-regulated hazardous waste. The Agency has decided to waive the RCRA section 3010 notification requirement for only those persons who generate, transport, treat, store, or dispose of hazardous wastes subject to today's rule that have previously notified EPA or an authorized State of hazardous waste activities and have received an identification number. The Agency believes that most, if not all, persons who manage these wastes have already notified EPA and received an EPA identification number and therefore will not have to re-notify.

However, any person who generates, transports, treats, stores, or disposes of these wastes has *not* previously notified and received an identification number, that person must notify EPA or an authorized State no later than July 31, 1990, of these activities pursuant to section 3010 of RCRA. Notification instructions are set forth in 45 FR 12740, February 26, 1980.

B. Permitting

Because HSWA requirements are applicable in authorized States at the same time as in unauthorized States, EPA will regulate K107-K110 until States are authorized to regulate these wastes. Thus, once this regulation becomes effective, EPA will apply Federal regulations to these wastes and to their management in both authorized and unauthorized States. Facilities that treat, store, or dispose of K107-K110, but that have not received a permit pursuant to section 3005 of RCRA and are not operating pursuant to interim status, might be eligible for interim status under HSWA (see section 3005(e)(1)(A)(ii) of RCRA, as amended). In order to operate pursuant to interim status, the eligible facilities are required to possess an EPA ID number pursuant to 40 CFR 270.70(a), and will be required to submit a Part A permit application by November 2, 1990.

Currently permitted facilities that manage UDMH wastes must submit Class I permit modifications if they are to continue managing the newly regulated wastes in units that require a permit. The facilities must obtain the necessary modification by the effective date of the rule, or they will be prohibited from accepting additional UDMH wastes.

Interim status facilities that manage UDMH wastes in units that require a permit must file an amended Part A permit application under 40 CFR 270.10(g) if they are to continue managing newly regulated wastes. The facilities must file the necessary amendments by the effective date of the rule, or they will not receive interim status with respect to the UDMH wastes (i.e., they will be prohibited from accepting additional UDMH wastes until permitted).

Newly regulated facilities (i.e., facilities at which the only hazardous wastes that are managed are newly regulated UDMH wastes) must qualify for interim status by the compliance date of the rule in order to continue managing UDMH wastes prior to receiving a permit. Under 40 CFR 270.70, an existing facility may obtain interim status by getting an EPA identification number and submitting a Part A permit

application by the effective date of this rule. To retain interim status, a newly-regulated land disposal facility must submit a Part B permit application within one year after the effective date of the rule and certify that the facility is in compliance with all applicable ground water monitoring and financial responsibility requirements (see RCRA section 3005(e)(3)).

EPA recently promulgated amendments to the procedures for permit modifications for treatment, storage, and disposal facilities (see 53 FR 37934, September 28, 1988). The following discussion assumes implementation in accordance with the new rule. EPA will implement the UDMH listing regulations by using the new permit modification procedures, consistent with EPA policy (see 53 FR 37933, September 28, 1988).

Under the new regulation in 40 CFR 270.42, there are now three classes of permit modifications with different submittal and public participation requirements for each class. In 40 CFR 270.42(g), which concerns newly listed or identified wastes, a permitted facility that is "in existence" as a hazardous waste facility for the newly listed or identified waste on the effective date of the notice must submit a Class 1 modification by that date. Essentially, this modification is a notification to the Agency that the facility is handling the waste. As part of the procedure, the permittee must also notify the public within 90 days of submittal to the Agency.

Next, within 180 days of the effective date, the permittee must submit a Class 2 or 3 modification to the Agency. A permittee may submit a Class 2 modification if the newly regulated waste will be disposed in existing TSD units and will not require additional or different management practices from those authorized in the permit. A Class 1 modification requires public notice by the facility owner of the modification request, a 60 day public comment period, and an informal meeting between the owner and the public within the 60 day period. The rule includes a "default provision," so that for Class 1 modifications, if the Agency does not make a decision within 120 days, the modification is automatically authorized for 180 days. If the Agency does not reach a decision by the end of that period, the modification is permanently authorized. If the newly regulated waste requires additional or different management practices, a Class 3 modification is required. The initial public notification and public meeting requirements are the same as for Class

2. However, after the end of the public comment period, the Agency will develop a draft permit modification, open a public comment period of 45 days and hold a public hearing.

X. Regulatory Impact Analysis

Under Executive Order 12291, EPA must determine whether a regulation is "major" and, therefore, subject to the requirement of a Regulatory Impact Analysis. The generator subject to today's rule, Uniroyal Corporation, is not currently manufacturing UDMH. As a result, none of the wastes covered by this final regulation are currently being generated, and therefore no costs from their management as hazardous would be incurred at the present time.

However, Uniroyal may resume production; when this occurs the total additional incurred cost for disposal of the wastes as hazardous would be less than \$2,000 (based on previous production levels), well under the \$100 million constituting a major regulation. This cost would be insignificant and would result from minimal additional compliance requirements, as these wastes were already handled as if they were hazardous.

Since EPA does not expect that the amendments promulgated here will have an annual effect on the economy of \$100 million or more, result in a measurable increase in cost or prices, or have an adverse impact on the ability of U.S.-based enterprises to compete in either domestic or foreign markets, these amendments are not considered to constitute a major action. As such, a Regulatory Impact Analysis is not required.

The Agency received comments on the economic impact analysis included with the December 20, 1984 proposed regulations. Uniroyal criticized the Agency's economic analysis because it did not consider the impact of co-disposal of the aqueous wastes with other plant wastes by deep well injection. Uniroyal contended that in the event that the subject hazardous wastes are mixed with other solid wastes, the resulting mixture would be hazardous wastes by the mixture rule (see 40 CFR 261.3(a)(2)(iii)).

Because the commenter ceased underground injection of their UDMH manufacturing wastes in May, 1985 (because of having ceased the production of UDMH itself), long before promulgation of today's rule, the commenter will not be subject to the permitting requirements of parts 144 and 146 for Class 1 wells receiving hazardous wastes (assuming no other hazardous wastes are being injected). As a result, no additional management costs would

be incurred by a designation as hazardous wastes formerly disposed in this manner. The commenter would still be required to comply with the parts 144 and 146 requirements for Class 1 wells for the disposal of non-hazardous industrial wastes, however, if the deep well continues to receive other wastes from the facility not regulated as hazardous under RCRA.

XI. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. sections 601-612, whenever an agency is required to publish a general notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (*i.e.*, small businesses, small organizations, and small governmental jurisdictions). No regulatory flexibility analysis is required, however, if the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

The hazardous wastes listed here are not generated by small entities (as defined by the Regulatory Flexibility Act), and the Agency received no comments that small entities will dispose of them in significant quantities. Accordingly, I hereby certify that this regulation will not have a significant economic impact on a substantial number of small entities. This regulation, therefore, does not require a regulatory flexibility analysis.

XII. Paperwork Reduction Act

This rule does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. section 3501 *et seq.*

List of Subjects

40 CFR Part 261

Hazardous waste, Recycling.

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous materials, Hazardous materials transportation, Hazardous substances, Intergovernmental relations, Natural resources, Nuclear materials,

Pesticides and pests, Radioactive materials, Reporting and recordkeeping requirements, Superfund, Waste treatment and disposal, Water pollution control.

Dated: April 23, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, Title 40 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

2. In § 261.32, add the following waste streams to the subgroup 'Organic Chemicals':

§ 261.32 Hazardous wastes from specific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Organic chemicals:		
K107.....	Column bottoms from product separation from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazines.	(C,T)
K108.....	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(I,T)
K109.....	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K110.....	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)

3. Add the following compound and analysis methods in alphabetical order to Table 1 of Appendix III of part 261:

Appendix III—Chemical Analysis Test Methods

TABLE 1.—ANALYSIS METHODS FOR ORGANIC CHEMICALS CONTAINED IN SW-846

Compound	Method No.
1,1-Dimethylhydrazine (UDMH).....	8250

4. Add the following entries in numerical order to Appendix VII of part 261:

Appendix VII—Basis for Listing Hazardous Waste

EPA hazardous waste No.	Hazardous constituents for which listed
K107.....	1,1-Dimethylhydrazine (UDMH).
K108.....	1,1-Dimethylhydrazine (UDMH).
K109.....	1,1-Dimethylhydrazine (UDMH).
K110.....	1,1-Dimethylhydrazine (UDMH).

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

5. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6920.

6. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication:

§ 271.1 Purpose and scope.

(j)

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
May 1, 1990.....	Listing Wastes from the Production of UDMH from Carboxylic Acid Hydrazides.....	(insert Federal Register page numbers).	November 2, 1990.

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

7. The authority citation for part 302 continues to read as follows:

Authority: Secs. 101(1)(14) and 102(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601(14) and 9602; secs. 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

8. Section 302.4 is amended by adding the waste streams K107, K108, K109, and K110 to Table 302.4.

§ 302.4 Designation of hazardous substances.

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final RQ	
			RQ	Code	RCRA waste number	Category	Pounds (kg)
K107..... Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.			10	4	K107	X	10 (4.54)
K108..... Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.			10	4	K108	X	10 (4.54)
K109..... Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.			10	4	K109	X	10 (4.54)
K110..... Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.			10	4	K110	X	10 (4.54)

* 4—indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA section 3001.

RCRA REVISION CHECKLIST 76

Criteria for Listing Toxic Wastes; Technical Amendment

55 FR 18726

May 4, 1990

(Non-HSWA Cluster VI)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART B - CRITERIA FOR IDENTIFYING THE CHARACTERISTICS OF
HAZARDOUS WASTE AND FOR LISTING HAZARDOUS WASTE

CRITERIA FOR LISTING HAZARDOUS WASTE

replace "unless" after "Appendix VIII" with "and"; delete "any of" after "considering"; delete "not" after "waste is"	261.11(a)(3)				
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best available copy.

Authority: 42 U.S.C. 7401-7642.

§ 52.2220 [Amended]

2. In § 52.2220, paragraph (c)(91)(iii) is redesignated as (c)(91)(ii).

§ 52.2222 [Amended]

3. In § 52.2222 paragraph (C) is redesignated as (c).

[FR Doc. 90-10353 Filed 5-3-90; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Part 261

[FRL-3762-3]

Hazardous Waste Management System: Identification and Listing of Hazardous Waste

AGENCY: Environmental Protection Agency.

ACTION: Technical amendment.

SUMMARY: On May 19, 1980, as part of its final and interim final regulations implementing section 3001 of the Resource Conservation and Recovery Act (RCRA), EPA promulgated a series of criteria for listing wastes as hazardous. The Agency is today conforming the language of the regulation to reflect the Agency's intent and consistent interpretation.

EFFECTIVE DATE: May 4, 1990.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline at (800) 424-9346 or at (202) 382-3000. For technical information, contact Mr. William A. Collins, Office of Solid Wastes (OS-332), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 382-4791.

SUPPLEMENTARY INFORMATION: On May 19, 1980, EPA promulgated final and interim final regulations implementing section 3001 of the Resource Conservation and Recovery Act (RCRA). Section 3001(a), among other provisions, requires the Agency to promulgate criteria for listing wastes as hazardous. The Agency's regulations to implement this section of the Act is codified at 40 CFR 261.11.

The provision involved in this technical correction is § 261.11(a)(3), the criteria for listing toxic wastes. This provision states that the Agency will list a waste as toxic if the waste contains any toxic constituent listed in appendix VIII of part 261 unless, after considering a series of enumerated factors, the Administrator determines that the waste is not capable of posing a substantial hazard to human health and the environment even if managed improperly. Appendix VIII contains a

list of substances shown in scientific studies to be toxic, carcinogenic, mutagenic or teratogenic. The factors set out in the rule—drawn for the most part from sections 1004(5) and 3001(a) of RCRA—include the nature of the toxic constituents, the concentration of toxic constituents in the waste, the migratory potential of the constituents and their mobility and persistence after migrating from a waste. Other factors are the plausible ways the waste could be mismanaged, the quantity of waste generated, damage incidents caused by past management of the waste, and action by other regulatory agencies regarding the waste or waste constituents.

In practice, the Agency has always evaluated the waste factors (or those factors that are relevant) in its specific listing actions at issue, and then made judgments as to whether wastes containing an Appendix VIII constituent is capable of causing substantial harm if mismanaged. (See Listing Background Documents of: May 19, 1980, 45 FR 33084-33137; November 12, 1980, 45 FR 74884-74894; November 25, 1980, 45 FR 78524-78550; January 16, 1981, 46 FR 4614-4620; May 29, 1981, 46 FR 27473-27480; May 10, 1984, 49 FR 19922-19923; January 14, 1985, 50 FR 1979-2006; October 23, 1985, 50 FR 42936-42943; December 31, 1985, 50 FR 53315-53320; February 13, 1986, 51 FR 5327-5331; February 25, 1986, 51 FR 6537-6542; May 28, 1986, 51 FR 19320-19322; September 13, 1988, 53 FR 35412-35421; October 6, 1989, 54 FR 41402-41408; and December 11, 1989, 54 FR 50968-50979 (explaining the basis for listing the waste in 40 CFR 261.31, 261.32, and 261.33 based upon the criteria for listing in § 261.11(a)(3))). As written, however, the rule could mistakenly be read to imply that wastes are hazardous if they contain an appendix VIII constituent (conceivably in any concentration), without considering the enumerated factors which serve only to rebut the presumption.

As stated above, the Agency has never applied the rule in this way, and has always interpreted the rule to require consideration of the appropriate factors in determining whether to list wastes: By appropriate factors, the Agency does not mean that each factor enumerated in § 261.11(a)(3) must be considered in a particular case. The Agency therefore believes that the wording of the rule should be corrected to reflect the proper standard established by the rule. Accordingly, the Agency is amending § 261.11(a)(3) to state that wastes will be listed as

hazardous if they contain one or more appendix VIII constituents and after considering the enumerated factors, the Administrator determines that the waste is capable of posing substantial harm if managed improperly. This change in language is not intended to and will not affect existing Agency listing practices based upon the Agency's consistent interpretation of the 1980 regulatory language. Thus, EPA has and will continue to provide more or less detailed consideration of the factors, as well as to consider factors jointly, as appropriate.

Because this action is a technical clarification of an existing rule, EPA believes that notice and comment requirements do not apply to and are unnecessary for today's action. Any regulatory action was achieved by the 1980 rule and by the numerous listings providing EPA's interpretation of the rule. In any event, EPA believes that good cause exists for today's changes under section 553(b)(3)(B) of the Administrative Procedures Act because this is a technical clarification (or at most an interpretive rule).

List of Subjects in 40 CFR Part 261

Hazardous waste, Recycling.

Dated: April 28, 1990.

Henry L. Longest II,

Acting Assistant Administrator, Office of Solid Waste and Emergency Response.

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6922.

2. In § 261.11, paragraph (a)(3) introductory text is revised to read as follows:

§ 261.11 Criteria for listing hazardous waste.

(a) * * *

(3) It contains any of the toxic constituents listed in Appendix VIII and, after considering the following factors, the Administrator concludes that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

* * * * *

[FR Doc. 90-10328 Filed 5-3-90; 8:45 am]

BILLING CODE 6560-50-M

RCRA REVISION CHECKLIST 77

HSWA Codification Rule, Double Liners; Correction

55 FR 19262-19264

May 9, 1990

(HSWA Cluster II)

Note: The final rule addressed by this checklist corrects 264.221(c) and 264.301(c) as promulgated on July 15, 1985 (50 FR 28702; Revision Checklist 17 H). This correction is based on a decision reached in the U.S. Court of Appeals for the District of Columbia on June 23, 1987 concerning a lawsuit filed against EPA. States not yet authorized for Revision Checklist 17 H are encouraged to adopt these corrections at the same time the Revision Checklist 17 H provisions are adopted.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS
WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

SUBPART K - SURFACE IMPOUNDMENTS

DESIGN AND OPERATING REQUIREMENTS

1 insert "for units where the Part B of the permit application is received by the Regional Administrator after November 8, 1984" after "permit"	264.221(c)				
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SUBPART N - LANDFILLS

DESIGN AND OPERATING REQUIREMENTS

add sentence regarding applicability of 264.301(c) only where Part B of the permit application is received after November 8, 1984	264.301(c)				
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1 "Issuance" should not be changed to "Insurance" in this paragraph; this is a typographical error in the FR for this correction notice (55 FR 19263).

be commingled in the same sack and counted toward the 10 pound minimum.

284.511 Direct Country Sack Label. Direct country sacks must be labeled with PS Tag 116. The tag is white and specially coded to route the mail to a specific country and airport of destination. The blocks on the tag for date, weight, and dispatch information must be completed by the Postal Service and may not be completed by the mailer. Tag 115, *International Priority Airmail*, must also be affixed to the Direct Country Sacks. Tag 115 is a "Day-Glo" pink tag that identifies the mail to ensure it receives priority handling.

284.52 Mixed Direct Country Bundle Sacks

284.521 General. The direct country bundles containing six or more pieces destined to a specific country that cannot be made up in direct country sacks, must be enclosed in orange Priority Mail sacks unless other equipment is specified by the acceptance office.

284.522 Mixed Direct Country Sack Label. The sack label must be completed as follows:

Line 1: DIS Acceptance Post Office
Routing Code

Line 2: International Priority Airmail

Line 3: Mailer, Mailer Location

Example:

DIS, Philadelphia, PA 190
International Priority Airmail
ABC Store, Philadelphia, PA

284.53 Nonpresort/Residual Mail Sacks

284.531 General. The working bundles of mixed country mail and loose items should be enclosed in orange Priority Mail sacks unless other equipment is specified by the acceptance office. Nonpresorted letter-size mail consisting of 400 pieces or more may be presented in trays if authorized by the acceptance office. Working bundles of mixed mail cannot be enclosed in Mixed Direct Country Sacks.

284.532 Nonpresort/Residual Mail Sack Label. The sack label must be completed as follows:

Line 1: Appropriate U.S. Exchange
Office and routing code

Line 2: International Priority Airmail—
WKG

Line 3: Mailer, Mailer Location

Example:

AMF, Boston, MA 021
International Priority Airmail—WKG
CPA Company, Boston, MA

284.54 Tags and Weight Maximum for Sacks

284.541 Weight Maximum. The maximum weight of the sack and contents must not exceed 66 pounds.

284.542 Tag 115 and Tag 116. All IPA sacks (direct country, mixed direct country bundle sacks and nonpresort/residual mail sacks must be labeled with Tag 115, *International Priority Airmail*. Tag 115 is a "Day-Glo" pink tag that identifies IPA mail to ensure that it receives priority treatment. Tag 116 is a dispatching tag to be used only for Direct Country Sacks. Tag 116 is white and specially coded to route the mail to a specific country and airport of destination. The blocks on the tag for date, weight, and dispatch information must be completed by the Postal Service and may not be completed by the mailer. Postal tags and sacks are available from the post office.

284.6 Bundle and Sack Label Information. Mailers may obtain routing information for facing slips and sack labels from the acceptance post office. Routing information is also printed in Publication 507, *International Priority Airmail Mailer Guidelines*, and Handbook IM-201 *International Priority Airmail Guidelines*.

284.7 Customs Forms Requirements

284.71 Letters and Letter Packages. See 224.5.

284.72 Printed Matter. See 244.6.

284.73 Small Packets. See 264.5.

A transmittal letter making the changes in the pages in the International Mail manual will be published and transmitted to subscribers automatically. Notice of issuance of the transmittal letter will be published in the Federal Register as provided by 39 CFR 20.3.

Fred Eggleston,

Assistant General Counsel, Legislative Division.

[FR Doc. 90-10622 Filed 5-8-90; 8:45 am]

BILLING CODE 7710-12-M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[FRL-3763-5]

Approval and Promulgation of State Implementation Plans; Montana

AGENCY: Environmental Protection Agency.

ACTION: Final rule; correction.

SUMMARY: On December 2, 1988 (53 FR 48645) EPA added 40 CFR 52.1382(c)

which described an air quality modeling commitment made by Montana. However, 40 CFR 52.1382(c) which described Class II designations already existed. Today's notice redesignates 40 CFR 52.1382(c), which pertains to air quality modeling, as 40 CFR 52.1382(d). On June 7, 1989 (54 FR 24341) EPA added 40 CFR 52.1387, stack height regulations. However, a § 52.1387, visibility protection, already existed. Today's notice redesignates § 52.1387, stack height regulations, as § 52.1308.

EFFECTIVE DATES: January 31, 1989, for the corrections to 40 CFR 52.1382. July 7, 1989, for the corrections to 40 CFR 52.1387.

FOR FURTHER INFORMATION CONTACT: Laurie Ostrand, Air Programs Branch, Environmental Protection Agency, 999 18th Street, suite 500, Denver, Colorado 80202-2405, (303) 293-1814, FTS 330-1814.

Dated: April 26, 1990.

Irwin L. Dickstein,
Acting Regional Administrator.

40 CFR part 52, subpart BB, is amended as follows.

PART 52—[AMENDED]

Subpart BB—Montana

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401-7642

§ 52.1382 [Amended]

2. Section 52.1382 is amended by redesignating paragraph (c) (which was inadvertently added on December 2, 1988 (53 FR 48645)) as (d).

§ 52.1387 [Amended]

3. Part 52 is amended by redesignating § 52.1387 (which was inadvertently added on June 7, 1989 (54 FR 24341)) as § 52.1388.

[FR Doc. 90-10620 Filed 5-8-90; 8:45 am]

BILLING CODE 6580-50-M

40 CFR Part 264

[FRL-3394-9]

Hazardous Waste Management System; Final Codification Rule; Correction

AGENCY: Environmental Protection Agency.

ACTION: Final Rule; correction.

SUMMARY: EPA is issuing a correction notice for §§ 264.221(c) and 264.301(c) as promulgated on July 15, 1985 (see 50 FR 28747 and 28748 respectively). This

correction notice is based on a decision reached in the United States Court of Appeals for the District of Columbia on June 23, 1987, concerning a lawsuit filed against EPA. This correction notice applies to certain landfill and surface impoundment units for which the Part B of the permit application was received by November 8, 1984. Permits issued for units in this category are not required to include conditions imposing double liner and leachate collection system requirements as a matter of statute pursuant to section 3004(o) but may include such requirements where necessary to protect human health and the environment on a case-by-case basis pursuant to section 3005(c).

EFFECTIVE DATE: May 9, 1990.

FOR FURTHER INFORMATION CONTACT: Mr. Alessi Otte (202) 382-4654.

SUPPLEMENTARY INFORMATION: On June 23, 1987, the United States Court of Appeals for the District of Columbia issued its decision in *United Technologies Corp. vs. U.S. Environmental Protection Agency*. The lawsuit challenged a number of aspects of EPA's July 15, 1985, final rule interpreting amendments to the Resource Conservation and Recovery Act (RCRA) enacted in HSWA. The Court of Appeals upheld all but one of EPA's interpretations. The only portion of the rule that the Court found lacking dealt with the applicability of the minimum technological requirements (i.e., double liner and leachate detection and collection systems) provision contained in section 3004(o)(1) of the Act, 42 U.S.C. section 6924(o)(1). The Court concluded as follows:

We do find that 40 CFR Sec. 265.221, 265.301 are invalid to the extent that they impose Section 3004(o) technological requirements on owners and operators whose applications for a final determination on their Section 3005 permits were received before November 8, 1984.

EPA in this final rule is making conforming changes to its regulations in line with the Court of Appeals decision. In this regard, EPA interprets the decision as applying to section 3004(o)(1) requirements where permit applications were received by the date of enactment of HSWA, for purposes of requiring double liners and leachate collection systems as permit conditions under section 3005(c). The conforming changes appear in 40 CFR part 264.221 and 264.301.

Petitioners did not challenge and the decision does not address the applicability of the minimum technological requirements under section 3015, which was also codified in the July 15, 1985 rule. Section 3015

contains its own applicability provision. It applies to new, replacement, and expanded surface impoundments and landfill units that qualify for interim status and that receive waste after May 8, 1985 (six months after the date of enactment of HSWA). It subjects these facilities to the "requirements of section 3004(o)." In light of the separate applicability plan describe above, EPA interprets this language as referring to the substantive requirements in section 3004(o) rather than its applicability provisions. Hence, section 3015 applies without regard to the date the owner/operator submitted a part B permit application. Since part 265 implements section 3015, no change is necessary to part 265.

Similarly, the decision has no impact on the applicability of minimum technological requirements under section 3005(j). Section 3005(j) again contains its own applicability provision. It requires owners and operators of surface impoundments in existence and qualifying for interim status on November 8, 1984, to stop receiving hazardous waste by November 8, 1988, unless the owner or operator retrofits the unit to come into "compliance with the requirements of section 3004(o)(1)(A)" by November 8, 1988, or qualifies for a statutory exemption. Again, EPA interprets this provision as applying the substantive requirements of section 3004(o) to the units described in the separate jurisdictional provisions of section 3005(j). Hence, the Court's decision to read section 3004(o) as applying to units for which part B applications are first submitted after November 8, 1984, has no impact on the surface impoundment retrofit requirements.

In addition, nothing in the Court of Appeals decision addresses or affects EPA's ability to condition permits pursuant to RCRA section 3005(c)(3) to ensure protection of human health and the environment. Thus, regardless of the date of permit application, Regional Administrators can determine, based on a case-by-case evaluation, that a permit may need to be conditioned to include minimum technological requirements, due to the particular circumstances associated with a facility or the characteristics of a specific site.

List of Subjects in 40 Part 264

Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

Dated: April 27, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, title 40 of the Code of Federal Regulations is amended as follows:

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924 and 6925.

2. Section 264.221 is amended by revising paragraph (c) to read as follows:

§ 264.221 Design and operating requirements.

(c) The owner or operator of each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment unit, must install two or more liners and leachate collection system between such liners. The liners and leachate collection system must protect human health and the environment. The requirements of this paragraph shall apply with respect to all waste received after insurance of the permit for units where the part B of the permit application is received by the Regional Administrator after November 8, 1984. The requirement for the installation of two or more liners in this paragraph may be satisfied by the installation of a top liner designed, operated, and constructed of materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

3. Section 264.301 is amended by revising paragraph (c) to read as follows:

§ 264.301 Design and operating requirements.

(c) The owner or operator of each new landfill, each new landfill unit at an existing facility, each replacement of an existing landfill unit, and each lateral expansion of an existing landfill unit, must install two or more liners and a leachate collection system above and between the liners. The liners and leachate collection systems must protect human health and the environment. The requirements of this paragraph shall apply with respect to all waste received after issuance of the permit for units where the part B of the permit application is received by the Regional Administrator after November 8, 1984. The requirement for the installation of two or more liners in this paragraph may be satisfied by the installation of a top liner designed, operated, and constructed of materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

[FR Doc. 90-10842 Filed 5-8-90; 8:45 am]
BILLING CODE 6560-50-M

40 CFR Part 350

[OPTS-400039A; FRL-3734-5]

Notice of Change of Address for Submission of Information Under the Emergency Planning and Community Right-to-Know Act; Correction

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; correction.

SUMMARY: EPA issued a change of address notice that was published in the Federal Register of January 5, 1990 (55 FR 420). The P.O. Box number was inadvertently misstated. This notice corrects that P.O. Box number.

DATES: This document is effective May 9, 1990.

FOR FURTHER INFORMATION CONTACT: Doug Sellers, Project Officer, Title III Reporting Center, Environmental Protection Agency, 401 M St., SW.,

Washington, DC 20460, Telephone: 202-382-3587.

SUPPLEMENTARY INFORMATION: In the Federal Register of January 5, 1990 (55 FR 420), EPA issued a notice announcing the new mailing address to be used by facilities when submitting toxic chemical release forms and trade secrecy claims to EPA under section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (also known as Title III). The P.O. Box number for the new mailing address was incorrectly stated as "223779" in the preamble and codified text on page 420, in the third column, in two places: the eleventh line of the **SUPPLEMENTARY INFORMATION** paragraph and the next to the last line of the codified text. The correct mailing address is: Title III Reporting Center, Environmental Protection Agency, P.O. Box 23779, Washington, DC 20026-3779.

Dated: April 26, 1990.

Linda A. Travers,
Director, Information Management Division,
Office of Toxic Substances.

[FR Doc. 90-10843 Filed 5-8-90; 8:45 a.m.]

BILLING CODE 6560-50-D

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[FCC 90-125]

Broadcast Services; Withdrawal of Disqualifying Major Change Amendments

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission revises §§ 73.3571, 73.3572, and 73.3573 of its rules regarding processing of AM, FM, and television applications to allow an applicant who submits a major amendment, that would otherwise require the assignment of a new file number and place the applicant at the end of the processing line, to withdraw the amendment. Applicants in comparative cases may withdraw such amendments any time prior to designation of the application for hearing; or subject to the discretion of the Administrative Law Judge after designation for a hearing. This policy has existed with regard to applicants in comparative cases since the late 1970's. This action is taken to formally codify the policy with regard to all applicants.

EFFECTIVE DATE: May 9, 1990.

ADDRESSES: Federal Communication Commission, Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Marilyn Mohrman-Gillis, Mass Media Bureau, (202) 632-7792.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Order, FCC No. 90-125, adopted April 9, 1990, and released May 1, 1990. The full text of this Commission decision is available for inspection and copying during normal business hours in the FCC Dockets Branch (Room 230), 1919 M Street, NW., Washington, DC. The complete text of this decision may also be purchased from the Commission's copy contractor, International Transcription Services, (202) 857-3800, 2100 M Street, NW., suite 140, Washington, DC 20037.

Synopsis of Order

1. The Commission revises 47 CFR 73.3571, 73.3572, and 73.3573 regarding processing of AM, FM, and television applications to permit an applicant to withdraw a pre-designation amendment to an application that is mutually exclusive with other applications if it would require assignment of a new file number and place that applicant at the end of the processing line. The Order also amends the rules to permit applicants to withdraw pre-designation major amendments during the hearing stage of a proceeding at the discretion of the Administrative Law Judge. Finally, single applicants are permitted to withdraw a major change amendment.

2. The rules being amended had required that where an applicant submits a major amendment after the period for amendment had expired but before the application had been designated for a hearing, if applicable, the application would be assigned a new file number and placed at the end of the processing line. In comparative cases, this had the effect of removing the applicant from the processing. In cases involving a single applicant, the applicant was again subjected to competing applications and petitions to deny. Since the late 1970's the Commission has permitted applicants in comparative cases to withdraw such amendments rather than be removed from the proceeding. See e.g., *Golden Shores Broadcasting Co.*, 2 FCC Rcd 4743 (1987); *Tequesta Television, Inc.*, 61 RR 2d 1403 (1987). The Commission issued this Order to codify this previously established policy.

3. In making these amendments, the Commission recognized that the purpose of the original rule was to eliminate

RCRA REVISION CHECKLIST 78

Land Disposal Restrictions for
Third Third Scheduled Wastes

55 FR 22520-22720

June 1, 1990

(HSWA Cluster II and Non-HSWA Cluster VI)

Notes: 1) The Federal Register addressed by this checklist is the last of five Congressionally mandated prohibitions on land disposal of hazardous wastes. Previous checklists based on the Congressional mandate include Revision Checklists 34, 39, 50 and 63. Revision Checklists 62 and 66 correct the First Thirds Rule addressed by Revision Checklist 50. Revision Checklist 83 (56 FR 3864) addresses changes to the Third Thirds Rule. Because of the changes made to the tables and appendices by this correction notice, States are strongly encouraged to adopt them at the same time as the provisions addressed by Revision Checklist 78.

2) This checklist may be subject to change in the future. EPA's State Programs Branch is currently discussing the relationship of hazardous waste injection issues to the State authorization program. In question are the changes made to 40 CFR Part 148 by the final rule addressed by this checklist and whether they should be included in the checklist. This present checklist does not include these changes.

3) The checklist is in HSWA Cluster II, with the exception of the clarifying amendment to §261.33(c) which is in non-HSWA Cluster VI. This clarification is not immediately effective in authorized States since the requirements are not imposed pursuant to HSWA. Thus, these requirements are applicable only in those States that do not have interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

4) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

5) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of Revision Checklist 78 which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to exclude these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelegable sections, see Appendix J of the State Authorization Manual (SAM).

- 6) Note that while 268.40 is delegable to States, "Administrator" in the following phrase "Approved by the Administrator under the procedures set for this in 268.42(b)" should not be replaced with an analogous State term because it is referring to decisions under 268.42(b). Such decisions will be made by the EPA Administrator.
- 7) States which have not submitted any land disposal restrictions are strongly encouraged to use the Consolidated Land Disposal Restriction Checklist rather than the seven individual revision checklists.
- 8) Note that the Toxicity Characteristic Leaching Procedure (TCLP) referred to by the Third Third Scheduled Waste Rule is the TCLP entered into the Federal code at 40 CFR 261 Appendix II by the Toxicity Characteristic Rule (55 FR 11798, March 29, 1990) and amended at 55 FR 26986 (June 29, 1990). (Both the Toxicity Characteristic Rule and the June amendment are addressed by Revision Checklist 74.) The TCLP procedure previously located at 40 CFR Part 268, Appendix I and introduced by the Solvents and Dioxins Land Disposal Restrictions Rule (51 FR 40572; November 7, 1986; Revision Checklist 34) is the outdated version of the TCLP. Thus, States adopting the Third Third Scheduled Waste Rule must also adopt the new version of the TCLP. The Revision Checklist 34 version of the TCLP should be removed from their code as well.
- 9) Guidance regarding the use of the new TCLP versus the EP Toxicity Test may be found at 55 FR 22660 (June 1, 1990). The code (40 CFR 268.40(a) and 268.41(a)) addressing this issue contains a serious technical error which is discussed in Footnote 11 found at the end of this checklist.
- 10) Adopting the alternate treatment standards for lab packs is optional. However, if a State chooses to adopt these alternate standards, all of the requirements related to these standards must be adopted, including all of the provisions added by the Third Third Scheduled Waste Rule (i.e., Revision Checklist 78) at 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268.

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE

GENERAL

remove ", but is not listed as a hazardous waste in Subpart D"; change "the EPA" to "every EPA"; insert "that is applicable as" before "set forth"; remove "In the respective characteristic" before "in this Subpart"; before "recordkeeping", change "certain" to "all applicable"	261.20(b)				
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CHARACTERISTIC OF IGNITABILITY

remove ", but is not listed as a hazardous waste in Subpart D,"	261.21(b)				
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CHARACTERISTIC OF CORROSIVITY

remove ", but is not listed as a hazardous waste in Subpart D,"	261.22(b)				
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CHARACTERISTIC OF REACTIVITY

remove ", but is not listed as a hazardous waste in Subpart D,"	261.23(b)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

CHARACTERISTIC OF EP TOXICITY

remove ", but is
not listed as a
hazardous waste
in Subpart D,"

261.24(b)

SUBPART D - LISTS OF HAZARDOUS WASTES**HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES**

add the waste
code "F039" to list
in alphanumeric
order to list as
specified below

261.31

Industry and EPA hazardous
waste No.

Hazardous waste

Hazard
code

F039.....	Leachate resulting from the treatment, storage, or disposal of wastes classified by more than one waste code under Subpart D, or from a mixture of wastes classified under Subparts C and D of this part. (Leachate resulting from the management of one or more of the following EPA Hazardous Wastes and no other hazardous wastes retains its hazardous waste code(s): F020, F021, F022, F023, F026, F027, and/or F028.).	(T)
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DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF

1 insert "or (f)" after "(e)"; change "261.7(b)(3)" to "261.7(b)"	261.33(c)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add "F039" to list
in alphanumeric order
as shown below:

Appendix VII

EPA hazardous
waste No.

Hazardous constituents for
which listed

* * * * *

F039.....All constituents for which treatment
standards are specified for multi-source
leachate (wastewaters and non-
wastewaters) under 40 CFR 268.43(a),
Table CCW.

* * * * *

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 262 - STANDARDS APPLICABLE TO GENERATORS OF
HAZARDOUS WASTE**

SUBPART A - GENERAL

HAZARDOUS WASTE DETERMINATION

in the first sentence, replace "If" with "For purposes of compliance with 40 CFR Part 268, or if"; remove "as a hazardous waste" after "listed"; replace "of 40 CFR Part 261" with "of this part"; replace "he must determine" with "the generator must then determine"	262.11(c)				
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SUBPART C - PRE-TRANSPORT REQUIREMENTS

ACCUMULATION TIME

replace "and with §265.16" with ", with §265.16, and with 40 CFR 268.7(a)(4)"	262.34(a)(4)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART B - GENERAL FACILITY STANDARDS

revise comment following paragraph (a)(2) as follows: remove "or all" after "supply part"; add ", except as otherwise specified in in 40 CFR 268.7(b) and (c)." to the second sentence	264.13(a)(2)				
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SUBPART K - SURFACE IMPOUNDMENTS

SPECIAL REQUIREMENTS FOR IGNITABLE OF REACTIVE WASTE

insert "the waste and impoundment satisfy all applicable requirements of 40 CFR Part 268 and" after "unless"	264.229				
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SUBPART L - WASTE PILES

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and waste pile satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	264.256				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART M - LAND TREATMENT

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

insert "the waste and the treatment zone meet all applicable requirements of 40 CFR Part 268, and" after "unless"	264.281				
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SUBPART N - LANDFILLS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

replace "in treated, rendered, or mixed before or immediately after placement in a landfill so that:" with "and landfill meet all applicable requirements of Part 268, and:"	264.312(a)				
begin the first sentence with "Except for prohibited wastes which remain subject to treatment standards in Subpart D of Part 268,"	264.312(b)				

DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS (LAB PACKS)

†,2 add new paragraph regarding disposal in compliance with Part 268; requirement for fiber drums to meet DOT specifications and 264.316(b) requirements if incinerate lab packs	264.316(f)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

replace "Part 268" with "40 CFR Part 268, and the 40 CFR Part 268 standards are considered material conditions or requirements of the Part 265 interim status standards"	265.1(e)				
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SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

revise comment following subparagraph (a)(2) as follows: remove "or all" after "supply part"; add ", except as otherwise specified in 40 CFR 268.7(b) and (c)." to the second sentence	265.13(a)(2)				
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SUBPART K - SURFACE IMPOUNDMENTS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and impoundment satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	265.229				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART L - WASTE PILES

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and pile satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	265.256				
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SUBPART M - LAND TREATMENT

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

insert "the waste and treatment zone meet all applicable requirements of 40 CFR Part 268, and" after "unless"	265.281				
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SUBPART N - LANDFILLS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

replace "Is treated, rendered, or mixed before or immediately after placement in a landfill so that:" with "and landfill meet all applicable requirements of 40 CFR 268, and:"	265.312(a)				
begin the first sentence with "Except for prohibited wastes which remain subject to treatment standards in Subpart D of Part 268,"	265.312(b)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED
DRUMS (LAB PACKS)**

†,2 add new paragraph regarding disposal in compliance with Part 268; requirement for fiber drums to meet DOT specifications and 264.316(b) requirements if incinerate lab packs	265.316(f)				
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PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

3 wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal if the wastes:	268.1(c)(3)				
disposed into a nonhazardous or hazardous injection well as defined in 40 CFR 144.6(a)	268.1(c)(3)(i)				
do not exhibit any prohibited characteristic of hazardous waste at the point of injection	268.1(c)(3)(ii)				
paragraph removed	268.1(c)(5)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
DEFINITIONS APPLICABLE TO THIS PART					
new introductory paragraph for definitions	268.2				
redesignate "halogenated organic compounds" or "HOCs" as 268.2(a)	268.2(a)				
redesignate "hazardous constituent or constituents" as 268.2(b)	268.2(b)				
redesignate "land disposal" as 268.2(c)	268.2(c)				
add "nonwastewaters"	268.2(d)				
redesignate "polychlorinated biphenyls" or "PCBs" as 268.2(e)	268.2(e)				
add "wastewaters" and the following exceptions:	268.2(f)				
"F001, F002, F003 F004, F005 solvent-water mixtures"	268.2(f)(1)				
"K011, K013, K014 wastewaters"	268.2(f)(2)				
"K103 and K104 wastewaters"	268.2(f)(3)				
add "inorganic solid debris"; specific inorganic or metal materials:	268.2(g)				
metal slags	268.2(g)(1)				
classified slag	268.2(g)(2)				
glass	268.2(g)(3)				
concrete	268.2(g)(4)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
masonry and refractory bricks	268.2(g)(5)				
metal cans, containers, drums or tanks	268.2(g)(6)				
metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment	268.2(g)(7)				
scrap metal as defined in 40 CFR 261.1(c)(6)	268.2(g)(8)				

DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT

8 begin sentence with "Except as provided in paragraph (b) of this section,"	268.3(a)				
new paragraph; permissible forms of dilution related to Sections 307 or 402 of the CWA	268.3(b)				

WASTE ANALYSIS AND RECORDKEEPING

revise section to include more guidance on specifying treatment standards	268.7(a)(1)(ii)				
revise section to include more guidance on specifying treatment standards	268.7(a)(2)(i)(B)				
9 revise section to include more guidance on specifying treatment standards	268.7(a)(3)(ii)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
replace entire paragraph with new requirements for the development of a waste analysis plan and record-keeping requirements when treating in 262.34 tanks/containers; other requirements:	268.7(a)(4)				
what the waste analysis plan must be based on and contain	268.7(a)(4)(i)				
requirements for filling of waste analysis plan	268.7(a)(4)(ii)				
compliance with 268.7(a)(2) notification requirements for wastes shipped off-site	268.7(a)(4)(iii)				
remove subparagraph	268.7(a)(4)(iv)				
†,2 notification for a generator managing a lab pack that contains wastes identified in Appendix IV if use alternate treatment standards under 268.42; 268.7(a)(5)&(6) compliance; certification	268.7(a)(7)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
†,2 notice for a generator managing a lab pack that contains organic wastes specified in Appendix V if use alternate treatment standard under 268.42; 268.7(a)(5)&(6) compliance; certification	268.7(a)(8)				
notification and certification requirements for small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e)	268.7(a)(9)				
revise section to include more guidance on specifying treatment standards	268.7(b)(4)(ii)				
insert "impermissible" in front of "dilution" in the certification paragraph	268.7(b)(5)(i)				
certification requirements for wastes with treatment standards expressed as concentrations in the waste pursuant to 268.43	268.7(b)(5)(iii)				
10 remove paragraph 268.7(b)(7) and redesignate 268.7(b)(8) as 268.7(b)(7)	268.7(b)(7)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
begin the paragraph with "Except where the owner or operator is disposing of any waste that is a recyclable material used in a manner constituting disposal pursuant to 40 CFR 266.20(b),"	268.7(c)				
remove paragraph	268.7(c)(3)				
remove paragraph	268.7(c)(4)				
LANDFILL AND SURFACE IMPOUNDMENT DISPOSAL RESTRICTIONS					
insert "As of May 8, 1990, this section is no longer in effect" at the end of the paragraph	268.8(a)				
SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC					
determination of applicable treatment standards under Subpart D of Part 268 by initial generator of a solid waste; code designation	268.9(a)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
the treatment standard for the waste code listed in 40 CFR Part 261, Subpart D will operate for wastes both listed under Subpart D, Part 261 and exhibit a characteristic under Subpart C, Part 261; conditions under which treatment standards for all applicable listed and characteristic waste codes must be met	268.9(b)				
no prohibited waste which exhibits a characteristic under 40 CFR Part 261, Subpart C may be land disposed unless waste complies with Part 268, Subpart D treatment standards	268.9(c)				
wastes that exhibit a characteristic are subject to all 268.7 requirements unless wastes are no longer hazardous; if not hazardous, notification/certification sent to EPA Regional Administrator or authorized State	268.9(d)				
information needed with each notification	268.9(d)(1)				
	268.9(d)(1)(i)				
	268.9(d)(1)(ii)				
	268.9(d)(1)(iii)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
certification signed by authorized representative stating language found in 268.7(b)(5)(i)	268.9(d)(2)				

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - THIRD THIRD WASTES

effective August 8, 1990, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e) and 261.33(f)	268.35(a)				
effective November 8, 1990, prohibition from land disposal of certain wastes specified in 261.32	268.35(b)				
effective May 8, 1992, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e), 261.33(f), certain characteristic wastes, inorganic debris defined in 268.2(a)(7), and RCRA hazardous wastes containing naturally occurring radioactive materials	268.35(c)				
effective May 8, 1992, prohibition from land disposal of 268.12 mixed radioactive/ hazardous wastes	268.35(d)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective May 8, 1992, prohibition from land disposal of wastes specified in 268.35 as having Subpart D, Part 268 treatment standards based on incineration, mercury retorting, or vitrification, and which are contaminated soil or debris	268.35(e)				
between May 8, 1990, and August 8, 1990, wastes included in paragraph 268.35(a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	268.35(f)				
between May 8, 1990, and November 8, 1990, wastes included in paragraph 268.35(b) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	268.35(g)				
between May 8, 1990, and May 8, 1992, wastes included in paragraphs 268.35(c), (d) and (e) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	268.35(h)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
conditions under which requirements of paragraphs 268.35(a), (b), (c) (d) and (e) do not apply	268.35(i)				
wastes meet applicable 268 Sub-part D standards	268.35(i)(1)				
persons granted exemption under 268.6	268.35(i)(2)				
wastes meet applicable alternate standards under 268.44	268.35(i)(3)				
persons granted extension to the effective date of a prohibition under 268.5	268.35(i)(4)				
testing of waste to determine if 268.10, 268.11 and 268.12 wastes exceed applicable treatment standards specified in 268.41 and 268.43; consequences of exceeding standards	268.35(j)				

SUBPART D - TREATMENT STANDARDS

APPLICABILITY OF TREATMENT STANDARDS

11 revise paragraph by adding the exception for certain wastes that may be land disposed if test methods in Appendix I, Part 268 or Appendix II, Part 261 methods are used	268.40(a)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
begin the paragraph with "Except as otherwise specified in §268.43(c)."	268.40(c)				

TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

11 revise paragraph by adding the exception for certain wastes that Table CCWE identifies and whose constituents are extracted using test methods in Appendix I, Part 268 or Appendix II, Part 261; compliance based on grab samples	268.41(a)				
replace Table CCWE with new table as shown on pages 22690 through 22692 of this final rule	268.41(a)/ Table CCWE				

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

treatment of wastes identified in 268.42(a)(1)&(2) with technology specified in those sub-paragraphs and in Table 1 of 268.42	268.42(a)				
insert "40 CFR" in front of "Part 264" and "Part 265"; remove "or in boilers or industrial furnaces burning in accordance with applicable regulatory standards"	268.42(a)(2)				
remove paragraph	268.42(a)(3)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
remove paragraph	268.42(a)(4)				
add new Table 1 addressing Technology Codes and Description of Technology-Based Standards as shown on pages 22693 and 22694 of this final rule	268.42(a)/Table 1				
add new table on Technology-Based Standards by RCRA Waste Code as shown on pages 22694 through 22700 of this final rule	268.42(a)/Table 2				
add new table on Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste as shown on page 22700 of this final rule	268.42(a)/Table 3				

Guidance note: 268.42 is NOT DELEGABLE. States should see Note 5 at the beginning of this checklist regarding how to incorporate this paragraph into their code.

replace "paragraph (a)" with "paragraphs (a), (c), and (d)" in two places	268.42(b)				
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†,2 ALTERNATE TREATMENT STANDARDS FOR LAB PACKS

conditions for eligibility of lab packs for land disposal:	268.42(c)				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance of lab packs with applicable provisions of 264.316 and 265.316	268.42(c)(1)				
Part 268 Appendix IV and Appendix V hazardous wastes contained in lab packs	268.42(c)(2)				
incineration of lab packs in accordance with Part 264, Subpart O and Part 265, Subpart O requirements	268.42(c)(3)				
treatment standards for incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010 and D011	268.42(c)(4)				
12 radioactive hazardous mixed wastes with Table 3 treatment standards not subject to 268.41, 268.43 or Table 2 treatment standards; radioactive hazardous mixed wastes not subject to Table 3 treatment standards remain subject to 268.41, 268.43 and Table 2 treatment standards	268.42(d)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS					
replace the last sentence with "Compliance with these concentrations is required based upon grab samples, unless otherwise noted in the following Table CCW"	268.43(a)				
replace Table CCW with new table as shown on pages 22701 through 22713 of this final rule	268.43(a)/Table CCW				
conditions for demonstrating compliance with treatment standards for organic constituents provided:	268.43(c)				
treatment for organic constituents established based on incineration in units operated in accordance with Subpart O requirements of Part 264 or Part 265 or based on combustion in fuel substitution units in accordance with applicable technical requirements	268.43(c)(1)				
organic constituents treated using paragraph 268.43(c)(1) methods	268.43(c)(2)				
good-faith efforts fail to detect the organic constituents; when such efforts must be demonstrated	268.43(c)(3)				

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX IV TO PART 268

†,2 ORGANOMETALLIC LAB PACKS

add Appendix IV as shown on page 22713 of this final rule	Appendix IV				
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APPENDIX V TO PART 268

†,2 ORGANIC LAB PACKS

add Appendix V as shown on pages 22713 and 22714 of this final rule	Appendix V				
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APPENDIX VI TO PART 268

**RECOMMENDED TECHNOLOGIES TO ACHIEVE DEACTIVATION OF CHARACTERISTICS IN
SECTION 268.42**

add Appendix VI as shown on pages 22714 and 22715 of this final rule	Appendix VI				
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APPENDIX VII TO PART 268

**EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED LDRs
(COMPREHENSIVE LIST)**

add Appendix VII as shown on pages 22715 through 22718 of this final rule	Appendix VII				
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**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX VIII TO PART 268

NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES (COMPREHENSIVE LIST)

add Appendix VIII
as shown on pages
22718 and 22719 of
this final rule

Appendix VIII

**PART 270 - EPA-ADMINISTERED PERMIT PROGRAMS; THE HAZARDOUS
WASTE PERMIT PROGRAM**

SUBPART D - CHANGES TO PERMIT

PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE

13 CLASSIFICATION OF PERMIT MODIFICATION

redesignate old
B(1)(b) as B(1)(c)
and add new item
involving F039
under General
Facility Standards
as shown below

270.42,
Appendix I

Modifications

Class

B. General Facility Standards

1. * * *

b. To incorporate changes associated
with F039 (multi-source leachate)
sampling or analysis methods.....

1

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
<p>¹ Unlike the other changes addressed by this checklist, the change to 261.33(c) is not imposed pursuant to HSWA. Thus, this change is placed in non-HSWA Cluster VI.</p> <p>² This code is part of the optional requirements for the alternate treatment standards for lab packs under the Third Third Scheduled Waste Rule. If adopted, all of the requirements (i.e., 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268) related to these alternate treatment standards must be adopted.</p> <p>³ This is a new subparagraph introduced into the code by Revision Checklist 78. The original subparagraph 268.1(c)(3) was introduced by Revision Checklist 34, modified by Revision Checklist 39, then removed by Revision Checklist 50, with 268.1(c)(4) redesignated as (c)(3). The redesignated subparagraph 268.1(c)(3) was subsequently removed by Revision Checklist 66.</p> <p>⁴ This paragraph was originally part of 268.2(a) when it was entered into the code by Revision Checklist 34. Revision Checklist 78 renumbered it as 268.2(b) and removed the old 268.2(b) introduced by Revision Checklist 34.</p> <p>⁵ The definition of land disposal was introduced into the code as part of 268.2(a) by Revision Checklist 34. It was modified by Revision Checklist 39 and designated as 268.2(c) by Revision Checklist 78.</p> <p>⁶ Note there is a typographical error in the <u>Federal Register</u> notice for Revision Checklist 78 (55 <u>FR</u> 22520, June 1, 1990). The reference to "(g)(6)" should be to "(f)."</p> <p>⁷ This definition was introduced by Revision Checklist 39 as part of 268.2(a). It was redesignated as 268.2(e) by Revision Checklist 78.</p> <p>⁸ Paragraph 268.3(a) was originally introduced into the code by Revision Checklist 34 as 268.3, and was then revised by Revision Checklist 39. Revision Checklist 78 revised and redesignated it as 268.3(a).</p> <p>⁹ Note that on page 22687 of the final rule addressed by this checklist, it appears that 268.7(a)(3)(iii)-(v) were removed. This is an error and these three subparagraphs should remain in the code.</p> <p>¹⁰ This paragraph was originally 268.7(b)(8) when it was entered into the code by Revision Checklist 50, but it was redesignated as 268.7(b)(7) by Revision Checklist 78 because the old 278.7(b)(7) and 278.7(b)(7)(i)-(iv) were removed by Revision Checklist 78. Revision Checklist 66 corrected 268.7(b)(8) before it was redesignated by Revision Checklist 78.</p> <p>¹¹ The current text of 268.40(a) and 268.41(a) indicates that an extract or treatment residue of certain wastes may be land disposed only if certain requirements are met using either the test method in Appendix I of Part 268 or the test method in Appendix II of Part 261. Following promulgation of the March 29, 1990 Toxicity Characteristics rule addressed by Revision Checklist 74 (55 <u>FR</u> 11798, as amended at 55 <u>FR</u> 26986), both of these appendices relate to</p>					

**RCRA REVISION CHECKLIST 78: Land Disposal Restrictions for
Third Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

the same test method, the TCLP. Previously, the Part 261 appendix contained the EP Toxicity test procedures while the Part 268 appendix contained the TCLP. EPA will issue a correction to the rule for these particular paragraphs in the near future, clarifying which procedures may be used. Until such time, however, EPA indicates that for the specific waste exceptions listed in these paragraphs the TCLP can be used for measuring compliance with the treatment standards for those specified wastes, and, if the extract or treatment residue fails that test, the EP Toxicity test can be used. If the extract or residue passes that less stringent test, then such waste is considered in compliance with the treatment standards. For more information related to the use of either of the two test methods, see the discussion at 55 FR 22660 (June 1, 1990).

- ¹² The 55 FR 22520, June 1, 1990, code incorrectly states that a subparagraph 268.42(e) is added. The Federal Register did not contain a 268.42(e); it only added 268.42(d).
- ¹³ Appendix I was introduced by Revision Checklist 54 as an optional modification to section 270.42. Changes to this appendix addressed by Revision Checklist 78 are relevant only if a State has modified its code to include Appendix I as per Revision Checklist 54.

Friday
June 1, 1990

Part II

**Environmental
Protection Agency**

40 CFR Part 148 et al.

**Land Disposal Restrictions for Third
Third Scheduled Wastes; Rule**

**ENVIRONMENTAL PROTECTION
AGENCY**

40 CFR Parts 148, 261, 262, 264, 265,
268, 270, 271, and 302

[EPA/OSW-FR-90-010; SWH-FRL-3751-1]

RIN 2050-AC73

**Land Disposal Restrictions for Third
Third Scheduled Wastes**

AGENCY: Environmental Protection
Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) today is promulgating regulations implementing the last of five Congressionally mandated prohibitions on land disposal of hazardous wastes (the third one-third of the schedule of restricted hazardous wastes, hereafter referred to as the Third Third). This action is taken in response to amendments to the Resource Conservation and Recovery Act (RCRA), enacted in the Hazardous and Solid Waste Amendments (HSWA) of 1984. When fully effective in May 1992, this rule, combined with the previous rulemakings, is expected to require treatment of a total of seven million tons of hazardous waste managed in RCRA-regulated facilities.

EFFECTIVE DATE: This final rule is effective on May 8, 1990.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F-90-LD13-FFFF, and is located in the EPA RCRA Docket, room 2427, 401 M Street SW., Washington, DC 20460. The docket is open from 9 a.m. to 4 p.m., Monday through Friday, except on Federal holidays. The public must make an appointment to review docket materials by calling (202) 475-9327. The public may copy a maximum of 100 pages from any regulatory document at no cost. Additional copies cost \$.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline at: (800) 424-9346 (toll-free) or (202) 382-3000 locally.

For information on specific aspects of this final rule, contact Richard Kinch or Rhonda Craig, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7917. For specific information on BDAT treatment standards, contact Larry Rosengrant, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7917. For specific information on the Underground Injection Control Program

and hazardous waste injection wells, contact Bruce Kobelski, Office of Drinking Water (WH-550), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7275. For specific information on capacity determinations or national variances, contact Jo-Ann Bassi, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-6673.

SUPPLEMENTARY INFORMATION:**Expanded Summary**

Today's notice promulgates specific treatment standards and effective dates for the Third Third wastes, "soft hammer" First and Second Third wastes, and five newly listed wastes. Today's notice also promulgates treatment standards and effective dates for multi-source leachate and mixed radioactive/hazardous wastes, which were re-scheduled to the Third Third. The Agency has also re-scheduled wastes from the petroleum refining industry, EPA Hazardous Waste Nos. K048-K052, to the Third Third, is revising the treatment standards for these wastes, and is granting a six-month national capacity variance for K048-K052 nonwastewaters. The Agency is also promulgating alternate treatment standards for lab packs.

The Agency is also promulgating treatment standards and effective dates for hazardous wastes that exhibit one or more of the following characteristics: Ignitibility, corrosivity, reactivity or EP toxicity (40 CFR 261.21-261.24). The Agency has revised the proposed treatment standards for these wastes to reflect data submitted during the comment period showing wide variability in the wastestreams. Today's final rule establishes treatment standards for the characteristic wastes in one of four forms: (1) A concentration level equal to, or greater than the characteristic level; (2) a concentration level less than the characteristic level; (3) a specified treatment technology which in many cases will result in treatment below the characteristic level; or (4) a treatment standard of "deactivation" to remove the characteristic, with guidance on technologies the Agency believes will remove the characteristics (see appendix VI to part 268).

In promulgating treatment standards for characteristic wastes, EPA has evaluated the applicability of certain provisions of the land disposal restrictions' framework with respect to characteristic wastes including wastes regulated under the National Pollutant Discharge Elimination System (NPDES)

program, sections 307(b) and 402 of the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA) programs regulating deep well injection to ensure successful integration of these programs with the regulations being promulgated today. Specifically, the Agency considered the appropriateness of the dilution prohibition for each of the characteristic wastestreams, and the applicability of treatment standards expressed as specified methods.

In general, the Agency believes that the mixing of waste streams to eliminate certain characteristics is appropriate and should be permissible for certain characteristic waste streams (e.g., most wastes that are purely corrosive). Furthermore, EPA believes that the dilution prohibition should not apply to characteristic wastes that are managed in treatment trains regulated under the Pretreatment and National Pollutant Discharge Elimination System (NPDES) programs under sections 307(b) and 402 of the CWA or in Class I underground injection well systems regulated under the Safe Drinking Water Act (SDWA). The Agency believes that the treatment requirements and associated dilution rules under the CWA are generally consistent with the dilution rules under RCRA, and that the Agency should rely on the existing CWA provisions. Similarly, EPA has established a regulatory program under the SDWA to prevent underground injection which endangers drinking water sources. Class I deep wells inject below the lowermost geologic formation containing an underground source of drinking water, and are subject to minimum location, construction, and operation requirements. The Agency believes that application of dilution rules to these wastes would not further minimize threats to human health and the environment, and that disposal of these wastes by underground injection at the characteristic levels is as sound as the treatment option. However, hazardous effluent, sludges, or other residues generated from these treatment trains, or pretreatment from CWA or SDWA systems, that are subsequently land disposed are subject to the land disposal restriction provisions.

The Agency also is limiting the circumstances under which treatment standards expressed as specified methods apply to wastes regulated under the CWA and SDWA programs. In general, the Agency believes that where a treatment standard is expressed as a specified method, and where application of that method is consistent with and promotes the objectives of the program, it should be

impermissible to dilute these wastes and avoid treating them by the designated treatment method. With respect to existing CWA regulations, the Agency believes that this is true for all specified methods in today's rule. Therefore, the Agency is specifying that dilution is impermissible for these wastes, and that the treatment standards expressed as specified methods apply. The Agency, however, is not requiring treatment of underground injected wastes with the specified methods, based on the previously-stated belief that disposal of such characteristic wastes by this method is as sound as the treatment option. (The Agency emphasizes that any mixture of listed and characteristic wastes is subject to the existing dilution prohibition rule, and must comply with the treatment standard for the listed waste, even if it is a specified method.)

The Agency received comments indicating that generators may be likely to change waste codes and ship their wastes as characteristic wastes rather than as listed wastes as a result of this rulemaking. The Agency is concerned with the potential for mislabeling hazardous wastes, but believes that this incentive has always existed since characteristic wastes may be disposed in a subtitle D facility once they no longer exhibit a hazardous characteristic. Furthermore, the Agency is revising the waste identification requirements of 40 CFR parts 261, 262, 264, and 265 to require that all relevant waste codes must be provided; we believe this revision will enhance the ability to enforce the accurate labeling of hazardous wastes. Finally, the Agency emphasizes that the mislabeling of hazardous wastes is a serious violation of the land disposal restrictions, and potentially a criminal act. The Agency will be modifying the existing Waste Analysis Plan Guidance to aid treatment and disposal facilities in determining whether waste has been properly classified.

The Agency is promulgating certain provisions of general applicability in today's rulemaking, including certain revisions to the existing rule that prohibits dilution of prohibited wastes, amendments to 40 CFR 262.11, which outlines the procedures for identification of hazardous wastes, and modifications to the tracking and recordkeeping requirements of 40 CFR 268.7. In addition, EPA is modifying existing testing requirements for treatment and disposal facilities, and amending subparagraph (c) of 40 CFR 261.33 (commercial chemicals that are hazardous wastes when discarded) due to the possible lack of clarity that

became apparent in the course of establishing treatment standards for these wastes. The Agency also is clarifying certain questions of applicability, such as whether wastes formerly excluded by the Bevill Amendment are to be considered newly identified for purposes of the land disposal restrictions, and applicability of California list prohibitions to newly identified and newly listed hazardous wastes.

Unless a longer national capacity variance is specified, the effective date for compliance with treatment standards for all waste codes in the final rule has been extended to August 8, 1990 by granting a three-month national capacity variance. The effective date is being delayed because the Agency realizes that even where data indicate that sufficient treatment capacity exists, it is not immediately available. Nonetheless, all Third Third wastes become restricted on May 8, 1990 and therefore subject to a number of LDR provisions. For example, if hazardous wastes not treated in compliance with applicable treatment standards are disposed of in surface impoundments or landfills, such units must meet minimum technological requirements. Furthermore, wastes subject to this extension of the effective date must be in compliance with all applicable recordkeeping requirements, and California list prohibitions, if applicable.

Finally, wastes for which treatment standards are being promulgated may be land disposed after their effective dates only if the applicable treatment standards are met, or if disposal occurs in units that satisfy the "no migration" standard.

Outline

I. Background

A. Summary of the Hazardous and Solid Waste Amendments of 1984 and the Land Disposal Restrictions Framework

1. Statutory Requirements
2. Applicability to Injected Wastes
3. Solvents and Dioxins
4. California List Wastes
5. Disposal of Solvents, Dioxins, and California List Wastes in Injection Wells
6. Scheduled Wastes
7. Newly Identified and Listed Wastes

B. Regulatory Framework

1. Applicability
2. Treatment Standards
3. National Capacity Variances from the Effective Dates
4. Case-By-Case Extensions of the Effective Dates
5. "No Migration" Exemptions from the Restrictions
6. Variances from the Treatment Standards
7. Exemption for Treatment in Surface Impoundments
8. Storage of Prohibited Wastes
9. "Soft Hammer" Provisions
- C. Pollution Prevention (Waste Minimization) Benefits
- D. Summary of the Proposed Rule
 1. Characteristic Wastes
 2. Determining When Dilution is Permissible
 3. Other Impermissible Dilution Issues
 4. Treatment Standards for Multi-Source Leachate
 5. Alternate Treatment Standards for Lab Packs
 6. Applicability to Mineral Processing Wastes
 7. Clarification of "P" and "U" Solid Wastes
 8. Treatment/Disposal Facility Testing Requirements
 9. Testing of Wastes Treated in 90-Day Tanks or Containers
 10. Generator Notification Requirements
 11. Storage Prohibition
 12. Applicability of California List Prohibitions After May 8, 1990
- II. Summary of Today's Final Rule
 - A. Applicability of Today's Final Rule
 1. Three Month National Capacity Variance for Third Third Wastes
 2. Hazardous Waste Injection Wells Regulated Under 40 CFR 148
 3. Remaining Scheduled Listed Hazardous Wastes
 4. Characteristic Hazardous Wastes
 5. Characteristic Wastes Regulated Under the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA) and RCRA
 6. Mineral Processing Wastes
 - B. Implementation of Requirements for Characteristic Wastes
 1. Overlap of Standards for Listed Wastes that also Exhibit a Characteristic
 2. Revisions to Waste Identification Requirements
 3. Wastes Subject to a Capacity Variance
 4. Use of TCLP v. EP Analytical Methods for Compliance
 5. Newly Identified Toxicity Characteristic (TC) Wastes

6. Further Principles Governing Applicability
- C. Amended Tracking System for Characteristic Prohibited Wastes
- D. The Dilution Prohibition as it Applies to Centralized Treatment
- E. Treatment Standards for Multi-Source Leachate
- F. Alternate Treatment Standards for Lab Packs
- G. Mixed (Hazardous/Radioactive) Wastes
- H. Nationwide Variances from the Effective Date
- I. Generator Notification Requirements
- J. Waste Analysis Plans and Treatment/Disposal Facility Testing Requirements
- K. Testing of Wastes Treated in 90-Day Tanks or Containers
- L. Clarification of "P" and "U" Solid Wastes
- M. Storage Prohibition
- N. Case-by-Case Extension Petitions
- O. Applicability of California List Prohibitions After May 8, 1990
- P. Analysis of Treated Wastes
- Q. Practical Quantitation Limits (PQLs)
- R. Best Demonstrated Available Technologies (BDAT)
- S. Reformatting of Treatment Standard Tables and Addition of Appendix VII to Part 268, Effective Dates for Prohibited Wastes
- T. Relationship of *Hazardous Waste Treatment Council v. EPA* to Treatment Standards Promulgated in Today's Final Rule
- III.A. Detailed Discussion of Today's Final Rule
 1. Development and Identification of Treatment Standards
 - a. The BDAT Methodology
 - b. Use of Technologies Identified As BDAT
 - c. Applicability of Treatment Standards to Treatment Residues Identified as "Derived-From" Wastes and to Waste Mixtures
 - d. Wastewater Versus Nonwastewater Standards
 - e. Transfer of Treatment Standards
 - f. Treatment Standards Based on Single Facility Data, Grab Samples Versus Composite Samples, and Waste Analysis Plans
 - g. Analytical Requirements, the BDAT List and Relationship of PQLs to BDAT
 - h. Relationship of Detection Limits to Concentration-Based Standards
 - i. Relation of *Hazardous Waste Treatment Council v. EPA*
 - III.A.2. Treatment Standards for Certain Characteristic Wastes
 - a. General Issues on Developing Treatment Standards for Characteristic Wastes
 - b. Ignitable Characteristic Wastes
 - c. Corrosive Characteristic Wastes
 - d. Reactive Characteristic Wastes
 - e. Effect of Treatment Standards on Disposal Provisions in 40 CFR 264 and 265 for Ignitable and Reactive Wastes
 - f. EP Toxic Halogenated Pesticide Wastes
 - III.A.3. Treatment Standards for Metal Wastes
 - a. Introduction
 - b. Arsenic [D004, K031, K084, K101, K102, P010, P011, P012, P036, P038, U136]
 - c. Barium [D005, P013]
 - d. Cadmium [D006, Cadmium Batteries]
 - e. Chromium [D007, U032]
 - f. Lead [D008, K069, K100, P110, U144, U145, U146]
 - g. Mercury [D009, K071, K108, P085, P092, U151]
 - h. Selenium [D010, P103, P114, U204, U205]
 - i. Silver [D011, P099, P104]
 - j. Thallium [P113, P114, P115, U214, U215, U216, U217]
 - k. Vanadium [P119, P120]
 - III.A.4. Treatment Standards for Remaining F and K Wastes
 - a. F002 and F005
 - b. F006 and F019
 - c. F024
 - d. F025
 - e. K001 and U051
 - f. K002, K003, K004, K005, K006, K007, and K008
 - g. K011, K013, and K014
 - h. K015
 - i. K017 and K073
 - j. K021
 - k. K022, K025, K026, K035, and K083
 - l. K028, K029, K095, and K096
 - m. K032, K033, K034, K041, K097, and K098
 - n. K038 and K037
 - o. K042, K085, and K105
 - p. K044, K045, K046, and K047
 - q. K048, K049, K050, K051, and K052
 - r. K060
 - s. K061
 - t. K086
 - III.A.5. Development of Treatment Standards for U and P Wastewaters and Nonwastewaters Excluding Metal Salts and Organo-metals
 - a. Concentration-based Standards for Specific Organics
 - b. Technology-based Standards for Specific Organics
 - c. U and P Wastes That are Potentially Reactive
 - d. Gases
 - e. U and P Cyanogens
 - III.A.6. Development of Treatment Standards for Multi-Source Leachate
 - a. Background
 - b. Final Approach for Regulating Multi-Source Leachate
 - c. Multi-Source Leachate That Exhibits a Characteristic of Hazardous Waste
 - d. Multi-Source Leachate Containing Dioxins and Furans
 - e. Status of Multi-source Leachate that is Mixed with Other Prohibited Wastes
- III.A.7. Applicability of Treatment Standards to Soil and Debris
- III.A.8. Radioactive Mixed Waste
 - a. Characterization and Industries Affected
 - b. Applicable Technologies
 - c. Determination of BDAT for Certain Mixed Wastes
- III.A.9. Alternate Treatment Standards for Lab Packs
 - B. Capacity Determinations
 1. Determination of Alternative Capacity and Effective Dates for Surface Land-Disposed Wastes for which Treatment Standards are Proposed
 - a. Total Quantity of Land-Disposed Wastes
 - b. Required Alternative Capacity for Surface Land-Disposed Wastes
 - c. Capacity Currently Available and Effective Dates
 2. Contaminated Soil and Debris Capacity Variance
 3. Capacity Determination for Underground Injected Wastes
 - C. Ninety-Day Capacity Variance for Third Third Wastes
 - D. Applicability of Land Disposal Restrictions
 1. Introduction
 2. Legal Authority Over Characteristic Wastes
 - a. Introduction
 - b. General Standard for Agency Construction of Statutes
 - c. Scope of Agency Authority for Treatment Requirements
 - d. Agency Framework for Addressing Treatment Standards for Characteristic Wastes and Integrating Them with Other Regulatory Programs
 3. Treatment Levels
 - a. Environmental Considerations
 - (1) Toxic Wastewaters
 - (2) Toxic Nonwastewaters
 - (3) Other Characteristic Wastes
 - b. Regulatory Problems
 4. Methods of Treatment
 - a. Environmental Considerations
 - b. Regulatory Problems
 5. General Dilution Prohibition
 - a. Environmental Considerations
 - b. Regulatory Problems
 6. Exemption to Dilution Prohibition for Characteristic Wastes Treated for Purposes of Certain Clean Water Act Programs
 - a. Introduction

- b. Environmental Considerations
- c. Regulatory Problems
- 7. Exemption for LDR Prohibitions for Characteristic Wastes Disposed Below Characteristic Levels in Wells Regulated Under the Safe Drinking Water Act
 - a. Introduction
 - b. Environmental Considerations
 - c. Regulatory Problems
- E. Implementation of Requirements for Characteristic Wastes
 - 1. Overlap of Treatment Standards for Listed Wastes that also Exhibit a Characteristic
 - 2. Revisions to Waste Identification Requirements
 - 3. Wastes Subject to a Capacity Variance
 - 4. Use of *TCLP v. EP* Analytical Methods for Compliance
 - 5. Newly Identified TC Wastes
 - 6. Further Principles Governing Applicability
 - a. Other Statutory Exemptions or Exclusions
 - b. Restricted Wastes Versus Prohibited Wastes
 - c. Changes in Treatability Groups
- F. Amended Tracking System for Characteristic Prohibited Wastes
- G. The Dilution Prohibition as it Applies to Centralized Treatment
- H. Applicability of Today's Final Rule to Mineral Processing Wastes
- I. Generator Notification Requirements
- J. Waste Analysis Plans and Treatment/Disposal Facility Testing Requirements
- K. Testing of Wastes Treated in 90-Day Tanks or Containers
- L. Clarification of "P" and "U" Solid Wastes
- M. The Storage Prohibition
- N. Case-By-Case Extensions
- O. Applicability of California List Prohibitions After May 8, 1990
- IV. State Authority
 - A. Applicability of Rules in Authorized States
 - B. Effect on State Authorizations
 - C. State Implementation
- V. Effect of the Land Disposal Restrictions Program on Other Environmental Programs
 - A. Discharges Regulated Under the Clean Water Act
 - B. Discharges Regulated Under the Marine Protection, Research, and Sanctuaries Act
 - C. Wellhead Protection Regulated Under the Safe Drinking Water Act
 - D. Air Emissions Regulated Under the Clean Air Act (CAA)
 - E. Clean-Up Actions Regulated Under the Comprehensive Environmental Response, Compensation, and Liability Act

- F. Applicability of Treatment Standards to Wastes from Pesticides Regulated Under the Federal Insecticide, Fungicide, and Rodenticide Act
- G. Regulatory Overlap of Polychlorinated Biphenyls (PCBs) Under the Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act
- VI. Regulatory Requirements
 - A. Regulatory Impact Analysis—Surface Disposed Wastes
 - 1. Overview of Affected Wastes, Facilities, and Management
 - a. Quantity of Affected Waste
 - b. Affected Facilities
 - c. Waste Management Practices
 - 2. Benefits of the Final Rule
 - a. Human Health Benefits
 - b. Safety Benefits
 - c. Environmental Benefits
 - 3. Costs
 - 4. Economic Impacts
 - B. Regulatory Flexibility Analysis—Surface Disposed Wastes
 - C. Regulatory Impact Analysis—Underground Injected Wastes
 - D. Regulatory Flexibility Analysis—Underground Injected Wastes
 - E. Paperwork Reduction Act
 - F. Review of Supporting Documents

I. Background

A. Summary of the Hazardous and Solid Waste Amendments of 1984 and the Land Disposal Restrictions Framework

1. Statutory Requirements

The Hazardous and Solid Waste Amendments (HSWA), enacted on November 8, 1984, prohibit the land disposal of hazardous wastes: Specifically, the amendments specify dates when particular groups of hazardous wastes are prohibited from land disposal unless " * * * it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous" (RCRA sections 3004(d)(1), (e)(1), (g)(5); 42 U.S.C. 6924(d)(1), (e)(1), (g)(5)).

The amendments also require the Agency to set " * * * levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (RCRA section 3004(m)(1), 42 U.S.C. 6924(m)(1)). Wastes that meet treatment standards established by EPA are not prohibited and may be land disposed. In addition, a hazardous waste that does not meet the treatment standard may be land disposed provided the "no migration" demonstration specified in RCRA

sections 3004(d)(1), (e)(1) and (g)(5) is accepted by EPA.

For the purposes of the restrictions, HSWA defines land disposal " * * * to include, but not be limited to, any placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave" (RCRA section 3004(k), 42 U.S.C. 6924(k)).

The land disposal restrictions are effective when promulgated unless the Administrator grants a national capacity variance from the otherwise-applicable date and establishes a different date (not to exceed two years beyond the statutory deadline) based on " * * * the earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available" (RCRA section 3004(h)(2), 42 U.S.C. 6924(h)(2)). The Administrator may also grant a case-by-case extension of the effective date for up to one year, renewable once for up to one additional year, when an applicant successfully makes certain demonstrations (RCRA section 3004(h)(3), 42 U.S.C. 6924(h)(3)). A case-by-case extension can be granted whether or not a national capacity variance has been granted.

The statute also allows treatment of hazardous wastes in surface impoundments that meet certain minimum technological requirements (or certain exceptions thereto). Treatment in surface impoundments is permissible provided the treatment residues that do not meet the treatment standard(s) (or applicable statutory prohibition levels) are " * * * removed for subsequent management within one year of the entry of the waste into the surface impoundment" (RCRA section 3005(j)(11)(B), 42 U.S.C. 6925(j)(11)(B)).

In addition to prohibiting the land disposal of hazardous wastes, Congress prohibited storage of any waste which is prohibited from land disposal unless " * * * such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal" (RCRA section 3004(j), 42 U.S.C. 6924(j)).

2. Applicability to Injected Wastes

As noted above, disposal of hazardous wastes in injection wells is subject to the provisions of HSWA. The injection of hazardous wastes is controlled by two statutes, RCRA and the Safe Drinking Water Act (SDWA). The regulations governing injection of these wastes have been codified along

with other regulations of the Underground Injection Control (UIC) program under the SDWA in parts 124, 144, 145, 146, 147, and 148 of the Code of Federal Regulations.

3. Solvents and Dioxins

Effective November 8, 1986, HSWA prohibited land disposal (except by deep well injection) of solvent-containing hazardous wastes numbered F001-F005 listed in 40 CFR 261.31 and dioxin-containing hazardous wastes numbered F020-F023 and F026-F028 (RCRA sections 3004 (e)(1), (e)(2), 42 U.S.C. 6924 (e)(1), (e)(2)). In response to this mandate, EPA promulgated a final rule (51 FR 40572) on November 7, 1986, implementing RCRA section 3004(e). This rule established the general framework for the land disposal restrictions program, and established treatment standards for the F001-F005 solvent wastes and F020-F023 and F026-F028 dioxin-containing wastes.

4. California List Wastes

Effective July 8, 1987, the statute prohibited further land disposal (except by deep well injection) of the following listed or identified wastes (RCRA section 3001) set out in RCRA sections 3004 (d)(1) and (d)(2) (42 U.S.C. 6924 (d)(1), (d)(2)):

(A) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l.

(B) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to those specified below:

(i) Arsenic and/or compounds (as As) 500 mg/l;

(ii) Cadmium and/or compounds (as Cd) 100 mg/l

(iii) Chromium (VI and/or compounds (as Cr VI)) 500 mg/l;

(iv) Lead and/or compounds (as Pb) 500 mg/l;

(v) Mercury and/or compounds (as Hg) 20 mg/l;

(vi) Nickel and/or compounds (as Ni) 134 mg/l;

(vii) Selenium and/or compounds (as Se) 100 mg/l; and

(viii) Thallium and/or compounds (as Tl) 130 mg/l.

(C) Liquid hazardous waste having a pH less than or equal to two (2.0).

(D) Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm.

(E) Hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg.

On July 8, 1987, EPA promulgated a final rule (52 FR 25760) implementing RCRA section 3004(d). This rule established treatment standards for California list wastes containing PCBs and certain HOCs, and codified the statutory prohibition on liquid corrosive wastes. The statutory prohibition also is in effect for the California list wastes containing free cyanides, metals, and the California list dilute HOC wastewaters.

5. Disposal of Solvents, Dioxins and California List Wastes in Injection Wells

Section 3004(f) of RCRA required that the Administrator prohibit the disposal of solvents, dioxins and California list wastes in deep wells, effective August 8, 1988, unless such disposal had been determined to be protective of human health and the environment for as long as the wastes remained hazardous, or unless a variance had been granted under RCRA section 3004(h). On July 26, 1988, the Agency established effective dates for the prohibition on injection of solvents and dioxin wastes (53 FR 28118). In another regulation, effective August 6, 1988 and published August 16, 1988 in the Federal Register, the Agency established effective dates for the prohibition on injection of California list wastes (53 FR 30908).

6. Scheduled Wastes

HSWA required the Agency to prepare a schedule by November 8, 1986, for restricting the land disposal of all hazardous wastes, including underground injected wastes, listed or identified as of November 8, 1984, in 40 CFR part 261, excluding solvent- and dioxin-containing wastes and California list wastes covered under the schedule set by Congress. The schedule, based on a ranking of the listed wastes that considers their intrinsic hazard and their volume, ensures that prohibitions and treatment standards are promulgated first for high volume hazardous wastes with high intrinsic hazard before standards are set for low volume wastes with low intrinsic hazard. The statute further requires that these determinations be made by the following deadlines:

(A) At least one-third of all listed hazardous wastes by August 8, 1988;

(B) At least two-thirds of all listed hazardous wastes by June 8, 1989; and

(C) All remaining listed hazardous wastes and all hazardous wastes identified as of November 8, 1984, by one or more of the characteristics

defined in 40 CFR part 261 by May 8, 1990.

Furthermore, if EPA failed to set a treatment standard by the statutory deadline for any hazardous waste in the first or second third of the schedule, should such waste be disposed in a landfill or surface impoundment, that unit must meet the minimum technological requirements specified in RCRA section 3004(o) for new facilities (RCRA section 3004(g)(6)). (Note: In the August 17, 1988 First Third final rule, EPA interpreted the term "such facility" in section 3004(g)(6) to refer to the individual surface impoundment or landfill unit.) In addition, prior to disposal in such unit, the generator was required to certify to the Administrator that he had investigated the availability of treatment capacity and had determined that disposal in such landfill or surface impoundment was the only practical alternative to treatment currently available to the generator. This restriction on the use of landfills and surface impoundments that met the minimum technological requirements applied until EPA set a treatment standard for the waste, or until May 8, 1990, whichever was sooner. These requirements were collectively referred to as the soft hammer provisions. Other forms of land disposal, including underground injection, were not similarly restricted, and could continue to be used for disposal of untreated wastes until EPA promulgated a treatment standard, or until May 8, 1990, whichever was sooner.

If the Agency fails to set a treatment standard for any scheduled hazardous waste by May 8, 1990, the soft hammer provisions are superseded by the hard hammer. (Note: It is EPA's interpretation that the hard hammer applies to characteristic wastes. See 54 FR 48409.) These wastes are automatically prohibited from all forms of disposal on May 8, 1990, unless the wastes are the subject of a successful "no migration" demonstration (RCRA section 3004(g)(5), 42 U.S.C. 6924(g)(5)). (Note: RCRA section 3004(h)(2) permits extensions of the effective date such as national capacity extensions or case-by-case extensions beyond the hard hammer date.)

On May 28, 1986, EPA promulgated the schedule for setting treatment standards for the listed and identified hazardous wastes (51 FR 19300). All wastes that are identified as hazardous by characteristic are scheduled in the Third Third. This schedule is incorporated in 40 CFR 268.10, 268.11 and 268.12.

For the scheduled wastes, the statute does not provide different deadlines for restriction of wastes that are injected underground versus disposed of in surface land units. The Agency did, however, propose and promulgate First Third regulations for surface disposed and injected wastes on separate dates. The First Third final rule, promulgated on August 8, 1988, and published in the Federal Register on August 17, 1988 (53 FR 31138), set out the conditions under which wastes included in the first one-third of the schedule of restricted hazardous wastes may continue to be land disposed (other than by injection). Final regulations prohibiting deep well injection of certain First Third wastes were published on August 16, 1988 (53 FR 30908) and on June 14, 1989 (54 FR 25416).

The Second Third final rule, promulgated on June 8, 1989, and published in the Federal Register on June 23, 1989, (54 FR 26594) established treatment standards and prohibition effective dates for land disposal and underground injection for certain wastes. In addition, EPA promulgated treatment standards and effective dates for certain First Third soft hammer wastes, Third Third wastes and newly listed wastes.

Today's notice promulgates the conditions under which Third Third wastes may continue to be land disposed. It also promulgates treatment standards for some First and Second Third restricted hazardous wastes, five newly listed wastes (*i.e.*, listed after November 8, 1984), promulgates alternate treatment standards for lab packs, and revises the treatment standards for petroleum refining wastes (EPA Hazardous Waste No. K048-K052). This rule applies to all forms of land disposal, including deep well injection, and finalizes the November 22, 1989 proposed rulemaking (54 FR 48372).

7. Newly Identified and Listed Wastes

RCRA requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed in 40 CFR part 261 after November 8, 1984, within six months of the date of identification or listing (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for an automatic prohibition of the land disposal of such wastes if EPA fails to meet this deadline. Today's notice promulgates treatment standards for five newly listed wastes (see section III.A).

B. Regulatory Framework

The November 7, 1986, final rule (51 FR 40572) established the regulatory

framework for implementing the land disposal restrictions program. Some changes to the framework were made in the July 8, 1987, final rule (52 FR 25760) that prohibited the land disposal of California list wastes, and in the August 17, 1988, First Third final rule. Some additional changes are also being promulgated in today's final rule, particularly with respect to characteristic wastes. Regulations specifying how the framework applies to injected wastes were promulgated July 26, 1988 (53 FR 28118). The following discussion summarizes the major provisions of the land disposal restrictions framework.

1. Applicability

The land disposal restrictions apply prospectively to the affected wastes. In other words, hazardous wastes land disposed after the applicable effective dates are subject to the restrictions, but wastes land disposed prior to the effective dates are not required to be removed or exhumed for treatment (51 FR 40577). However, if these wastes or contaminated media are excavated and removed, these wastes are subject to the land disposal restrictions. Similarly, only surface impoundments receiving restricted wastes after the applicable deadline are subject to the restrictions on treatment in surface impoundments contained in 40 CFR 268.4 and RCRA section 3005(j)(11). Also, the storage prohibition applies to wastes placed in storage after the effective dates.

The provisions of the land disposal restrictions apply to wastes produced by generators of greater than 1,000 kilograms of hazardous waste per calendar month, as well as small quantity generators of 100 to 1,000 kilograms of hazardous waste (or greater than 1 kilogram of acute hazardous waste) in a calendar month. However, wastes produced by small quantity generators of less than 100 kilograms of hazardous waste (or less than 1 kilogram of acute hazardous waste) per calendar month are conditionally exempt from RCRA, including the land disposal restrictions (see 40 CFR 268.1).

The land disposal restrictions apply to all facilities subject to RCRA, including both interim status and permitted facilities. The requirements of the land disposal restrictions program supersede 40 CFR 270.4(a), which currently provides that compliance with a RCRA permit constitutes compliance with subtitle C of RCRA. Therefore, even though the requirements may not be specified in the permit conditions, all permitted facilities are subject to the restrictions. Moreover, the land disposal

restrictions are material conditions or requirements of the interim status standards that may be enforced in either a criminal or civil action. Although EPA attempted to clarify this point in the June 4, 1987 correction notice (54 FR 21010, item #1, and 21016, item #27), the Agency's correction has been viewed as imprecise in that it characterized part 265 as requirements of persons managing wastes pursuant to part 268. Although the Agency believes that this point is already established, EPA is clarifying today that the part 268 provisions should be characterized as material conditions or requirements of part 265. Therefore, 265.1(e) is modified accordingly.

2. Treatment Standards

By each statutory deadline, the Agency must establish the applicable treatment standards under 40 CFR part 268 subpart D for each restricted hazardous waste (RCRA section 3004(m)(1)). After the applicable effective dates, restricted wastes may be land disposed only if they meet the treatment standards, or it has been demonstrated to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous. If EPA does not promulgate treatment standards by the statutory deadlines, such wastes are prohibited from land disposal (with the exception of First and Second Third scheduled hazardous wastes, which were subject to the soft hammer provisions of RCRA section 3004(g)(6) until May 8, 1990).

At present, a treatment standard is based on the performance of the best demonstrated available technology (BDAT) to treat the waste (51 FR 40578). EPA may establish treatment standards either as specific technologies or as performance standards based on the performance of BDAT. Compliance with performance standards may be monitored by measuring the concentration level of the hazardous constituents (or in some circumstances, indicator pollutants) in the waste, treatment residual, or in the extract of the waste or treatment residual. When treatment standards are set as performance levels, the regulated community may use any technology not otherwise prohibited (such as impermissible dilution) to treat the waste to meet the treatment standard. Thus, treatment is not limited to only those technologies considered in determining the treatment standard. However, when treatment standards are

expressed as specific technologies, such technologies must be employed.

3. National Capacity Variances From the Effective Dates

The Agency has the authority to grant national capacity variances from the statutory effective dates, not to exceed two years, if there is insufficient alternative protective treatment, recovery or disposal capacity for the wastes (RCRA section 3004(h)(2)). To make capacity determinations, EPA compares the nationally available alternative treatment, recovery, or protective disposal capacity at permitted and interim status facilities which will be in operation by the effective date with the quantity of restricted waste generated. If there is a significant shortage of such capacity nationwide, EPA will establish an alternative effective date based on the earliest date such capacity will be available. During the period such a capacity variance is in place, if the waste is disposed in a landfill or surface impoundment, such disposal may only be in a unit meeting the minimum technological requirements of RCRA section 3004(o) (53 FR 31186 and 40 CFR 268.5(h)(2)). It should be noted, however, that if a waste subject to a national capacity variance is treated to meet the applicable treatment standards, the land disposal restrictions allow such waste to be disposed in a subtitle C landfill or surface impoundment regardless of whether the unit meets minimum technological requirements. Note, however, that independent RCRA provisions may require such wastes to be disposed in units meeting minimum technological requirement.

4. Case-By-Case Extensions of the Effective Date

The Agency will consider granting up to a one-year extension (renewable only once) of a prohibition effective date on a case-by-case basis. The requirements outlined in 40 CFR 268.5 must be satisfied, including a demonstration that adequate alternative treatment, recovery, or disposal capacity for the petitioner's waste cannot reasonably be made available by the effective date due to circumstances beyond the applicant's control, and that the petitioner has entered into a binding contractual commitment to construct or otherwise provide such capacity. If a waste is placed in a surface impoundment or landfill during the period that such a case-by-case extension is in place, such unit must meet the minimum technological requirements of RCRA section 3004(o).

5. "No Migration" Exemptions From the Restrictions

EPA has the authority to allow the land disposal of a restricted hazardous waste which does not meet the treatment standard provided that the petitioner demonstrates that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the waste remains hazardous (40 CFR 268.6). If a petition is granted under 40 CFR part 268, it can remain in effect no longer than ten years for disposal in interim status land disposal units, and for no longer than the term of the RCRA permit for disposal in permitted units (40 CFR 268.6(h)).

However, for injected wastes, 40 CFR 148.20 (promulgated on July 26, 1988, see 53 FR 28118) outlines in detail the Agency's requirements for "no migration" petitions for hazardous waste injection facilities. Briefly, a petitioner is required, through modeling, to demonstrate that there is no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. This demonstration can be made in one of two ways: the use of flow and transport models to show that injected fluids will not migrate vertically out of the injection zone for a period of 10,000 years; or, use of geochemical modeling to show that the waste is transformed so it will become nonhazardous at the edge of the injection zone. Also, a showing must be made that the well was in compliance with the substantive area of review, corrective action, and mechanical integrity requirements of part 146.

6. Variances From the Treatment Standards

EPA established the variance from the treatment standard to account for those wastes that cannot be treated to meet the applicable treatment standards, even if well-designed and well-operated BDAT treatment systems are used, or if treatment technologies are inappropriate for the waste (40 CFR 268.44). This variance is somewhat analogous to the fundamentally different factors variance in the Agency's Clean Water Act effluent limitations guidelines regulations. Among other things, petitioners must demonstrate that the waste is significantly different from the wastes evaluated by EPA in establishing the treatment standard, and the waste cannot be treated to the level or by the method specified by the treatment standard, or that such standard or method is inappropriate for the waste (51 FR 40605). This variance procedure

can result in the establishment of a new treatability group and corresponding treatment standard that applies to all wastes meeting the criteria of the new waste treatability group. A site-specific variance from the treatment standard may also be granted administratively (without rulemaking), but the variance has no generic applicability to other wastes at other sites (53 FR 31199).

7. Exemption for Treatment in Surface Impoundments

Wastes that would otherwise be prohibited from one or more methods of land disposal may be treated in a surface impoundment that meets certain technological requirements (40 CFR 268.4(a)(3)) as long as treatment residuals that do not meet the applicable treatment standard (or statutory prohibition levels where no treatment standards are established) are removed for subsequent management within one year of entry into the impoundment and the wastes are not placed into any other surface impoundment. The owner or operator of such an impoundment must certify to the Regional Administrator that the technical requirements have been met and must also submit a copy of the waste analysis plan to the Regional Administrator that shows the waste analysis plan has been modified to provide for testing of treatment residuals in accordance with § 268.4 requirements.

8. Storage of Prohibited Wastes

Storage of prohibited wastes in tanks and containers is prohibited except where storage is solely for the purpose of accumulating sufficient quantities of wastes to facilitate proper treatment, recovery, or disposal (40 CFR 268.50). A facility that stores a prohibited waste for more than one year bears the burden of proof that such storage is solely for this purpose. *Id.* EPA bears the burden of proof if the Agency believes that storage of a restricted waste by a facility for up to one year is not for the purpose of accumulating sufficient quantities to facilitate proper treatment, recovery, or disposal. *Id.*

9. The "Soft Hammer" Provisions

First and Second Third wastes for which EPA did not promulgate treatment standards by their respective effective dates could continue to be disposed of in landfill and surface impoundment units until May 8, 1990. Such land disposal could occur only if certain demonstrations were made, and provided technology requirements of RCRA section 3004(o) (see 53 FR 31181, August 17, 1988). Other types of land

disposal were not similarly restricted (e.g., underground injection). On May 8, 1990, wastes for which EPA has not established treatment standards are prohibited from land disposal (including underground injection). This prohibition is referred to as the hard hammer. Effective May 8, 1990, therefore, the soft hammer provisions are no longer in effect.

C. Pollution Prevention (Waste Minimization) Benefits

EPA's progress over the years in improving environmental quality through its media-specific pollution control programs has been substantial. Over the past two decades, standard industrial practice for pollution control concentrated to a large extent on "end of pipe" treatment or land disposal of hazardous and non-hazardous wastes. However, EPA realizes that there are limits to how much environmental improvement can be achieved under these programs which emphasize management after pollutants have been generated. EPA believes that reducing or eliminating discharges and/or emissions to the environment through the implementation of cost-effective source reduction and environmentally sound recycling practices can provide additional environmental improvements. Many corporations are seeking to incorporate waste minimization planning programs into their strategic planning to lower emission volumes and toxicities as a function of actual plant processes through either recycling or source reduction.

Under sections 3002(b) and 3005(h), hazardous waste generators are required to certify that they have a program in place to reduce the volume or quantity and toxicity of hazardous waste to the degree determined by the generator to be economically practicable. EPA encourages hazardous waste generators to pursue source reduction and environmentally sound recycling wherever possible to reduce the need for and costs of subsequent treatment, storage and disposal. In many cases, there may be economic as well as environmental benefits for companies that pursue pollution prevention options. Waste minimization planning programs have been suggested by EPA and mandated by some state governments. Several EPA documents on waste minimization are available to the public (Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program; Notice and Request for Comment, *Federal Register* Vol. 54, No. 111, June 12, 1989; The EPA Manual for Waste Minimization Opportunity Assessments, EPA 600/2-

88/025, April 1988). Several state governments have already enacted waste minimization legislation (Massachusetts Toxics Use Reduction Act of 1989; Oregon Toxics Use Reduction and Hazardous Waste Reduction Act, House Bill 3515, July 2, 1989). About six other states have legislation pending that will mandate some type of waste minimization program and/or facility planning. About 25 other states offer some type of technical assistance to companies that seek alternatives to treatment, storage and disposal of waste.

Many companies have already implemented waste minimization programs. Most of these waste minimization programs have elements in common. The most successful programs have incorporated waste minimization into company policy. It is advantageous for top corporate management and/or individual plant management to provide support for assessing and understanding the economic and regulatory benefits of pursuing waste minimization versus treatment, storage and disposal options. Typically, management supports assessment of the true costs associated with waste production, including the costs of compliance, loss of production potential, and potential liability.

Program success generally requires that each individual, regardless of status or rank, be encouraged to make a contribution to minimize waste. Collective and individual pay incentives can be provided for productivity improvements. Waste minimization circles can be established using self-managing teams chosen from a broad spectrum of production and management personnel. These management teams can be provided with all information necessary to adequately assess waste minimization opportunities. Additionally, it is very beneficial for production personnel to be trained and retrained in optimum use of plant equipment and raw materials.

Some companies set explicitly defined objectives for the reduction of waste volume and toxicity that are achievable within a reasonable time frame. Typically, the objectives should not exceed the ability of the operations personnel to support and maintain them.

In all cases, it is necessary to determine the causes of waste generation. This can be done for individual processes or for several combined processes if the plant process waste streams are particularly complex. Many corporations have implemented this type of "waste minimization assessment" as part of an overall waste minimization program.

For a waste minimization assessment, it is generally necessary to accurately characterize the type of waste generated by volume, toxicity and source(s). Most companies track their waste generation by a variety of means and then normalize the results to account for variations in production rate(s). One State (Massachusetts Toxics Use Reduction Act) requires each generator of a toxic or hazardous substance to track the rate of waste generation and release/transfer per unit of product. The EPA Manual for Waste Minimization Opportunity Assessments aids in tracking waste streams which can be quite difficult to analyze in complex plant operations, where many processes discharge into one waste stream.

Next, individual processes can be examined to search for opportunities for waste reduction such as recycling, substituting less hazardous raw materials, modifying existing equipment, novel technologies, capital improvements, and increasing process efficiency. EPA and State funded technical assistance programs (e.g., Minnesota Technical Assistance Program—MnTAP, California Waste Minimization Clearinghouse, U.S. EPA Pollution Prevention Information Clearinghouse) are becoming increasingly available to identify some of these opportunities. Information is also available through industry trade associations, professional consultants specializing in waste minimization, technical literature, and chemical and equipment vendors.

It is important to realize that waste minimization, especially when incorporated into company policy, is a continual process. Ideally, a waste minimization program becomes an integral part of the company strategic plan to increase manufacturing productivity.

D. Summary of the Proposed Rule

On November 22, 1989, the Agency proposed treatment standards and prohibition effective dates for approximately 350 hazardous wastes, including hazardous wastes listed in 40 CFR 268.12 (Third Third wastes), certain wastes listed in 40 CFR 268.10 and 268.11 (First and Second Third wastes), five newly listed wastes, and wastes exhibiting a characteristic (i.e., ignitability, corrosivity, reactivity, and EP toxicity) as described in 40 CFR 261.21-261.24. In addition, the Agency proposed one modification to the land disposal restrictions regulatory framework and several interpretations of general applicability. Furthermore, the Agency proposed to revise the

treatment standards for wastes from the petroleum refining industry, EPA Hazardous Waste Nos. K048-K052. Today's rulemaking finalizes the November 22, 1989 proposal.

1. Characteristic Wastes

In the November 22, 1989 notice, EPA proposed two alternatives: (1) Set the treatment standards at the characteristic level for all of the characteristic wastes; or (2) set treatment standards at the lowest level which data indicated could be consistently achieved, some of which were below the characteristic levels, and require these standards to be met before the waste could be land disposed (even though the waste was no longer defined as hazardous). This second alternative was based on a reading of the statute that the land disposal prohibitions can attach at the point a waste becomes hazardous, and that the section 3004(m) requirements to treat to a level (or by a method) that minimizes threats to human health and the environment can attach at that point. Waste that is hazardous at the point of generation and destined for land disposal remains subject to the requirements of section 3004(m) regardless of its concentration at any subsequent time. See 54 FR 48490.

In addition, if a waste is identified as carrying more than one characteristic, it would need to meet each treatment standard or utilize each method for those characteristics. If a listed waste could also be identified for one or more characteristic waste codes, EPA proposed that the waste would have to be treated to meet the treatment standards for each of the waste codes. See 54 FR 48491.

2. Determining When Dilution is Permissible

The Agency also clarified the dilution rules as they apply to centralized treatment in the proposed rule. In particular, the Agency indicated that aggregation of wastes for the purpose of treatment in a centralized treatment system must, at a minimum, result in "actual reduction in the toxicity or mobility of at least one BDAT constituent in each prohibited waste that is centrally treated to the extent that these constituents are present in initial concentrations that exceed the treatment standard for that prohibited waste." See 54 FR 48494.

3. Other Impermissible Dilution Issues

The Agency proposed that: (1) Impermissible dilution (as previously defined for listed wastes) of a waste that exhibits a characteristic be prohibited; and (2) impermissible

dilution of a listed waste to achieve a delisting level be prohibited. See 54 FR 48495.

4. Treatment Standards for Multi-Source Leachate

On February 27, 1989, the Agency amended the schedule for prohibiting hazardous wastes from land disposal by placing multi-source leachate derived from listed spent solvents and scheduled hazardous wastes (i.e., First, Second, and Third Third) in the Third Third (see 54 FR 8264). In the Third Third proposed rule, the Agency proposed two options for the development of treatment standards for multi-source leachate: (1) Continued application of the treatment standards developed for the underlying wastes from which the leachate is derived; or (2) establishment of one set of wastewater standards and one set of nonwastewater standards which would apply to all multi-source leachate. See 54 FR 48461.

5. Alternative Treatment Standards for Lab Packs

The Agency proposed an approach for lab packs that establishes alternate treatment standards expressed as technologies for those lab packs meeting certain criteria. In particular, EPA proposed incineration as the alternative treatment standard for lab packs containing certain characteristic waste and listed organic hazardous waste codes only, and stabilization for lab packs containing certain EP toxic metals only. The proposed approach was intended to provide administrative relief and simplify the management system for lab pack wastes, because the treatment residue for these wastes would not need to be analyzed for compliance with individual treatment standards. See 54 FR 48470.

6. Applicability to Mineral Processing Wastes

On September 1, 1989 (54 FR 36592), EPA narrowed the scope of the RCRA exclusion for solid wastes from the extraction, beneficiation, and processing of ores and minerals, limiting this exclusion to 25 high volume/low toxicity wastes. On January 23, 1990 (55 FR 23227), the Agency removed five additional wastes from the exclusion based upon additional volume and/or hazard data. In the Third Third proposal, EPA proposed to consider the wastes that were removed from the exclusion to be "newly identified" for the purposes of these provisions, and further proposed not to apply the treatment standards for characteristic wastes to such wastes. Therefore, these wastes would not be subject to the

BDAT treatment standards for characteristic wastes. See 54 FR 48492.

7. Clarification of "P" and "U" Solid Wastes

The Agency proposed to modify the existing language of 40 CFR 261.33 to include residues of 40 CFR 261.33(f) materials remaining in containers and in inner liners, in addition to 40 CFR 261.33(e) residues already included in the scope of the commercial chemical product listings.

EPA also proposed that soils and spill residues contaminated with 40 CFR 261.33(d) wastes be considered to be solid wastes unless they are recycled within 90 days of the spill, regardless of intent to recycle in the future. See 54 FR 48493.

8. Treatment/Disposal Facility Testing Requirements

EPA proposed revisions to the facility testing requirements contained in 40 CFR 264.13(a), 265.13(a), 268.7(b), and 268.7(c). Specifically, the Agency proposed two approaches to specify under what circumstances EPA may require the owner/operator of a treatment or disposal facility to analyze a representative sample of a waste: (1) State that the generator may supply waste analysis information only if an EPA approved waste analysis plan allows the generator to do so; or (2) state that the owner/operator is required to test the waste a minimum of once a year, and that the Regional Administrator may require more frequent testing through the waste analysis plan on a site-specific basis. See 54 FR 48497.

9. Testing of Wastes Treated in 90-Day Tanks or Containers

Under 40 CFR 268.7(b), treatment facilities treating prohibited hazardous wastes must test the treatment residues that they generate at a frequency determined by their waste analysis plan in order to ascertain compliance with the applicable treatment standards. There is a regulatory gap, however, with respect to treatment of prohibited wastes that is conducted in 90-day tanks or containers regulated under § 262.34. This is because such tanks or containers are not subject to a waste analysis plan requirement. To close this regulatory gap, EPA proposed that persons treating prohibited wastes in such tanks and containers must prepare a plan justifying the frequency of testing based on a detailed analysis of a representative sample of the prohibited waste. The plan must contain all information necessary to treat the waste

in accordance with part 268, and must be retained as a facility record. See 54 FR 48497.

10. Generator Notification Requirements

EPA proposed to clarify 40 CFR 268.7 by allowing generators to reference the treatment standards in 40 CFR 268.41, 265.42, or 265.43. Such a reference must include the EPA Hazardous Waste No., the treatability group(s) of the waste(s), and the CFR section where the treatment standards appear. The Agency also proposed to amend 40 CFR 268.7 to allow a one-time notification and certification requirement for small quantity generator (SQG) shipments subject to tolling agreements. See 54 FR 48496.

11. Storage Prohibition

Section 3004(j) of RCRA provides that storage of prohibited hazardous waste is itself prohibited " * * * unless such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal" (40 CFR 268.50(a)(2) and 51 FR 1709). The Agency proposed an interpretation of this section such that the storage prohibition does not apply where storage precedes legitimate, protective treatment, or recovery. See 54 FR 48496.

12. Applicability of California List Prohibitions After May 8, 1990

The Agency outlined three situations where the California List is still applicable: (1) Liquid hazardous wastes that contain over 50 ppm PCBs, where PCBs are not a regulated constituent in the treatment standards; (2) HOC-containing wastes identified as hazardous by a characteristic property that does not contain HOCs; and (3) liquid hazardous wastes that exhibit a characteristic and also contain over 134 mg/1 of nickel and/or 130 mg/1 of thallium.

The California list regulatory and statutory prohibitions are superseded by more specific prohibitions and treatment standards. However, EPA solicited comment on a national capacity variance (to May 8, 1992) for injected corrosive wastes, but did not propose a capacity variance for corrosive wastes disposed of in surface impoundments. The legal basis for this approach was that without it, in the case of a waste which received a national capacity variance under the California list rule, EPA would effectively grant a national capacity variance for a California list waste for longer than two years. EPA also proposed to modify the language of 40 CFR 268.32(h) to ensure that there are

no periods of time in which neither the California list or superseding HOC standards would operate. See 54 FR 48498.

II. Summary of Today's Final Rule

Today's final rule is the fifth rulemaking required under the land disposal restrictions program as outlined in the 1984 Hazardous and Solid Waste Amendments to RCRA. The Agency is required to promulgate regulations establishing conditions under which the Third Third wastes included in 40 CFR 268.12 may be land disposed by the statutory deadline of May 8, 1990.

A. Applicability of Today's Final Rule

The Agency today is promulgating treatment standards and effective dates for all Third Third wastes, including wastes exhibiting a characteristic as described in 40 CFR 261.21-261.24 (see sections III.A.3 and III.A.4). The Agency also is promulgating treatment standards and effective dates for all First and Second Third soft hammer wastes (previously subject to the requirements of 40 CFR 268.8).

In previous rulemakings, the Agency amended the schedule so that certain First and Second Third wastewater residues, derived-from wastes (i.e., multi-source leachate), and mixtures of scheduled hazardous/radioactive wastes were moved to the Third Third of the schedule (see 53 FR 31214, § 268.12 (b), (c), and (d); 54 FR 8264; and 54 FR 26848, § 268.12 (b) and (c)). The Agency today is promulgating treatment standards for these wastes. In addition, the Agency is promulgating treatment standards for five newly listed wastes (i.e., wastes listed after enactment of the Hazardous and Solid Waste Amendments of 1984): four wastes that fall into the F002 and F005 (spent solvent) waste codes, and F025.

In the Second Third rulemaking, the Agency solicited comments, data, and specific suggestions regarding the regulation of lab packs. In today's rule, the Agency is promulgating alternate treatment standards expressed as specified technologies for lab packs meeting certain criteria.

1. Three-Month National Capacity Variance for Third Third Wastes

The Agency is granting a three-month national capacity variance for all wastes affected by this rule, based on the time required for the regulated community to make adjustments necessary to comply with the new regulations. The prohibitions on land disposal in this final rule, therefore, will be effective on August 8, 1990. During the period between May 8, 1990, and August 8,

1990, wastes (that do not meet the treatment standards) disposed in landfills or surface impoundments, must be disposed in units that meet the minimum technological requirements set out in 40 CFR 268.5(h)(2), and must comply with the California list prohibitions, where applicable. See 52 FR 25760, July 8, 1987. In addition, the recordkeeping requirements of 40 CFR 268.7 (a)(3) and (b)(6) apply to all Third Third wastes during the three-month national capacity variance. See section III.C of today's preamble for a discussion of this capacity variance.

2. Hazardous Waste Injection Wells Regulated Under 40 CFR Part 148

The Agency has, on occasion, proposed and promulgated regulations and effective dates for underground injected hazardous wastes covered under RCRA sections 3004 (f) and (g) separately from regulations addressing wastes disposed in surface facilities. EPA is addressing all methods of land disposal of wastes in today's rulemaking, including hazardous waste injection wells regulated jointly under the Safe Drinking Water Act (SDWA) and RCRA.

3. Remaining Scheduled Listed Hazardous Wastes

Today's final rule establishes treatment standards and effective dates for those listed hazardous wastes included in 40 CFR 268.10-268.12 for which treatment standards have not been promulgated to date. In section III.A, the Agency identifies the waste treatability groups by waste code and identifies the best demonstrated available technology (BDAT) for each. Treatment standards applicable to each treatability group are based on the performance levels achievable by the BDAT identified for each group. The Agency reiterates that any technology not otherwise prohibited (e.g., impermissible dilution) may be used to meet the concentration-based treatment standards.

In addition, EPA is re-scheduling wastes from the petroleum refining industry, K048-K052, to the Third Third, and promulgating revisions to existing treatment standards for these wastes. The Agency is also rescinding all existing treatment standards expressed as "no land disposal" for nonwastewaters. A detailed discussion of these revised treatment standards for these wastes may be found in section III.A.

4. Characteristic Hazardous Wastes

In today's final rule, EPA is promulgating treatment standards and effective dates for hazardous wastes that exhibit one or more of the following characteristics: Ignitibility, corrosivity, reactivity or EP toxicity (40 CFR 261.21-261.24). In the November 22, 1989 notice, the Agency proposed treatment standards based on the performance of best demonstrated available technology without regard to the characteristic level. The standards, however, were transferred from treatment of listed wastes, which after evaluating data submitted by commenters, proved unachievable for characteristic wastes. The Agency today is promulgating treatment standards for these wastes that have been revised to reflect data from treating characteristic wastes submitted during the comment period. These newly-submitted data show wide variability in the wastestreams. Today's final rule establishes treatment standards for the characteristic wastes in one of four forms: (1) A concentration level equal to or greater than the characteristic level for the EP toxic metals; (2) a specified treatment technology; (3) a treatment standard of "deactivation" to remove the characteristic, with guidance on technologies the Agency believes will remove the characteristics (see appendix VI to part 268); or (4) treatment to concentration levels below the characteristic level (typically where the standard can be based on a treatment technology that is not matrix-dependent, or the Agency has sufficient data to find achievability). In addition, the Agency believes that by specifying technologies for certain of the characteristic wastes (i.e., incineration of high-TOC ignitable nonwastewaters and EP toxic pesticide wastewaters), it is requiring treatment below the characteristic levels for wastes where such treatment is technically achievable. A detailed discussion of the treatment standards promulgated for the characteristic wastes is provided in sections III.A.2, III.A.3 and III.D of today's preamble.

5. Characteristic Wastes Regulated Under the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA) and RCRA

Today's final rule limits the applicability of certain provisions of the land disposal restrictions' framework to characteristic wastes subject to regulation under the Clean Water Act (i.e., discharges permitted under the NPDES or POTW pretreatment regulations), and to characteristic

wastes managed in systems which discharge to Class I underground injection wells subject to regulation under the Safe Drinking Water Act. First, the LDR dilution prohibition does not apply to characteristic wastes managed in NPDES or pretreatment systems and subsequently discharged under CWA regulations, *unless* a method of treatment is specified. Second, the LDR dilution prohibition does not apply to wastes disposed of in Class I underground injection wells. Third, where a specified technology is the treatment standard for a characteristic waste, the method need not be utilized if the waste is disposed of in a Class I injection well. Characteristic wastes that are exempt from the dilution prohibition and which are managed and disposed of on-site, are not subject to the full § 268.7 requirements for waste analysis and recordkeeping. The Agency believes that this action is necessary to successfully integrate RCRA and SDWA programs; the underlying rationale for these decisions is provided in section III.D of today's preamble.

6. Mineral Processing Wastes

On September 1, 1989 and January 23, 1990, EPA published final rules in the Federal Register (54 FR 36592 and 55 FR 2322, respectively) that removed a number of mineral processing wastes from the so-called "Bevill Exclusion." RCRA section 3001(b)(3)(A)(ii) excludes from the hazardous waste regulations, pending completion of studies by the Agency, solid wastes from the extraction, beneficiation, and processing of ores and metals.

All of these previously excluded mineral processing wastes that exhibit one or more of the characteristics of hazardous waste will be subject to the hazardous waste regulations when the final rules become effective March 1, 1990, and July 23, 1990.

EPA believes that these wastes are "newly identified" for the purposes of determining applicability of the land disposal prohibitions. Although technically the wastes are not being identified by a new characteristic, they are being brought into the subtitle C system after the date of enactment of HSWA on November 8, 1984. The Agency, therefore, is clarifying in today's final rule that these newly identified mineral processing wastes are *not* subject to the BDAT treatment standards promulgated today for characteristic hazardous wastes. A detailed discussion is provided in section III.H.

B. Implementation of Requirements for Characteristic Wastes

In today's final rule, the Agency is promulgating several new provisions, and revising existing regulations to implement the treatment standards for characteristic wastes.

1. Overlap of Standards for Listed Wastes That Also Exhibit a Characteristic

The Agency today is promulgating its proposed approach with respect to determining applicable treatment standards for wastes that carry more than one waste code. Specifically, wastes that carry more than one characteristic waste code must be treated to meet the treatment standard for each characteristic; listed wastes that also exhibit one or more hazardous characteristics must be treated to meet the treatment standard for each of the waste codes, unless the characteristic constituent or property is specifically addressed in the treatment standard for the listed waste. Finally, EPA is specifying that disposal of a waste that exhibits a characteristic at the point of disposal is prohibited unless the treatment standard for that characteristic component is above the characteristic level. See section III.E.1 for a more detailed discussion.

2. Revisions to Waste Identification Requirements

Section 262.11 of 40 CFR currently sets out an either/or scheme where, if the generator determines that a waste is listed, the generator does not need to determine whether the waste exhibits a characteristic. The Agency is amending § 262.11 to indicate that generators must determine whether listed wastes also exhibit characteristics of hazardous waste for purposes of compliance with 40 CFR part 268. In addition, the Agency is amending §§ 261.21 through 261.24 to indicate that wastes that carry characteristic waste codes may also be listed wastes. See section III.E.2 of today's preamble.

3. Wastes Subject to a Capacity Variance

EPA is clarifying the requirements that are applicable to characteristic wastes during the period of a capacity variance. Under the present rule, it is possible for prohibited characteristic wastes which are subject to a national capacity variance to become nonhazardous. If, during the period of the variance the waste is treated to be nonhazardous, arguably the landfill or impoundment unit would have to meet minimum technological requirements.

EPA does not read the statute or the rules this way, and is making this clarification in section III.E.3 of today's preamble.

4. Use of TCLP v. EP Analytical Methods for Compliance

EPA is establishing treatment standards for several characteristic wastes at the characteristic level, and has determined that this level should be measured by the TCLP. This is the protocol which large quantity generators will use to assess the toxicity of their wastes starting on September 25, 1990 (small quantity generators are subject to the revised testing protocol on March 29, 1990), and it is the protocol used to measure the efficacy of stabilization or other immobilization treatment in most of the BDAT standards. A detailed discussion is provided in section III.E.4.

5. Newly Identified Toxicity Characteristic (TC) Wastes

EPA is clarifying that wastes that exhibit the TC but not the EP are not presently prohibited, even if the constituent causing the waste to exhibit the TCLP is also a constituent controlled by the EP. This point is also discussed in section III.E.5 of today's preamble.

In addition, EPA is clarifying that for hazardous wastes that are subject to more than one treatment standard, during the period of a national capacity variance for one of the wastes, the treatment standards for any other waste codes that have not received such an extension must be met. As indicated in previous rulemakings, hazardous wastes that are subject to a capacity extension and contain California list constituents must comply with the California list prohibitions. See 53 FR 31188. A detailed discussion is provided in section III.E.3 of today's preamble.

6. Further Principles Governing Applicability

The Agency notes that the issues in this rulemaking concerning when hazardous wastes become prohibited from land disposal do not change the status of other regulatory or statutory inclusions or exclusions to the definition of solid or hazardous waste found at 40 CFR 261.2-261.8. These provisions can override the LDR point of generation evaluation to keep wastes from being prohibited and subject to a dilution prohibition or treatment standard. Further, those who manage hazardous waste will need to assess what LDR prohibitions apply at different points in the waste management process. The question of whether a given waste is going to prohibited land disposal is complicated by the fact that wastes may

change form or treatability groups after undergoing treatment. The Agency explains these decision rules and provides clarifying examples in section III.E.6 of today's final rule.

C. Amended Tracking System for Characteristic Prohibited Wastes

EPA's decisions concerning characteristic wastes necessitate certain modifications of the tracking provisions contained in 40 CFR 268.7. These changes are summarized below, and a detailed discussion of each of these provisions is provided in section III.F of today's preamble.

1. Clarification of and Changes to Generally Applicable Recordkeeping Requirements

Most of the existing provisions of § 268.7 contemplate that restricted wastes are being shipped off-site for treatment or disposal (see §§ 268.7 (a)(2) and (a)(3), and §§ 268.7 (b)(4) and (b)(5)). The Agency is clarifying in today's rulemaking that for wastes managed on-site, generators must determine if the waste is restricted, and keep some documentation of that determination, plus some documentation of where the restricted waste was treated, stored, or disposed—whether treatment, storage, or disposal occurs on-site or off-site. This requirement applies to characteristic wastes, even when the hazardous characteristic is removed prior to disposal, or when the waste is excluded from the definition of hazardous or solid waste under 40 CFR 261.2-261.8. The Agency also notes that those wastes exempted from all of part 268 under 40 CFR 268.1 (b) and (e) are not subject to any recordkeeping requirements.

2. Tracking (i.e., Notification/Certification) Provisions Applicable to Generators

EPA believes that the existing tracking system requires some modification for characteristic waste that the generator has treated to meet the treatment standard before it is sent off-site (and therefore, in most cases may be land disposed in a subtitle D facility). The Agency believes that under the present rule, sending the tracking forms to subtitle D facilities could have counterproductive effects, and has determined that the tracking forms should not accompany shipments from generators to subtitle D facilities. By deciding that tracking documents for prohibited characteristic wastes that no longer exhibit a characteristic should not go to these facilities, however, the Agency is *not* deciding that notifications and certifications should not be

prepared for such wastes. EPA believes that the notifications and certifications should be sent to the appropriate EPA Regional Administrator or his delegated representative, or to a state authorized to implement the land disposal restrictions. EPA is making some slight modifications in the notification form that would be sent to EPA (or to an authorized State), because the existing notification refers to the waste's ID number and manifest number when shipped, neither of which are available for wastes no longer exhibiting a characteristic. While the revised notification form would not contain hazardous waste codes, it must contain a complete and accurate description of the waste, including its former hazardous waste classification, and must identify the facility receiving the waste. EPA is not amending the tracking requirements for those characteristic wastes that still exhibit a characteristic when they are sent off-site.

3. Tracking Provisions Applicable to Treaters

EPA is adopting the same approach for treaters of characteristic wastes as it is for generators. Thus, tracking forms for shipments of characteristic wastes that meet a treatment standard, and no longer exhibit a characteristic of hazardous waste, would be sent to EPA or to an authorized state.

4. Land Disposal Facilities

Under existing rules, subtitle C disposal facilities receiving prohibited wastes must keep copies of the notification and certification prepared by the generator and/or the treater, must test wastes (or waste extracts) at a frequency specified in their waste analysis plan (as modified in today's rule), and must dispose of certain types of wastes in minimum technology units. 40 CFR 268.7(c) (1), (2), and (3). These requirements do not fit well for the characteristic wastes prohibited in today's rule. The Agency is thus indicating that the requirements of § 268.7(c) do not apply to subtitle D disposal facilities receiving wastes that no longer exhibit a characteristic.

5. Changes in Certification to Reflect Dilution Prohibition

EPA is amending the certifications of compliance required of treaters and generators in § 268.7 to state that the treatment standard was not achieved by a form of impermissible dilution.

D. The Dilution Prohibition as it Applies to Centralized Treatment

The existing rules on dilution and EPA's interpretive statements regarding those rules indicate that the dilution prohibition has a two-fold objective: (1) To ensure that prohibited wastes are actually treated; and (2) to ensure that prohibited wastes are treated by methods that are appropriate for that type of waste. EPA has acknowledged that prohibited wastes which are aggregated are not diluted impermissibly if they are treated legitimately in centralized treatment systems, irrespective of the dilution inherent in such a system. Thus, if "dilution" is a legitimate type of treatment, or a necessary pretreatment step in a legitimate treatment system, such dilution is permissible. Conversely, prohibited wastes that are "treated" by inappropriate methods, or sent to treatment systems that do not treat the wastes, are diluted impermissibly.

In applying these principles to characteristic wastes, EPA encountered two major difficulties: First, the interface with regulatory systems established pursuant to the Clean Water Act and Safe Drinking Water Act, and second, difficulties in being able to quantify the proposal in a meaningful way. Given these problems and complications, EPA has decided that the most constructive course is to provide additional interpretive guidance on the existing dilution prohibition contained in § 268.3, and to explain more fully how those rules would apply in specific situations.

In all cases, the Agency has determined that for non-toxic hazardous characteristic wastes, it should not matter how the characteristic property is removed so long as it is removed. Thus, dilution is an acceptable treatment method for such wastes. In most cases, EPA has determined also not to apply a dilution prohibition to characteristic wastes that are managed in treatment systems regulated under the Clean Water Act or the Safe Drinking Water Act. However for aggregation of listed wastestreams or toxic characteristic wastestreams not included above, the Agency is able to provide limited additional guidance today on the issue, of when centralized treatment methods involving dilution are permissible. As a general rule, if the wastes are all legitimately amenable to the same type of treatment, and this method of treatment is utilized for the aggregated wastes, the aggregation step does not constitute impermissible dilution.

E. Treatment Standards for Multi-Source Leachate

On February 27, 1989, the Agency amended the schedule for prohibiting hazardous wastes from land disposal by placing multi-source leachate derived from hazardous wastes in the Third Third (see 54 FR 8264). The Agency took this step to study more fully the most appropriate treatment standards for such leachate. The Agency's original approach to multi-source leachate was that the leachate carries the waste codes of all of the listed hazardous wastes from which it is derived and, therefore, is subject to each of the prohibitions and treatment standards for those wastes. In the event a particular constituent in the leachate is present in more than one prohibited waste, the stricter treatment standard would apply (53 FR 31138, August 17, 1988).

The Agency today is promulgating a fixed set of wastewater treatment standards and a set of nonwastewater treatment standards for all multi-source leachate and residues derived from the treatment of multi-source leachate. The Agency is promulgating treatment standards for these wastes under EPA Hazardous Waste Code No. F039. The Agency has identified treatment levels for the entire BDAT list of hazardous constituents in the wastewater and nonwastewater treatability groups.

The Agency is also specifying that leachate derived solely from F020-F023 and F026-F028 (dioxin) wastes, and no other listed wastes, is considered to be single-source leachate and must comply with the treatment standards for those wastes and continue to be classified under those waste codes.

The Agency is not promulgating separate standards for multi-source leachate that exhibits a characteristic of hazardous waste because, by promulgating standards for all of the BDAT list constituents, the treatment standards will address all of the constituents and properties that the treatment standards for characteristic wastes address. Should multi-source leachate or residues derived from the treatment of multi-source leachate exhibit a characteristic at the point of disposal, however, it would have to be treated to meet the treatment standards for that characteristic. A detailed discussion of the treatment standards for multi-source leachate is contained in section III.A.6 of today's final rule.

F. Alternate Treatment Standards for Lab Packs

The Agency is today promulgating alternate treatment standards for lab packs that contain certain prohibited

organometallic and organic wastes specified in appendix IV and appendix V to 40 CFR part 268, respectively. The alternate treatment standards are expressed as a specified technology for each of the waste categories: (1) Incineration followed by treatment to meet the treatment standards for certain EP toxic metals for the organometallic wastes identified in appendix IV; and (2) incineration as a specified method for the organic hazardous wastes identified in appendix V. In addition, the Agency is allowing certain unregulated wastes to be included in lab packs utilizing the alternate treatment standards. The Agency is not promulgating the proposed alternate treatment standard for inorganic wastes due to concerns about unverified stabilization of variable waste streams.

The Agency believes that the alternate treatment standards provide some administrative relief, while minimizing the threats posed by land disposal of these small volumes of hazardous waste. Section III.A.9 of today's preamble contains a detailed discussion of the alternate treatment standards for these wastes.

G. Mixed (Hazardous/Radioactive) Wastes

EPA is granting a two-year national capacity variance under section 3004(h)(2) for mixed scheduled hazardous/radioactive wastes subject to today's rulemaking. The Agency bases the national variance for these wastes upon a determination that there is inadequate treatment capacity available for these wastes. The Agency is continuing to evaluate the volumes, characteristics, and treatment options for such wastes. A detailed discussion of EPA's approach for mixed wastes subject to today's rulemaking is provided in section III.A.8 of today's preamble.

The Agency is also establishing four separate treatability groups for specific types of mixed waste that could not be treated with the technologies determined to be BDAT for the corresponding nonradioactive wastes. The BDAT treatment standard for high-level radioactive wastes generated during the reprocessing of fuel rods is vitrification. For radioactive lead solids, the BDAT treatment standard is macroencapsulation. The BDAT treatment standard for radioactive elemental mercury is amalgamation. For radioactive hydraulic oil contaminated with mercury, BDAT is incineration.

H. Nationwide Variances From the Effective Date

Due to lack of sufficient treatment or recovery capacity, EPA is promulgating a two-year national capacity variance for the surface-disposed and deep well-injected hazardous wastes listed in Tables 1 and 2. In addition to the wastes listed in Tables 1 and 2, EPA is also granting a two-year national capacity extension to: mixed hazardous/radioactive wastes; naturally occurring radioactive materials that are mixed with RCRA hazardous wastes; soil and debris contaminated with Third Third wastes for which the treatment standard is based on incineration, mercury retorting, vitrification, or wet-air oxidation; and inorganic debris as defined in § 268.2(a)(7) (which also applies to chromium refractory bricks carrying the EPA Hazardous Waste Nos. K048-K052). The Agency is also granting a six-month capacity variance to nonwastewaters from the petroleum refining industry, EPA Hazardous Waste Nos. K048-K052. See section III.B of today's preamble for a detailed discussion of this six-month capacity variance.

Determinations of available capacity are based on a comparison of the volumes of wastes requiring treatment to the amount of capacity available for such treatment. Although EPA does not require that BDAT technologies be used to meet the applicable treatment standards, unless otherwise specified, EPA assesses available capacity by evaluating the availability of technologies identified as BDAT.

TABLE 1. SUMMARY OF TWO-YEAR NATIONAL CAPACITY VARIANCES FOR SURFACE-DISPOSED WASTES ¹

Required alternative treatment technology	Waste code/physical form
Acid Leaching and Chemical Precipitation.	D009 Low Mercury Nonwastewater.
	K106 Low Mercury Nonwastewater.
	P065 Low Mercury Nonwastewater.
	P092 Low Mercury Nonwastewater.
	U151 Low Mercury Nonwastewater.
Combustion of Sludge/Solids.	F039 ² Nonwastewater.
	K048 ³ Nonwastewater.
	K049 Nonwastewater.
	K050 Nonwastewater.
	K051 Nonwastewater.
Mercury Retorting....	K052 Nonwastewater.
	D009 High Mercury Nonwastewater.
	K106 High Mercury Nonwastewater.

TABLE 1. SUMMARY OF TWO-YEAR NATIONAL CAPACITY VARIANCES FOR SURFACE-DISPOSED WASTES ¹—Continued

Required alternative treatment technology	Waste code/physical form
Secondary Smelting.	P065 High Mercury Nonwastewater.
	P092 High Mercury Nonwastewater.
	U151 High Mercury Nonwastewater.
	D008 Lead Materials Stored before Secondary Smelting.
	P087 Nonwastewater/wastewater.
Thermal Recovery....	D004 Nonwastewater.
	K031 Nonwastewater.
	K084 Nonwastewater.
	K101 Nonwastewater.
	K102 Nonwastewater.
	P010 Nonwastewater.
	P011 Nonwastewater.
	P012 Nonwastewater.
	P036 Nonwastewater.
	P038 Nonwastewater.
Vitrification.....	U136 Nonwastewater.

¹ EPA is granting these wastes a two-year national capacity variance, except for K048-K052 nonwastewaters. This table does not include mixed radioactive wastes, certain contaminated soil and debris, or inorganic debris as defined in 268.2(a)(7) which are receiving two-year national capacity variances.

² Multi-source Leachate.

³ For K048-K052 petroleum-refining nonwastewaters, EPA is granting a six-month variance.

TABLE 2. SUMMARY OF TWO-YEAR NATIONAL CAPACITY VARIANCES FOR UNDERGROUND INJECTED WASTES

Required alternative treatment technology	Waste code/physical form
Acid Leaching and Chemical Precipitation.	D009 Low Mercury Nonwastewater.
	D003 ¹ Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
Alkaline Chlorination.	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
Chemical Oxidation followed by Chemical Precipitation.	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
Chemical Oxidation followed by Chromium Reduction and Chemical Precipitation.	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
	D003 ² Wastewater/Nonwastewater.
Chromium Reduction followed by Chemical Precipitation.	D007 Wastewater/Nonwastewater.
	D007 Wastewater/Nonwastewater.
	D007 Wastewater/Nonwastewater.
Mercury Retorting....	D009 Nonwastewater.
	D002 ⁴ Wastewater/Nonwastewater.
	D002 ⁴ Wastewater/Nonwastewater.
Neutralization.....	K011 Wastewater.
	K013 Wastewater.
	K014 Wastewater/Nonwastewater.
Wet-Air Oxidation....	K011 Wastewater.
	K013 Wastewater.
	K014 Wastewater/Nonwastewater.

TABLE 2. SUMMARY OF TWO-YEAR NATIONAL CAPACITY VARIANCES FOR UNDERGROUND INJECTED WASTES—Continued

Required alternative treatment technology	Waste code/physical form
Wet-Air Oxidation Followed by Carbon Adsorption Followed by Chemical Precipitation; Biological Treatment Followed by Chemical Precipitation.	F039 ⁵ Wastewater.
	F039 ⁵ Wastewater.
	F039 ⁵ Wastewater.

¹ D003 (Cyanides).

² D003 (Sulfides).

³ D003 (Explosives, water reactives, and other reactives).

⁴ Deepwell injected D002 liquids with a pH less than 2.0 must meet the California list prohibitions on August 8, 1990.

⁵ Multi-Source Leachate.

I. Generator Notification Requirements

The generator notification requirements set forth in 40 CFR 268.7 specify that when the generator has determined that the waste is restricted and does not meet the applicable treatment standards, the generator must, with each shipment of waste, notify the treatment facility in writing of the appropriate treatment standards. This notice must include, among other items, the applicable treatment standard and all applicable prohibitions set forth in § 268.32 or RCRA section 3004(d). If the waste being shipped is restricted, but can be land disposed without further treatment, the generator must submit to the land disposal facility the same information, as well as a certification stating that the waste meets the applicable treatment standards (40 CFR 268.7(a)(2)).

In today's final rule, the Agency is amending § 268.7 to allow referencing of the treatment standards. The following information must be included in the reference: EPA Hazardous Waste Number, the subcategory of the waste code (e.g., D003, reactive cyanide subcategory), the treatability group(s) of the waste(s) (e.g., wastewater or nonwastewater), and the section where the treatment standards appear. This change does not apply to spent solvents (F001-F005), multi-source leachate (F039), or California list wastes because these waste categories each contain a number of individual constituents or waste groups.

In addition, the Agency is amending § 268.7 to allow a one-time notification

and certification for SQG shipments subject to tolling agreements. A detailed discussion of these changes is provided in section III.I of today's preamble.

J. Waste Analysis Plans and Treatment/Disposal Facility Testing Requirements

The Agency today is promulgating modifications to the waste analysis plan requirements which incorporate elements of both approaches proposed on November 22, 1989. Under the final approach, treatment and disposal facilities must conduct periodic detailed physical and chemical analyses of their wastestreams to assure that the appropriate 40 CFR part 268 treatment standards are being met. Today's final rule amends the comment in 40 CFR 264.13(a)(2) and 265.13(a)(2) to clarify that the generator or treater may supply part of the waste analysis information, and that waste analysis requirements are not superseded if the treatment or disposal facility is supplied information by the generator or treater. See section III.J for a detailed discussion.

K. Testing of Wastes Treated in 90-Day Tanks or Containers

The Agency is promulgating testing requirements for wastes treated to comply with the BDAT treatment standard in so-called 90-day tanks (or containers) as proposed. A regulatory gap existed with respect to treatment of prohibited wastes in such tanks or containers regulated under § 262.34 because they were not subject to the waste analysis plan requirements. Thus, there was no regulatory vehicle for determining testing frequency in such circumstances.

In order to close this regulatory gap, EPA is requiring that persons treating prohibited wastes in such tanks and containers must prepare a plan justifying the frequency of testing that they choose to adopt. The Agency is also clarifying that these wastes are subject to the 40 CFR 268.7 recordkeeping requirements. A detailed discussion of these requirements is provided in section III.K of today's preamble.

L. Clarification of "P" and "U" Solid Wastes

The Agency is amending 40 CFR 261.33(c) to clarify the regulations pertaining to "P" and "U" hazardous wastes. The amendment will add residues of § 261.33(f) materials remaining in containers and in inner liners to the residues already included in the scope of the commercial chemical product listings. The existing regulatory language is partially in error, and the

Agency is correcting it with today's revisions.

In the November 22, 1989 proposal, the Agency also proposed amendments to § 261.33 regarding soil, water and spill debris contaminated with § 261.33 (e) and (f) (P and U wastes) materials. Specifically, the Agency proposed that residues of spills of commercial chemical products will be considered solid waste if they are not recycled within 90 days of the spill. The Agency has decided not to promulgate this revision as the desired effect can be achieved through interpretation of existing regulations.

Finally, during the comment period, several commenters requested clarification of the exception to the mixture rule for *de minimis* losses of "P" and "U" wastes (§ 261.33(a)(iv)(D)) to underground injection units. Today's notice provides this clarification. A detailed discussion of these issues is provided in section III.L of today's final rule.

M. Storage Prohibition

Section 3004(j) provides that storage of prohibited hazardous waste is prohibited " * * * unless such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal." See § 268.50(a)(2), and 51 FR 1709, January 14, 1986. This language applies only to storage of prohibited wastes in non-land based storage units (e.g., tanks and containers), as land-based storage is a form of disposal. In the November 22, 1989, notice, the Agency proposed an interpretation that the storage prohibition does not apply where storage precedes legitimate, protective treatment, recovery, or disposal. The Agency is not pursuing a definitive reinterpretation in today's final rule as proposed. The Agency continues to believe, however, that the statutory prohibition was designed to prevent the use of storage as a means of avoiding a treatment standard, and will continue to enforce the storage prohibition with that intention in mind. EPA is aware of the difficulties posed by the applicability of the section 3004(j) storage prohibition to mixed (radioactive/hazardous) wastes, as there is little disposal or treatment capacity available. EPA is further evaluating the legal, policy and factual issues relevant to these wastes, and expects to issue policy on these issues within the next 90 days. A detailed discussion is provided in section III.M of today's preamble.

N. Case-by-Case Extension Petitions

In granting a case-by-case extension, there is a statutory requirement that a binding contractual commitment to construct or otherwise provide alternative treatment, recovery, or disposal capacity that meets the treatment standards be in place. RCRA section 3004(h)(3). EPA today is clarifying that this requirement may be satisfied by EPA proposing to grant a no-migration petition or a treatability variance. See preamble section III.N for a more detailed discussion.

O. Applicability of California List Prohibitions After May 8, 1990

With the promulgation of the Third Third final rule, almost all of the California list prohibitions will be superseded by more specific prohibitions and treatment standards when they become effective.¹ The only continued applicability of the California list appears to be (1) for liquid hazardous wastes that contain over 50 ppm PCBs; (2) for HOC-containing wastes identified as hazardous by a characteristic property that does not involve HOCs, as, for example, an ignitable waste that also contains greater than 1000 ppm HOCs (but not an EP toxic waste that exhibits the characteristic because it contains one of the six chlorinated organic pesticides covered by the EP toxicity characteristic); and (3) for liquid hazardous wastes that exhibit a characteristic and also contain over 134 mg/l of nickel and/or 130 mg/l of thallium.

Today's final rule also addresses several issues that were raised in the November 22, 1990, proposal. First, EPA is restating that the California list prohibitions apply to wastes that receive national capacity variances in later rulemakings. The Agency believes these more general prohibitions serve as a minimum requirement. EPA notes, however, that the California list prohibitions do not apply to newly listed or identified wastes (i.e., wastes identified or listed after November 8, 1984) as the statute does not compel a contrary interpretation. A more detailed discussion of these issues appears in section III.O of today's preamble.

P. Analysis of Treated Wastes

The Agency today is using the same approach to waste analysis promulgated in the First and Second Third final rules

¹ See 52 FR 29993 (August 12, 1987) and 52 FR 25773 (July 8, 1987); see also 40 CFR 268.32(h) (HOC prohibition superseded by treatment standard and effective date for a particular HOC).

(53 FR 31146 and 54 FR 26594). (The following discussion and later preamble discussion are included for purposes of information and do not reopen the issue for judicial review.) Where BDAT is a destruction or removal technology, a total waste analysis is required because it is most appropriate for measuring such destruction or removal. The legislative history indicates a strong preference for treatment that destroys hazardous constituents (see, e.g., 130 Cong. Rec., S9179, daily ed. July 25, 1984, statement of Senator Chafee), and the only reliable way to verify that destruction has occurred is to measure the total waste. Similarly, where BDAT is identified as an immobilization technology such as stabilization, analysis of a TCLP waste extract is required because it is the most appropriate measure of immobilization. In cases where both technologies are identified as BDAT, both types of waste analysis are required.

In order to determine whether the waste meets the applicable treatment standards as generated, the original generator should perform an analysis of the waste. The waste extract is analyzed if the applicable treatment standards appear in 40 CFR 268.41, and a total waste analysis is performed if the applicable treatment standards appear in § 268.43. The generator may also make this determination based on knowledge of the waste, provided there is a reasonable basis for doing so (for example, the generator uses so little of a key constituent that it could not be found in the waste at levels exceeding a treatment standard). All supporting data used to make the determination must be retained on-site in the generator's files. See 40 CFR 268.7(a)(5). The Agency has discussed this principle in past rulemakings, and is repeating it here for the reader's convenience.

Q. Practical Quantitation Limits (PQLs)

As noted above, where BDAT is based on a destruction/removal technology, total waste analysis is performed to measure compliance with the BDAT levels. Several commenters have raised concerns that, in certain cases, analytical problems may prevent demonstrating compliance with the treatment standards. They contend that the BDAT concentration levels are, in some cases, below the practical quantitation limit (PQL)—the lowest level of quantitation that the Agency believes a competent laboratory can reliably achieve.

The Agency is currently developing guidance material on waste analysis which the Agency believes will resolve many of these problems. In the interim,

the Agency believes that where a waste has been treated with a combustion BDAT process (i.e., incineration or fuel substitution unit), and if the person has made a good faith effort to achieve the maximum analytical sensitivity, in certain cases the Agency will consider the person to have demonstrated compliance with the treatment standard for the respective organic constituents in the waste. For a more complete discussion of these issues, see section III.A.1 of today's final rule.

R. Best Demonstrated Available Technologies (BDAT)

Today's rule defines waste treatability groups by waste code, and identifies the Best Demonstrated Available Technology (BDAT) for each waste code within the treatability group (see section III.A.1). Treatment standards are based on the performance levels achievable by the BDAT identified for each waste code. Any technology not otherwise prohibited (e.g., impermissible dilution) may be used to meet the concentration-based treatment standards. Where treatment standards are expressed as a technology, the waste must be treated using the specified technology prior to land disposal.

S. Reformatting of Treatment Standard Tables and Addition of Appendix VII to Part 268, Effective Dates for Prohibited Wastes

The Agency is reformatting all of the tables of treatment standards in 40 CFR part 268 subtitle D and is providing the subpart D treatment standard tables in their entirety, including both previously promulgated standards and the treatment standards being promulgated today. The reformatted tables (i.e., 40 CFR 268.41, 268.42, and 268.43) are arranged according to waste code in alphanumeric order and include the CAS number identifying each regulated constituent, whether the standard is based on analyses of grab or composite samples, cross-references, and several other clarifying features that will make determining applicable treatment standards easier for the reader. The treatment standards finalized for the first time today are included in the tables. No substantive changes are being made to the treatment standards that were previously promulgated in the November 7, 1986, the July 8, 1987, the August 17, 1988, and the June 23, 1989, final rules except as discussed in other preamble sections of today's rule. (As an example, regulated constituents are being added to the wastes K048-K052, as well as F002 and F005, wastes for which certain treatment standards were previously promulgated. See preamble

section III.A.4.a. for a discussion of F002 and F005 and section III.A.4.c. for a discussion of K048-K052.)

In addition, the Agency is providing a complete list of waste codes regulated to date under the land disposal restrictions (including the waste codes included in today's rulemaking), as appendix VII to part 268. The appendix is provided for the reader's convenience; no substantive changes have been made to the dates, except as discussed in the preamble of today's rule.

T. Relationship of Hazardous Waste Treatment Council v. EPA to Treatment Standards Promulgated in Today's Final Rule

A number of commenters raised the issue of whether the treatment standards being adopted are below levels at which threats to human health and the environment are minimized, citing portions of the recent opinion *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 355 (D.C. Cir. 1989) (HWTC III). In that case, the Court upheld EPA's existing technology-based approach to establishing treatment standards as a reasonable construction of the statute, but remanded the case to the Agency in order for the Agency to explain properly why it had chosen this approach. EPA's explanation was published in the *Federal Register* on February 28, 1990, and was accepted by the Court, which dismissed all petitions for review on March 15, 1990. The standards EPA is adopting in this rule are also technology-based, which the Agency believes is warranted at this time due to the uncertainties associated with hazardous waste land disposal and the Agency's present inability to quantify precisely *de minimis* levels of hazardous constituents that would determine when threats to human health and the environment from disposal of prohibited wastes are minimized. 55 FR 6642. Further discussion of this point may be found in section III.A.1.i of today's preamble. As discussed in section III.D, EPA believes that HWTC III is not dispositive on the issue of appropriate treatment standards for characteristic wastes.

III.A. Detailed Discussion of Today's Final Rule

1. Development and Identification of Treatment Standards

Today's rule promulgates treatment standards for the remaining Third Third scheduled wastes, and for the First Third and Second Third wastes which heretofore were subject to the "soft hammer" provisions of 40 CFR 268.8.

Development and identification of the treatment standards are presented on a waste code basis in sections III.A.2. through III.A.5. of today's notice. Section III.A.6. presents the development of treatment standards for wastes identified as F039, multi-source leachate. Section III.A.7. discusses the applicability of today's treatment standards to contaminated soil and debris. Section III.A.8. presents the Agency's approach to regulating radioactive waste that is mixed with hazardous wastes.

The following discussion has appeared in previous preambles and is being repeated here as an aid to the reader's understanding of the land disposal restrictions program. Comments were not solicited in the proposed rule on the following discussion; however, comments were received pertaining to various issues discussed below. These comments, and the Agency's responses, are found in the Response to BDAT-Related Comments Document, Volume 1, in the RCRA Docket.

a. The BDAT Methodology

The first step in the development of treatment standards is to divide the wastes to be regulated into groups based on similar physical and chemical properties. These waste treatability groups take into account differences in the applicability and effectiveness of treatment for those particular wastes. The Agency initially decides how wastes should be grouped by examining whether the wastes are generated by similar industries or from similar processes. This is a valid starting point because the waste characteristics that affect treatment performance are expected to be similar for these wastes even though the wastes themselves are somewhat different.

The next step in the development of treatment standards is to identify the Best Demonstrated Available Technology (BDAT) for each treatability group. A treatment technology is considered to be "demonstrated" primarily based on data from full-scale treatment operations that are currently being used to treat the waste (or a similar waste). Once the "demonstrated" technologies have been identified, the Agency determines whether these technologies may be considered "available". To be "available", the technology itself or the services of the technology must be able to be purchased, and the technology must substantially diminish the toxicity of the waste or reduce the likelihood of migration of the waste's hazardous constituents. EPA prefers to base BDAT

on technologies that further the statutory goals of waste minimization and recycling. EPA may select this type of technology as BDAT over more conventional treatment if the disparity in performance of the technologies is not too pronounced, and the technology selected minimizes threats to human health and the environment by substantially diminishing waste toxicity and reducing mobility of toxic constituents.

Treatment data from "demonstrated" "available" technologies are then screened with regard to the design and operation of the equipment, the quality assurance/quality control (QA/QC) analyses of the performance and operating data, and the accuracy and precision of the analytical tests used to assess treatment performance. After this screening, the treatment data are adjusted for each constituent based on the analytical recovery of that constituent from the treatment residuals. The Agency has chosen to perform this adjustment in order to account (in part) for analytical interferences associated with the chemical makeup of the treatment residual. Where data for more than one treatment technology exist, the individual performance data for each of the various treatment technologies are then statistically evaluated. The mean concentrations of the constituents in the treatment residuals from each technology are then compared using an analysis of variance (ANOVA) test in order to determine if one technology performed significantly better than the other. (A detailed discussion of the methodology for identification of BDAT and the ANOVA test is provided in the November 7, 1986 final rule [51 FR 40572].) Where data exist for only one technology, the Agency uses best engineering judgment to assess whether that technology represents the best applicable technology for that particular waste and whether the data indicate that the treatment system was well-designed and well-operated.

After BDAT is identified, EPA develops the treatment standard for certain constituents in the waste. Treatment standards are expressed as maximum constituent-specific concentrations allowed in the waste (or in an extract of the treated waste), as a specific technology (or group of technologies), or as a combination of these. Although the statute provides discretion to establish treatment standards as either levels or methods of treatment, EPA normally attempts to set concentration-based treatment standards whenever possible, because they provide the regulated community

with flexibility in choosing treatment technologies and also allow the investigation and development of new and alternative technologies. In addition, establishing concentration-based standards provides a means of ensuring that treatment technologies are operated at conditions that will result in the best demonstrated performance.

b. Use of Technologies Identified As BDAT

Compliance with a concentration-based treatment standard requires only that the treatment level be achieved; once achieved, the waste may be land disposed. The waste need not be treated by the BDAT technology; in fact, a concentration-based treatment standard provides maximum flexibility in one's choice of treatment technology because any treatment, including recycling or any combination of treatment technologies, unless prohibited (e.g., impermissible dilution) or unless defined as land disposal (e.g., land treatment), can be used to achieve these standards.

Some treatment standards in today's rule, however, are expressed as a treatment method rather than as a concentration-based standard. EPA typically establishes a treatment method as the standard when it has no means of calculating valid concentration-based standards. In such cases, the specified technology must be used to treat that particular waste (including any mixture that contains the waste). After the waste is treated using the specified method, it may be land disposed, unless EPA has specified otherwise in the rule, or if the residue exhibits a hazardous waste characteristic and does not meet the treatment standard for that characteristic. In situations where wastes subject to concentration-based standards are mixed with wastes subject to treatment standards expressed as a method, the mixture must be treated by the specified method and must also meet the concentration-based treatment standards for any other prohibited waste contained in the matrix (see generally 53 FR 31146-7, August 17, 1988).

When EPA requires the use of a technology (or technologies), a generator or treater may demonstrate that an alternative treatment method can achieve the equivalent level of performance as that of the specified treatment method (40 CFR 268.42(b)). This demonstration is typically both waste-specific and site-specific and may be based on: (1) The development of a concentration-based standard that utilizes a surrogate or indicator compound that guarantees effective

treatment of the hazardous constituents; (2) the development of a new analytical method for quantifying the hazardous constituents; and (3) other demonstrations of equivalence for an alternative method of treatment based on a statistical comparison of technologies, including a comparison of specific design and operating parameters.

c. Applicability of Treatment Standards to Treatment Residues Identified as Derived-From Wastes and to Waste Mixtures

(1) *Derived-From Wastes.* All residues from treating the original listed F, K, U or P wastes are likewise usually considered to be the listed waste by virtue of the derived-from rule found in 40 CFR 261.3(c)(2). Consequently, all wastes generated in the course of treatment are prohibited from land disposal unless they comply with the treatment standard or are otherwise exempted from the prohibition, such as through a no-migration determination or by a capacity variance. Residues from the treatment of characteristic wastes, however, are not automatically considered the characteristic waste; these residues are considered characteristic if they still display the original characteristic, or if they display another characteristic.

Treatment operations, including those identified as BDAT, typically generate wastewater and nonwastewater residuals that may require further treatment. EPA has not tested every possible waste that may result from every subsequent part of the treatment train. However, since the treatment standards promulgated today are generally based on treatment of a relatively concentrated form of the waste (i.e., the "original" waste), the Agency believes that residues from subsequent treatment will be less difficult to treat.

The Agency is investigating de minimis levels for certain hazardous constituents in listed wastes below which the waste will no longer be a hazardous waste for purposes of subtitle C regulation. The Agency has yet to propose these de minimis levels. The Agency has indicated, however, that these de minimis levels will cap treatment standards if they are higher than the treatment standards (55 FR 6640; Feb. 28, 1990).

(2) *Mixtures of Different Hazardous Waste Streams.* Today's treatment standards apply to mixtures of different waste streams. Where a waste mixture consists of listed wastes and has more than one applicable concentration-based treatment standard for a

particular constituent, the most stringent standard must be met prior to land disposal (see 40 CFR 268.41(b)). In the event that such a waste mixture cannot be treated to meet the most stringent standard, one may petition the Agency for a variance from the treatment standard pursuant to 40 CFR 268.44.

d. Wastewater Versus Nonwastewater Standards

In today's rule, the treatment standards (both concentration-based and specified methods) are generally presented as applicable to wastewaters or to nonwastewaters (see 40 CFR 268.2). Wastewaters are defined as those wastes (listed wastes, including wastes generated as a result of the mixture and derived-from rules) that contain less than 1% total organic carbon (TOC) and less than 1% total suspended solids (TSS), except for those wastes identified as F001, F002, F003, F004, and F005 solvent-water mixtures. (See 53 FR 31145 (August 17, 1988) which adopts this definition for most First Third wastes, and 51 FR 40579 (November 7, 1986) for the definition of F001, F002, F003, F004, and F005 solvent-water mixtures.) Those wastes (listed wastes, including wastes that are hazardous as a result of the mixture and derived-from rules) that do not meet these criteria are defined as nonwastewaters and thus contain greater than or equal to 1% TOC, or greater than or equal to 1% TSS. (Note, however, the discussion in III.B. of further subcategorization of nonwastewaters for purposes of national capacity variances based on a lack of solids incineration capacity.)

(1) *Impermissible Switching of Wastewater and Nonwastewater Standards for Listed Wastes.* (See also discussion at III.D. below for issues associated with characteristic wastes.) It is not permissible to dilute or partially treat a prohibited listed waste in order to switch the applicability of a nonwastewater standard to a wastewater standard, or vice versa (see 52 FR 21012 (June 4, 1987); but see 52 FR 25767 (July 8, 1987) noting special circumstances when California list wastes are involved). The Agency has established this principle because technologies applicable to nonwastewaters are not generally applicable to wastewaters, or require special designs (in the case of incineration) in order to simultaneously handle wastewaters. Furthermore, treatment residues meeting the definition of nonwastewaters must comply with all applicable nonwastewater treatment standards; likewise, residual wastewaters must

comply with all applicable wastewater treatment standards.

The Agency recognizes, however, that certain technologies are specifically designed to separate wastewaters from nonwastewaters. Such technologies may or may not be considered partial treatment under this principle, as discussed in the following paragraphs.

Dewatering technologies such as filtration and centrifugation are typically designed to remove suspended solids (TSS) from aqueous wastes. When these technologies are applied to a nonwastewater that contains greater than 1% TSS but less than 1% TOC, the resultant liquid residue will probably meet the definition of a wastewater (i.e., it will probably contain less than 1% TSS and less than 1% TOC). The Agency does not consider this impermissible switching of applicable treatment standards. (Note: For the purposes of applying BDAT treatment standards, the Agency does not consider carbon adsorption a dewatering technology even though it may act as a filter for suspended material.)

When the suspended material is organic and the overall untreated waste contains greater than 1% TOC, these dewatering technologies are also not precluded from use. The resultant residuals (i.e., the removed solids and the liquids) must comply with the applicable wastewater or nonwastewater treatment standards depending on their TOC and TSS content. If the liquid residues from these dewatering technologies meet the definition of wastewaters, the Agency does not consider this to be impermissible switching of applicable standards.

The importance of the TOC level in determining permissible switching of applicable wastewater or nonwastewater treatment standard is apparent in the scenario of treatment of a waste containing less than 1% TSS and slightly more than 1% TOC (such as 2 or 3% TOC), and thereby being a nonwastewater by definition. If EPA has established concentration-based treatment standards for the corresponding wastewater form of this waste, it would be permissible to use carbon adsorption to treat this nonwastewater, so long as these concentration-based treatment standards for the wastewaters are ultimately achieved (i.e., if the residual wastewater contains hazardous constituents at levels above the concentration-based wastewater treatment standards, additional treatment with other technologies is necessary prior to land disposal.) However, if EPA has established a

wastewater treatment standard expressed as Carbon Adsorption as a Method of Treatment for this waste code, the nonwastewater described above must comply with the standard for the nonwastewater form, despite the fact that the TOC content is only slightly greater than 1%. This is not just a mechanical application of the requirement that treatment must be conducted by the specified method, with the treatability group determined at the point of generation. EPA established Carbon Adsorption as a Method of Treatment standard for certain wastewaters based on the assumption that wastewaters typically contain TOC levels much less than 1%, so that removal of the organic constituents from these wastewaters was anticipated to be effective. If the nonwastewater previously described is subjected to carbon adsorption as a method of treatment, there would be no means of assuring optimum removal of the hazardous constituents. Thus, in such a situation, the use of carbon adsorption for this nonwastewater, is not permitted as a means of complying with BDAT. The Agency considers this an impermissible switching of applicable treatability groups and treatment standards.

When EPA specifies a treatment method as the treatment standard, residues resulting from the required treatment method are no longer prohibited from land disposal unless EPA should otherwise specify. In the Second Third final rule (see generally 54 FR 26625, 26630, June 23, 1989), the Agency presented specific guidelines on this. (This summary is repeated here for the reader's convenience.) Where EPA has established Incineration as the treatment standard for nonwastewaters and/or wastewaters, or where EPA has established Carbon Adsorption the treatment standard for wastewaters, the following statements concerning residuals from treatment trains incorporating these technologies are true: (1) Scrubber waters from incinerators in compliance with the substantive provisions of 40 CFR part 264 subpart O or part 265 subpart O are considered to meet the treatment standard and can be land disposed; (2) the scrubber waters from incinerators in compliance with the substantive provisions of 40 CFR part 264 subpart O or part 265 subpart O are not required to undergo Carbon Adsorption as a Method of Treatment when this specified wastewater treatment method also has been established; (3) incinerator ashes and residues from the subsequent treatment of scrubber

waters from incinerators in compliance with the substantive provisions of 40 CFR part 264 subpart O or part 265 subpart O are considered to meet the treatment standard, and can be land disposed; (4) Incinerator equipment (such as fire brick) derived from sections of the incinerator that have been directly subjected to the high temperatures of the incinerator that was operated in compliance with the substantive provisions of 40 CFR part 264 subpart O or part 265 subpart O, or are downstream from the high temperature zones, are considered to meet the treatment standards for the wastes that were incinerated and can be land disposed (this does not include incinerator equipment such as refractory bricks that, as manufactured, contain metals that may be characteristic wastes by virtue of the EP toxicity test when discarded); (5) wastewater effluent and any subsequent nonwastewater treatment residues from carbon adsorption units treating wastewater forms of these wastes (i.e., wastes from downstream from the carbon column) are considered to meet the specified treatment standard and can be land disposed; and, (6) where EPA specifies carbon adsorption as the treatment method for wastewaters, spent carbon, as well as any other nonwastewater residues from the wastewater treatment preceding carbon adsorption, are *not* considered to meet the treatment standard; such spent carbon and nonwastewater residues must be treated by the specified nonwastewater method prior to land disposal.

e. Transfer of Treatment Standards

Rather than testing the performance of BDAT on every waste, in certain cases, the Agency transfers treatment standards from a tested waste to a similar untested waste. EPA believes that transferring treatment performance data for untested wastes is technically valid, particularly when the untested wastes are generated from similar industries or similar processing steps. EPA also believes that transferring treatment performance data for tested constituents in one waste to untested constituents in another similar waste is technically valid, particularly when the constituents and wastes have similar chemical and physical properties.

To determine whether wastes generated by different processes can be treated to the same performance levels, EPA reviews data on waste characteristics to identify parameters that are expected to affect treatment selection. When this analysis suggests that an untested waste can be treated

with the same technology as a tested waste, the Agency examines a more comprehensive list of constituents that represent the most important waste characteristics that will affect treatment performance.

The complete methodology for transferring treatment standards, however, depends upon the waste itself and often differs from treatability group to treatability group. For a detailed discussion of the transfer methodology for the wastes presented in today's rule, refer to the background documents for each waste or treatability group and the background documents for the wastes from which the treatment standards were transferred.

EPA notes further that in the case of transferring standards based on performance of incineration, EPA is most often transferring standards that were based on the ability of the incinerator to achieve destruction of organics to detection limits as measured in the ash and scrubber water. This is supported by data from approximately fourteen different test burns for a variety of different RCRA hazardous wastes. These wastes contained varying concentrations of many BDAT list organics. In developing concentration-based treatment standards for the U and P wastes, the Agency considered all of the detection limits and determined which were the most representative of U and P wastes. In order to account for the anticipated variability in waste characteristics of untreated U and P wastes, the Agency typically selected the highest detection limits for the constituent that corresponded to the chemical represented by the U or P code. Thus, the Agency believes the resultant treatment standards should be achievable on a routine basis for the majority of U and P wastes.

When developing concentration-based treatment standards for certain F and K wastes containing organics, the Agency considered all of the data and determined which particular waste was the most representative of that particular F or K waste based on the availability of waste characterization data. As a result, the Agency often transferred treatment standards that were significantly lower than those developed for the U and P wastes. The Agency believes that these lower treatment standards are achievable for these F and K wastes based on the ability to achieve detection limits for organics in the waste matrix from which the standard was transferred.

f. Treatment Standards Based on Single Facility Data, Grab Samples Versus Composite Samples, and Waste Analysis Plans

(1) *Single Facility Data.* As discussed in the August 17, 1988 final rule for First Third wastes, the Agency believes that the use of a small number of data sets from a single treatment facility can be representative of the treatment achieved by the particular treatment system. This is particularly true when no other treatment data are available, or when data exist but there is no verification that the treatment process from which the data were obtained was well-designed or well-operated. It is not possible for the Agency to sample every facility generating the waste or every treatment system treating the waste. For the purposes of determining treatment standards, the Agency has established a methodology for selecting particular facilities and treatment systems that it considers to be well-designed and well-operated. The Agency also selects wastes that are representative of those most difficult to treat.

The Agency recognizes that there is variability inherent in every treatment system, as well as variability in the characteristics of the wastes. The Agency accounts for these by multiplying the mean of the constituent concentrations by a variability factor. This factor is derived through a quantitative procedure that determines the statistical 99th percentile for the treatment standard. This establishes a treatment standard that should be achievable 99 percent of the time by a well-designed, well-operated system. The Agency further adjusts the treatment standard to account for variabilities due to analytical recovery. In addition, all analyses of hazardous constituents are performed in accordance with an established QA/QC plan as outlined in the BDAT Generic Quality Assurance Project Plan.

Standards based on incineration are always established above the limit of detection for that particular waste rather than at the detection limit. This is because the Agency prefers to account for the variability inherent in the treatment system and in the analysis of the recovery data. Therefore, following EPA's methodology for establishing treatment standards, the data are adjusted through use of the variability factor (typically 2.8) and an adjustment for recovery of a spiked analyte (or surrogate). The resulting treatment standards for the organic constituents are above the detection limits. The standards are thus greater than the achievable levels (which are at or below

the detection limits) and should be easily met by a well-designed, well-operated incineration system.

(2) *Grab versus Composite Samples.* Where performance data exist based on both the analysis of composite samples and the analysis of grab samples, the Agency establishes the treatment standards based on the analysis of grab samples. Grab samples normally reflect maximum process variability, and thus would reasonably characterize the range of treatment system performance.

In cases where only composite data exist, the Agency considers the QA/QC of the data, the inherent efficiency of the process design, and the level of performance achieved. The Agency may then choose to use this composite data to develop the treatment standard. Where these data are used to establish the treatment standard, the treatment standard is identified as based on analysis of a composite sample. Enforcement of that standard thus would also be based on composite samples.

(3) *Waste Analysis Plans.* The waste analysis plan provides the basis for monitoring a disposal facility's compliance with the promulgated treatment standards. This plan must be adequate to assure compliance with part 268. The disposal facility is, however, ultimately responsible if it disposes of a waste that does not meet a treatment standard. Therefore, a disposal facility might violate the land disposal restrictions while at the same time comply with the provisions of its waste analysis plan. Put another way, a waste analysis plan may be written to authorize types of sampling and monitoring different from those used to develop the treatment standard(s). In such an instance, the disposal facility must demonstrate that the waste analysis plan (and the specific deviating feature) is adequate to assure compliance with part 268 (see 40 CFR 264.13). This might require, for example, a demonstration of statistical equivalence between a composite sampling protocol and one based on grab sampling, or a demonstration of why monitoring for a subset of pollutants would assure compliance of those not monitored. In any case, enforcement of the land disposal restrictions is based on grab samples (except as described in the previous section) and analysis of all constituents regulated by the applicable treatment standards, not on the facility's waste analysis plan. (See preamble section III.C. for further discussion of WAPs.)

g. Analytical Requirements, the BDAT List, and Relationship of PQLs to BDAT

(1) *Waste Analysis Requirements.* In today's rule, BDAT has been identified as a destruction technology for organic constituents and cyanides in many wastes. The best measure of treatment performance for these wastes is one that reflects the extent to which these organics and cyanides have been destroyed. This approach is consistent with the Congressional preference to destroy hazardous wastes where possible. See, e.g., 130 Cong. Rec. S 9178-9179 (July 25, 1984) (statement of Sen. Chaffee) (wastes with high organic content should be incinerated). This approach is also consistent with the strong Congressional goal of eliminating uncertainty from the land disposal of hazardous waste. See, e.g., RCRA section 3004(d)(1), because it ensures removal of hazardous constituents from the land disposal environment. The corresponding treatment standards for these constituents are based, therefore, on an analysis of total constituent concentrations in a representative sample of the treated waste.

(Note: The land disposal restrictions for solvent waste codes F001-F005 (51 FR 40572) require analysis of waste extracts obtained from the Toxicity Characteristic Leaching Procedure (TCLP) as a measure of performance. At the time that the treatment standards for F001-F005 were promulgated, useful data were not available on total constituent concentrations in treated residuals and, as a result, the TCLP was considered to be the best available measure to evaluate performance of the treatment technology.)

In cases where treatment standards for metals in nonwastewaters are based on stabilization, the use of the TCLP is typically required as the measure of the performance of the treatment technology. Where treatment standards for nonwastewaters are based on multiple treatment processes due to mixtures of organics and metals, or where recovery of metals is the basis of the treatment standards, analysis of total constituent concentrations and analysis of the TCLP extract (or EP extract depending upon the standard) must be performed prior to land disposal.

(2) *The BDAT List.* The Agency has established a list of chemicals made up primarily from the constituents in 40 CFR part 261 appendix VII and appendix VIII, that are evaluated for regulation as BDAT constituents (i.e., for purposes of concentration-based treatment standards) when they are

present in a listed waste. The rationale for selection of the particular constituents to be regulated can be found in the background document for each waste or waste treatability group. The Agency believes that it is not limited to regulating only those constituents for which a waste is listed (40 CFR part 261 appendix VII). Appendix VII sets forth only the constituents that were the basis for the listing and is not an exhaustive list of hazardous constituents in each waste. Additional support for taking this approach is found in RCRA section 3001(f), which specifies that EPA must consider additional hazardous constituents other than those for which the waste was listed when evaluating delisting petitions. Section 3001(f) thus acknowledges that appendix VII is only a partial list of the hazardous constituents that can be present in a listed waste.

(3) *Relationship of Treatment Standards to PQLs.* In proposed revisions to the September 1986 edition of *Test Methods for Evaluating Solid Wastes* (also known as and herein referred to as SW-846), the Agency defines practical quantitation limits (PQLs) as "the lowest level of quantitation that the Agency believes a competent laboratory can be expected to reliably achieve." PQLs are directly related to the amount of interferences that are present in different waste matrices, and the PQLs listed in SW-846 are not always achievable for constituents as measured in untreated wastes. Most treatment processes, however, particularly destructive technologies such as incineration, destroy not only the hazardous constituents of the waste but also other organics that typically interfere with the analysis for constituents in untreated wastes. Thus, PQLs typically are significantly lower for treatment residuals such as incinerator ash than for untreated wastes. Such differences in PQLs for untreated versus treated wastes are demonstrated by the data for almost every incineration test burn performed by the Agency in developing the treatment standards.

Potential users of PQLs should keep in mind that the PQLs in SW-846 were established to provide guidance for the analysis of waste samples by acting as minimum performance criteria for analytical laboratories. The PQLs do not necessarily represent the lowest limits of analytical performance achievable for any given waste.

The PQLs in SW-846 were intended to be broadly applied to groups of wastes. As a result, matrix dependent correction

factors were not developed for any particular waste code, and do not specifically apply to any particular treatment residuals (i.e., only correction factors for matrices identified as ground water, low-level soil, high-level soil, and non-water miscible waste were specified in Method 8250 of SW-846). Furthermore, the Agency is currently modifying and expanding the matrix correction factors, as well as modifying the detection limits from which the PQLs are derived.

The PQLs listed in SW-846 for some constituents are less stringent than some of the treatment standards. This apparent anomaly results primarily from the fact that the PQLs in SW-846 were not based on the same waste matrices (i.e., treatment residues) that were tested in developing the treatment standards. The treatment standards for a given waste code are based on analysis of the treatment residuals of the waste (or in some cases, a similar waste from which the treatment standards are transferred). Consequently, the resulting treatment standards appropriately reflect the level of analytical performance achievable for that waste. Thus, the PQLs in SW-846 are generally not used directly in developing the Part 268 treatment standards.

Today's promulgated concentration-based nonwastewater standards based on combustion derive from detection limits from EPA's 14 test burns (which generated the data supporting virtually all of the proposed rule's concentration-based standards) plus a data set submitted by a commenter representing the hazardous waste treatment industry. This comment is discussed at length in subsequent paragraphs.

This commenter submitted a study that was undertaken to verify whether industry labs can reliably quantify regulated constituents at the level of both the existing and the proposed concentration-based standards. The study's secondary purpose was to identify any regulated constituents for which the concentration-based treatment standards may be inappropriate. The study consisted of analyzing regulated constituents in incinerator ash at levels near the concentration-based standards.

In the commenter's opinion, the data and observations indicate that many treatment standards are inappropriate, and also made three major assertions with respect to PQLs. First, the commenter asserted that based on the PQLs calculated using his data, certain previously promulgated concentration-based standards are not achievable.

EPA rejects this assertion because no specific treatment data were received in either this study or during the comment period for the appropriate rulemaking that indicated on a waste-specific basis that these treatment standards could not be achieved. (Note: The Agency is not precluded, however, from promulgating revisions to these standards in a later rulemaking after giving sufficient public notice.)

Second, the commenter asserted that certain of the proposed Third Third concentration-based standards are not achievable because they are based on detection levels below the PQLs calculated from his study. EPA evaluated the commenter's detection limit data rather than his PQLs and has determined that the majority of the commenter's detection limits demonstrate compliance with the concentration-based standards that were proposed, and all but a very few, comply with the standards being promulgated in today's rule. Because of this, and for reasons discussed below, the Agency has generally rejected the use of the PQLs calculated by the commenter in promulgating treatment standards.

However, several nonwastewater standards promulgated in today's rule reflect revisions based on the commenter's detection limit and recovery data. EPA has indicated where these data were used to revise specific standards in later sections of today's preamble. Although EPA revised these standards based on some data from this study, EPA generally found flaws with the commenter's study (such as: Incomplete untreated waste characterization; probable analytical interferences; and incomplete incinerator process documentation) that precluded incorporation of much of the data into the treatment standards for nonwastewaters. For example, BDAT analytes were detected at levels above the detection level (i.e., at measurable quantities) in several of the commenter's ash samples. Also, different ash samples appeared to have different compositions of these BDAT analytes, apparently indicating that these ashes differ significantly from one another. (See detail responses of these data in the Response to BDAT-Related Comments Background Document for Third Land Disposal Restrictions in the administrative record for today's rule.)

Third, the commenter stated that EPA had inappropriately calculated nonwastewater treatment standards in terms of both numerical detection levels and the best procedure for calculating standards, specifically, considering the

use of PQLs. The commenter chose to use a methodology adapted from the Clean Water Act regulations to calculate alternative concentration-based standards for ash which they asked EPA to consider. Regardless of the validity of the commenter's data, EPA is not deviating from the calculation methodology of the Generic Quality Assurance Project Plan for Land Disposal Restrictions Program ("BDAT") promulgated in conjunction with the November 11, 1986 regulatory framework. The Agency therefore is retaining its established methodology.

h. Relationship of Detection Limits to Concentration-Based Standards

Several commenters raised the issue that, in certain cases, analytical problems (i.e., difficulties in reliable quantitation at detection limits near the concentration-based treatment standards) may prevent demonstrating compliance with the proposed treatment standards for Third Third wastes. They also pointed out that this same problem already may exist for some First and Second Third wastes.

EPA has examined the data submitted to the Agency in support of these comments. (See discussion of these data as they relate to PQLs in the preceding section of the preamble.) While the Agency does not believe that the currently available data is conclusive, EPA acknowledges that there can be situations where lack of available analytical methods may prevent demonstration of compliance with the treatment standards.

EPA is dealing with this potential problem in a number of ways. First, EPA has examined detection limit data submitted by the commenters and compared them to the data used to develop the proposed standards. After a thorough technical evaluation, the Agency incorporated a portion of these data into the promulgated standards in today's rule. In addition, the Agency has reevaluated the existing BDAT data generated by the Agency, the transfer procedures used for some of the wastes, and recently available information and data on recovery of the BDAT organic constituents. Thus, EPA concurred with the commenters and concluded that many of the other proposed concentration-based treatment standards may not be achievable. As a result, EPA is promulgating revised treatment standards for some organics in nonwastewaters that are higher than the proposed standards. In doing so, the majority of the commenters' concerns over ability to measure at concentrations near the standards are no longer applicable. (Note: The Agency

is continuing to study this issue and, if warranted, may adjust other standards, including some for First and Second Third wastes, after sufficient public notice.)

Second, in certain situations where compliance with a standard cannot be demonstrated for a particular waste due to problems with analytical detection limits and where the treatment technology employed was considered by the Agency to be BDAT (see specific instances below), the Agency has decided that reliance upon the treatability variance petition process would place an unnecessary burden on both the regulated and regulatory communities. The Agency believes that where a waste has been treated with a combustion BDAT process (i.e., incineration or fuel substitution unit), and if the person has made a good faith effort to achieve maximum analytical sensitivity, the Agency will consider the person to have demonstrated compliance with the treatment standard for the respective organic constituents in the waste.

In order to demonstrate compliance in such cases, the person will have had to make a good faith effort to demonstrate that the analyte of concern is not present in the waste at, or above, the treatment standard. To provide a more concrete basis for making such demonstrations, EPA intends to develop and issue guidance on what constitutes a good faith effort to achieve such analytical sensitivity within the near future. This guidance is anticipated to be available at or near the effective date for the Third Third treatment standards (August 8, 1990).

In developing the treatment standards in today's rule, the Agency selected the treatment data (i.e., detection limit data) that best represented what the majority of wastes could meet. (Note: Most of these data were from incinerator units that were considered well-designed and well-operated.) However, the Agency rejected detection limit data for some wastes, because the Agency determined that these wastes were not necessarily representative of the treatability of other wastes. After reexamination of all of the available detection limit data, the Agency has found that the majority of the detection limit data for these wastes will generally not exceed the promulgated treatment standards by more than one order of magnitude. The Agency also points out that there is an inherent three-fold difference in detection limits that may arise due to difference in sample size taken for analysis.

Thus, until this formal guidance is available, the Agency will consider that, if an analytical sensitivity (i.e., detection limit) within an order of magnitude of the organic constituent treatment standard has been achieved, compliance with such treatment standard will be considered to have been demonstrated provided the data represents the use of a combustion process (i.e., restricted to incineration or fuel substitution in a unit in compliance with all applicable technical operating requirements under 40 CFR part 264 subpart O and part 265 subpart O. Thus, it is likely that the combustion unit is being operated properly). The Agency believes that this is consistent with RCRA section 3004(m), in that, as an alternative to specifying a concentration-based standard for these wastes, the Agency could have promulgated a method of treatment specifying the use of incineration or fuel substitution.

One commenter requested that persons with untreated wastes also be allowed to certify compliance if analytical problems prevent their demonstrating compliance with the treatment standards. The Agency emphatically disagrees. This situation has a substantial potential to mask the presence of hazardous constituents. Untreated wastes, and wastes treated by other than the aforementioned combustion processes (e.g., biotreatment), typically contain many materials that interfere with achieving low detection limits. Such wastes can, thus, contain significant levels of hazardous constituents even when the treatment process is operating properly. Allowing land disposal of such wastes would be contrary to the objectives of the land disposal restrictions statutory provisions. In addition, the rules already allow generators to certify compliance based on their knowledge of the waste, rather than by testing (section 268.7(a)(2)). If a generator believes, for example, that as a result of mass balance information a waste meets the treatment standard, it can certify compliance even if it is not possible to analytically demonstrate compliance with the standard.

EPA is thus amending §§ 268.7 and 268.43 to state that where a treatment standard for organics in nonwastewaters is based on the aforementioned combustion technologies (i.e., incineration or fuel substitution in units operated in accordance with the technical operating requirements of 40 CFR part 264 subpart O and part 265 subpart O) and a waste has been treated using that treatment method, the treatment facility may

certify compliance with the organic constituent standard if a good faith effort has been made to analytically demonstrate compliance with this standard and a detection limit within an order of magnitude of the organic constituent standard has been achieved. This includes all waste codes in the First, Second, and Third Thirds where standards for organics are based on such combustion processes or were transferred from wastes based on such combustion processes. These standards are specifically indicated in Table CCW of § 268.43.

The Agency points out that in cases where a facility believes that waste-specific treatment standards cannot be met because their laboratory is still unable to achieve detection limits below the treatment standards on specific treatment residuals, and: (1) The facility complies with all the other conditions mentioned above; or (2) a facility utilizes a combustion technology other than incineration or fuel substitution; or (3) a facility utilizes a technology other than combustion that can be demonstrated to be equivalent, the facility may submit a petition for a variance from the treatment standards for that particular waste code (EPA construes 40 CFR 268.44 as encompassing such petitions). The facility must demonstrate that the analyses are in compliance with all other BDAT QA/QC provisions (as outlined in the BDAT Generic Quality Assurance Project Plan (EPA/530-SW-87-011, March 1987). Moreover, the petitioner must also demonstrate that the treatment process is a well-designed and well-operated BDAT process.

i. Relation of Hazardous Waste Treatment Council v. EPA

A number of commenters raised the issue of whether the treatment standards being adopted are below levels at which threats to human health and the environment are minimized, citing portions of the recent opinion *Hazardous Waste Treatment Council v. EPA*, 886 F. 2d 355 (D.C. Cir. 1989) (HWTC III). In that case, the Court upheld EPA's existing technology-based approach to establishing treatment standards as a reasonable construction of the statute, but remanded the case to the Agency in order for the Agency to properly explain why it had chosen this approach. EPA's explanation was published in the *Federal Register* on February 28, 1990 and was accepted by the Court, which dismissed all petitions for review on March 15, 1990.

The standards EPA is adopting in this rule are also technology based. However, as discussed in detail in

section III.D. below, the Agency believes that with respect to disposal of prohibited characteristic wastes that are no longer "hazardous" under the regulations, the Agency must harmonize the competing considerations of section 3004(g) and 1006 (b) (relating to a regulatory framework for subtitle D systems) with those of section 3004(m) (relating to treatment to fully minimize threats) before determining the extent of the prohibition.

EPA notes further that it believes that treatment standards established below characteristic levels can result in nonredundant minimization of threats to human health and the environment and thus be permissible under RCRA section 3004(m) and the Court's opinion. Indeed, the Court itself noted that characteristic levels do not serve as a bar to further treatment (886 F. 2d at 363). The treatment standards for characteristic wastes in today's rule thus are not premised on any finding that the characteristic level, in and of itself, creates a bar to further treatment.

2. Treatment Standards for Certain Characteristic Wastes

This section of today's preamble presents a discussion of D001 Ignitable, D002 Corrosive, and D003 Reactive characteristic wastes, as well as the six EP Toxic pesticides (D012 through D017). Treatment standards for the eight EP Toxic metals are found in section III.A.3. of this preamble.

a. General Issues on Developing Treatment Standards for Characteristic Wastes

There were a number of options proposed for developing treatment standards for the characteristic wastes. One option considered by the Agency was to promulgate concentration-based standards (for those characteristic wastes that were defined by a level) based on available data. A second option was to promulgate a treatment standard expressed as a required method. A third option was to simply establish the characteristic level as the treatment standard, and a fourth option was to establish a method of treatment along with a required performance level.

The Agency received extensive comments discussing these options, particularly the option of setting treatment standards expressed as the characteristic levels. A few commenters strongly supported establishing treatment standards for characteristic wastes at levels below the characteristic levels, stating that available performance data supported such an approach. The majority of commenters, however, supported limiting the

treatment standards at the characteristic levels.

The Agency found some of the technical issues raised by these commenters persuasive. (Discussion of the policy issues associated with setting treatment standards for characteristic wastes is found in preamble section III.D.) The Agency agrees with commenters that argued that characteristic wastes may be generated in many matrices, and thus, can take any number of different forms; transferring data from specific listed wastes to these variable characteristic wastes, the commenters indicated, may not account for such differences.

In addition, for certain D001, D002, and D003 treatability groups, there are currently no available analytical methods to quantify residual ignitability, corrosiveness, and reactivity. Until EPA can develop analytical methods capable of accurately determining quantitative characteristic hazards, industry must judiciously make qualitative technical decisions dependent on the waste definition. Treaters must complete treatment until qualitative technical judgement indicates that the waste or waste residual no longer exhibits the characteristic hazard specified by the definition.

Many commenters supported the Agency's approach for setting treatment standards for Ignitable, Corrosive, and Reactive (with the exception of Reactive Cyanides) wastes expressed as a required method of treatment: Deactivation. The Agency, therefore, is promulgating the Deactivation treatment standard and is providing suggested deactivation methods to remove the characteristic for the various Ignitable, Corrosive, and Reactive treatability groups in appendix VI to 40 CFR part 268.

No comments were received on the proposed approach for regulating the EP Toxic pesticides (D011-D017). The Agency is promulgating concentration-based treatment standards for the nonwastewater forms of these wastes and methods of treatment for the wastewaters. The Agency is taking this action based on data indicating that incineration can remove organic constituents to non-detectable levels in nonwastewaters as evidenced by incineration data available for certain halogenated pesticides. Further discussion of issues associated with promulgating treatment standards for these characteristic wastes is found in the following sections of today's preamble.

b. Ignitable Characteristic Wastes

Under 40 CFR 261.21, there are four criteria for identifying a waste as D001 Ignitable. Paraphrasing these criteria, a waste is a D001 Ignitable if: (1) It is a liquid with a flash point less than 140 °F; (2) it is an ignitable compressed gas; (3) it is not a liquid and is capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes and when ignited burns vigorously and persistently; or (4) it is an oxidizer. EPA has determined that these four criteria translate directly into four major D001 subcategories (although EPA has further subcategorized the ignitable liquid subcategory into three treatability groups). If a waste is classified as D001 because it fits under more than one D001 subcategory, the waste must be treated by a treatment method or treatment methods that will remove all characteristics of ignitability for each applicable subcategory.

(1) *Ignitable Liquids Subcategory.* The first D001 subcategory, the Ignitable Liquids Subcategory, refers to those D001 wastes that exhibit the properties listed in § 261.21(a)(1). Commenters specifically questioned whether the determination of liquid under § 261.21(a)(1) was based on the paint filter test ("free liquid" Method 9095), the EP test (Method 1310), or the releasable liquids test in Method 9096. While the Agency has defined liquids both as materials expressed from wastes in Step 2 of Method 1310 (EP), and in Methods 9095 and 9096, there is not a specific definition of liquid with respect to this characteristic in the regulations. Therefore, the generator of a potentially ignitable waste may use any method for determining whether the waste is classified as a liquid for which he can provide an appropriate scientific or technical justification.

One commenter requested clarification regarding the D001 liquid exclusion for aqueous alcohol wastes which is found in 40 CFR 261.21(a). This provision states that a solid waste exhibits the characteristic of ignitability if "it is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 °C (140 °F) * * *". The Agency notes that, in this definition, the term alcohol refers to any alcohol or combination of alcohols. (Note: If the alcohol has been used for solvent properties and is one of the alcohols specified in EPA Hazardous Waste No. F003 or F005, the waste must be coded with these Hazardous Waste Numbers (which cover the hazard of ignitability).)

Data indicate that the majority of all D001 wastes generated fall into the D001

Ignitable Liquids Subcategory and are typically described as solvents, paint thinners, contaminated oils, and various organic hydrocarbons. Some of these wastes may contain organic constituents that are potential carcinogens or otherwise toxic. Typically, the major organic constituents in these wastes are volatile, flammable hydrocarbons or oxygenated hydrocarbons that provide the characteristic of ignitability to the waste (i.e., a flash point of less than 140 °F). (Note: Currently, the length of time over which combustion is sustained at a temperature of less than 140 °F is not specified although such a regulatory change may be appropriate in the future. This issue assumes relevance when considering the large volume of solvent-containing wastewaters that flashes but does not sustain combustion.)

For purposes of BDAT determination, most of the ignitable liquid wastes are typically classified as nonwastewaters because of their high organic content (usually greater than 1 percent TOC). Technologies applicable for treatment of these organic nonwastewaters include incineration, fuel substitution, and recovery processes such as distillation or liquid-liquid extraction. Thermal destruction technologies such as incineration and reuse as a fuel completely remove the characteristic of low flash point by completely destroying the volatile organic compounds (VOCs), thereby rendering the waste nonignitable. Recovery processes also remove the characteristic but recover the ignitable material for reuse instead of destroying the material. Furthermore, the Agency believes such technologies are both demonstrated and available because EPA has data showing that the majority (i.e., 75%) of D001 Ignitable Liquids are already treated by incineration, reused as a fuel substitute because of their high BTU content, or recovered for reuse through processes such as distillation. Based on the fact that these demonstrated, available technologies remove the characteristic of ignitability permanently and completely, as well as destroying a number of hazardous constituents, EPA proposed a treatment standard of "Incineration, Fuel Substitution, or Recovery as Methods of Treatment" for D001 nonwastewaters in the Ignitable Liquids Subcategory (54 FR 48420).

At the time of proposal, the Agency was unable to determine whether any D001 wastes in the Ignitable Liquids Subcategory, as initially generated, conformed to EPA's regulatory definition of wastewaters (i.e., wastes containing less than 1 percent TOC and 1 percent TSS). Accordingly, EPA did

not believe that wastewater treatment technologies such as biodegradation were applicable for treatment of any waste forms in the D001 Ignitable Liquids Subcategory because of the high organic contents and large BTU values thought to be inherent in these wastes, as well as the concern for air emissions caused by the release of untreated VOCs during dilution and aeration steps associated with most wastewater treatment technologies. Consequently, EPA proposed that the standard for nonwastewaters apply to any wastewaters as well, since the end result would be the removal of the ignitability characteristic and destruction of the hazardous constituents. See 54 FR 48420-22.

Concerning the issue of wastewater generation, the Agency received many comments indicating that there are wastes in the D001 Ignitable Liquids Subcategory that consist primarily of water. The commenters also emphasized that most of these low-organic, aqueous D001 wastes are best treated using wastewater treatment technologies even though such aqueous streams may contain greater than 1 percent TOC and may thus be classified as nonwastewaters. With respect to wastewater treatment technologies being appropriate methods of treating aqueous ignitable wastes, some commenters said that biological treatment is applicable for some of the D001 aqueous wastes that contain water-soluble organics. Other commenters indicated that wet air oxidation and carbon adsorption are also applicable forms of treatment for D001 aqueous wastes. Nonetheless, the Agency is still concerned about possible air emissions associated with the aeration and dilution steps that are often part of wastewater treatment processes such as biodegradation. However, EPA believes that such emissions can be controlled by altering operating parameters (e.g., aeration rates, temperatures) and by performing process steps such as aeration and dilution steps in controlled environments such as tanks equipped with air pollution control devices. The Agency believes some facilities are already practicing these precautions. For example, one commenter mentioned a biodegradation system used to treat D001 that was anaerobic and kept any air emissions contained inside the system.

After evaluation of all the appropriate waste characterization data and treatment performance data presented in the comments, the Agency decided that wastewater treatment technologies

that are capable of providing legitimate treatment for such aqueous wastes do exist. Next, EPA investigated information about technology treatment capabilities corresponding to the organic and water contents of wastes. For example, the Agency has information indicating that incineration is generally applied to those wastes having greater than 10 percent organic content and that technologies such as air stripping, wet air oxidation, and solvent extraction can be applied to streams containing up to 10 percent organic content. Using this information, along with the Agency's regulatory definitions of wastewaters and nonwastewaters, EPA determined that the D001 Ignitable Liquids Subcategory should be further subcategorized by division into three treatability groups as follows: (1) D001 Ignitable Liquids High TOC Nonwastewaters, (2) D001 Ignitable Liquids Low TOC Nonwastewaters, and (3) D001 Ignitable Liquids Wastewaters.

The Ignitable Liquids High TOC Nonwastewater Subcategory is defined as ignitable liquid wastes that contain greater than or equal to 10 percent TOC as generated. These wastes have large organic concentrations, high BTU content, and low water content. It is common practice to recover reusable organic materials from these wastes using processes such as distillation, steam stripping, and liquid-liquid extraction. Also, many of these wastes are excellent candidates for fuel substitution because of high BTU values. (Additional discussion on fuel substitution as a treatment method for these wastes is contained in the discussion of national capacity variances in section III.B.) The Agency is promulgating "Incineration (INCIN), Fuel Substitution (FSUBS), or Recovery (RORGS) a Method of Treatment" for this treatability group. See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in parentheses.

The Agency believes it appropriate to require that these wastes be treated by some type of destruction and recovery technology given that they often contain high concentrations of toxic organic constituents that provide the ignitability characteristic to the waste. The toxics in these wastes might not be destroyed if the waste could be land disposed so long as it is not ignitable at the point of disposal. Additionally, the Agency notes that this is an instance illustrating how a point-of-generation approach (i.e., the treatment method applies if the waste is in the treatability group when generated) ensures that the objectives of

section 3004(m) are satisfied. EPA also notes that if an Ignitable Liquids High TOC Nonwastewater is commingled with other waste streams, the entire mixture must be treated by one of the methods prescribed for Ignitable Liquids High TOC Nonwastewater Subcategory 268.41(b). This is an instance of how the rules seek to ensure that wastes are not commingled if the treatment method is not appropriate for each commingled waste. Put another way, commingling of Ignitable Liquids High TOC Nonwastewaters with non-incinerable wastes is normally a type of impermissible dilution. See 52 FR 25766 (July 8, 1987).

The Ignitable Liquids Low TOC Nonwastewater Subcategory is defined as wastes that contain greater than 1% but less than 10% TOC as generated. The Ignitable Liquids Wastewater Subcategory is defined as wastes that contain less than 1 percent TOC and less than 1 percent TSS as generated. The Agency believes that some of these wastes can be effectively treated (i.e., remove the characteristic of ignitability by either destroying or recovering the organic constituents that gave the waste its ignitable character) using technologies applicable for treatment of aqueous wastes. In some cases, these wastewaters and low TOC nonwastewaters may need to be mixed with other wastewaters to achieve an organic concentration desirable for proper operation of a treatment system for aqueous wastes. For instance, wastewaters destined for biological treatment are often commingled to achieve an organic concentration that is optimal for the microorganisms. Fuel substitution is not considered practical since wastes in both these categories generally do not have high BTU contents because they contain mostly water. Most of these wastes can be treated with wastewater technologies; however, incineration may also be applicable, especially for the Low TOC Nonwastewaters. EPA is promulgating "Deactivation (DEACT) to Remove the Characteristic of Ignitability" for both the Ignitable Liquids Low TOC Nonwastewater Subcategory and the Ignitable Liquids Wastewater Subcategory. See section 268 appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.)

One commenter requested clarification on whether phase

separation followed by recovery or use as a fuel of the organic phase could be considered a permissible type of deactivation treatment for ignitable wastes. EPA considers processes that separate an organic phase to be recovery (or in some cases pretreatment) and, hence, acceptable treatment provided the separated organic phase is reused or further treated by a technology that will remove the characteristic of ignitability. The aqueous phase would not require further treatment unless it still exhibited the ignitability characteristic (assuming the aqueous phase is not hazardous for any other reason). See also discussion of permissible switching of applicable wastewater and nonwastewater standards 54 FR 48383 (November 22, 1989). (Additionally, this is in keeping with the general principle established in these rules that determination of whether a characteristic waste achieves BDAT must be reevaluated whenever a treatment residual is generated. Put another way, each new treatability group is a new point of generation for a characteristic waste. See section III.D. below.)

EPA is aware that some D001 Ignitable Liquids have been shown to contain organic constituents that are also constituents in F001-F005 solvents. The Agency studied the option of transferring the standards for these constituents from the corresponding F001-F005 standards promulgated in the November 7, 1986, final rule (51 FR 40642). The Agency received comments for and against this option. However, the Agency believes that this option would create an unnecessary burden on the regulated community since the majority of D001 wastes in the Ignitable Liquids Subcategory should not contain these constituents and that most wastes containing F001-F005 constituents are probably cases of misclassification. Misclassifying F001-F005 waste as D001 is currently one of the largest enforcement issues in the RCRA program. Such misclassification is, of course, illegal and a serious infraction. It avoids the Congressionally mandated treatment standards for the prohibited solvent wastes. Indeed, solvents were the wastes Congress prioritized for prohibition and treatment. EPA believes, however, that the problem is best handled through enforcement rather than establishing treatment standards for the misclassified wastes because it seems an unreasonable burden to require generators of authentic D001 wastes to conduct the significant amount of testing and certification required under the land disposal

restrictions when it is likely that the constituents will not be present in most true D001 wastes. Therefore, the Agency is not promulgating concentration-based D001 treatment standards based on a transfer of F001-F005 data at this time, although it may reevaluate this decision in the future.

(2) *Ignitable Compressed Gases Subcategory.* The second subcategory, the Ignitable Compressed Gases Subcategory, refers to those D001 wastes that exhibit the properties listed in § 261.21(a)(3). The Agency has limited information on the generation and characterization of D001 wastes in this subcategory, but suspects that although these wastes are generated, it is unlikely that they require placement in any type of land disposal unit. The Agency believes that there are no gas cylinders containing compressed ignitable gases placed in surface impoundments and that it is physically impossible to dispose of them by means of deep well injection. Some cylinders containing D001 ignitable gases may be placed in waste piles; however, such placement of a container in a storage unit is not land disposal under section 3004(k). See 54 FR 48439. In addition, these types of cylinders are usually returned to distribution facilities to be refilled. The Agency does not intend to prevent short-term storage of cylinders prior to refilling.

The Agency proposed several options as treatment standards for compressed ignitable gases. The first option was that of recovery by direct reuse since, typically, the cylinders are directly refilled. The second option was incineration by venting the gas into an incinerator. The Agency proposed a treatment standard of "Recovery or Incineration of Vented Ignitable Gases" for these wastes.

EPA continues to believe that both incineration and recovery are applicable technologies for treatment of most compressed gases. However, several commenters presented information about the limitations of the proposed technologies and provided information about additional technologies that the Agency also believes to be applicable treatment methods for removing the characteristic of ignitability for this subcategory.

In regard to the feasibility of the recovery option, one commenter stated that it is viable within the compressed gas industry, except for cases such as cylinders that have defective valves, that have lost the identity of the manufacturer, that are lecture bottle size, or that are damaged. In any of these four cases, the contents in the cylinders must instead be treated. The

commenter also stated that the most prevalent treatment method is to feed the ignitable gas into a furnace as a fuel source. The Agency did not propose fuel substitution as a method because EPA's knowledge about the use and suitability of these wastes as fuels was limited. However, the characterization data submitted during the comment period indicate that most of the waste gases currently treated by fuel substitution are gases that can be used efficiently and safely as fuels.

With respect to "incineration of vented gases" as a treatment method, EPA believes that there may be cases when it is preferable to vent the gas into an appropriate adsorbent material (e.g., water, solvents, activated carbon) and then to incinerate the adsorbed gas/adsorbent material combination to permanently remove the characteristic. Additionally, a commenter said that for small volume containers of ignitable compressed gases (e.g., aerosol cans of 18 oz. or less), the containers can be fed directly into the kiln and vented within the kiln itself by the melting of the small cans. The vented gases are then incinerated in the kiln or afterburner.

One commenter described a method of treatment for pyrophoric gases. Typical gases in this class include tributyl aluminum, dimethylzinc, triethylborane, and tetramethyltin. The commenter claimed that these gases, because of their air reactive characteristics, cannot be vented into an incinerator without considerable risk. The commenter's method of treatment for such gases has been by remote control penetration and detonation under a column of appropriate scrubbing solution.

Another method of treatment described by the commenters to deactivate the ignitable characteristic in some compressed gases is to chemically oxidize them in an aqueous medium. The commenters claimed that carbonyl sulfide and methyl mercaptans are efficiently treated by oxidation. Chemical oxidation and chemical reduction technologies include reactions with reagents in aqueous mediums that will oxidize or reduce the hazardous constituents.

The Agency believes that all these technologies can remove the characteristic of ignitability and is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Ignitability" for the Ignitable Compressed Gas Subcategory. The Agency has established this standard to allow the regulated community the flexibility to use the "best" technology for the specific gaseous waste. See section 268

Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table I for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) This treatment standard will apply to all forms of wastes in the Ignitable Compressed Gases Subcategory since the definitions of wastewater and nonwastewater do not apply to this group of wastes.

(3) *Ignitable Reactives Subcategory.* The third subcategory, the Ignitable Reactives Subcategory, refers to those D001 wastes that exhibit the properties listed in § 261.21(a)(2). These wastes are typically generated on a sporadic basis in low volumes and are characterized as primarily inorganic solids or wastes containing reactive materials. Ignitable reactive materials include reactive alkali metals or metalloids (such as sodium and potassium) and calcium carbide slags. Most of these are very reactive with water and will generate gases that can ignite as the result of heat generated from the reaction with water. Other reactive ignitable solids in this subcategory include metals such as magnesium and aluminum that, when finely divided, can vigorously react with the oxygen in the air when ignited.

There appears to be an overlap between wastes in this D001 subcategory and certain D003 (characteristic of reactivity) wastes. A close examination of the definitions in § 261.21(a)(2) for ignitable wastes and §§ 261.23(a)(2), (3), and (6) for reactive wastes reveals the distinction between these two groups. The key difference is in the definition of ignitable wastes, which states: " . . . when ignited, burns vigorously and persistently." This phrase implies that the hazard is due primarily to the ignition potential rather than to the extreme reactivity.

The Agency proposed a treatment standard of "Deactivation as a Method of Treatment" for wastes in the D001 Ignitable Reactive Subcategory. The Agency took this approach for these wastes since the hazardous characteristic is based on imminent hazard (i.e., ignition and violent reaction) rather than on other criteria such as levels of hazardous constituents and since technologies exist that can completely remove this characteristic.

Current management practices for some of these wastes, such as calcium carbide slag, involve controlled deactivation with water. Other D001 Ignitable Reactives, such as those containing reactive alkali metals

(sodium or potassium) are sometimes chemically deactivated using chemical oxidation or chemical reduction technologies. Several commenters stated that incineration is also an appropriate treatment method for these wastes. Additionally, other commenters have indicated that recovery technologies are applicable for some wastes in this subcategory. EPA also believes that stabilization is an established deactivation technique for safe and equivalent management of reactive ignitable materials since it accomplishes results equivalent to those of other technologies by isolating and encapsulating the pyrophoric metal fines and precluding conditions that could cause ignition or reaction of the material.

The Agency believes that chemical oxidation, chemical reduction, incineration, and recovery are all applicable technologies for waste forms in the D001 Ignitable Reactives Subcategory because these technologies will remove the characteristic of ignitability. However, the Agency believes that because of the diversity in physical and chemical forms of the wastes in the Ignitable Reactives Subcategory it is not possible to determine a "best" technology for all wastes. EPA is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Ignitability" for the Ignitable Reactives Subcategory. See section 268 Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) This treatment standard is established only for nonwastewaters since ignitable reactive wastes are described as being very reactive with water and hence cannot exist as wastewaters.

(4) *Oxidizers Subcategory.* The fourth subcategory, the D001 Oxidizers Subcategory, refers to those D001 wastes that exhibit the properties listed in § 261.21(a)(4) and meet the definitions in 49 CFR 173.151. Several commenters have asked for an elaboration of the oxidizer definition because the DOT definition is not definitive but rather lists examples of oxidizing compounds. EPA believes that D001 wastes in the Oxidizers Subcategory are primarily inorganic and include such things as waste peroxides, perchlorates, and permanganates. The Agency has very limited information on the generation and characterization of D001 wastes in

this subcategory. Currently, generators must assess wastes for oxidizing hazards by considering known oxidizing constituents contained within the wastes, and by the definition as outlined in 49 CFR 173.151 which states:

"An oxidizer for the purpose of this subchapter is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of the organic matter."

In other words, the presence of any amount of the above substances does not indicate that a material is an oxidizer, rather one or more of these substances must be present in a quantity sufficient to yield oxygen and stimulate combustion.

The Agency believes recovery for reuse to be an applicable treatment for wastes in this subcategory since it is possible that certain aqueous solutions of waste oxidizers could be useful in the treatment of other hazardous wastes. These wastes must, however, be used as treatment reagents in tanks and not in surface impoundments because of the potential release of heat and volatile organics during the oxidation/reduction reactions (see 40 CFR 264.229 and 265.229).

Several commenters wrote about different technologies that are applicable to wastes in the oxidizer subcategory. One commenter generates calcium hypochlorite and trichlorocyanuric acid wastes that fit into the oxidizer subcategory. They are both off-spec or contaminated swimming pool chlorination chemicals. The wastes are normally generated as solids and routinely disposed of through deactivation by adding the material to large quantities of water (similar to its use in swimming pools). Following the deactivation, the waste is further treated in a wastewater treatment facility. During deactivation and treatment, there is no release of chlorine gas. EPA considers mixing with water followed by chemical treatment to be applicable for oxidizer wastes.

Additionally, the commenter pointed out that both hydrogen peroxide and nitric acid are oxidizers and that the standard treatment for these chemicals is dissolution in water followed by neutralization. In the case of nitric acid, the diluting in water is needed to prevent an adverse reaction. Other commenters use recovery and incineration as treatment methods. The Agency believes that all these technologies are applicable for treatment of oxidizer wastes since they will remove the characteristic of ignitability.

The Agency proposed a treatment standard of "Deactivation" for wastes in the D001 Oxidizers Subcategory. The Agency took this approach for these wastes since the hazardous characteristic of these wastes is based on imminent hazard. (i.e., oxidizers can react violently with organics or other materials and result in the rapid generation of fires) rather than on other criteria such as levels of hazardous constituents and since technologies exist that can completely remove this characteristic. EPA continues to believe that this standard is appropriate for wastes in the D001 Oxidizer Subcategory and is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Ignitability" for the D001 Oxidizers Subcategory. See section 268 appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) This standard will allow the regulated community the flexibility to determine the "best" treatment based on the physical and chemical characteristics of the oxidizer wastes.

BDAT TREATMENT STANDARDS FOR D001 IGNITABLE LIQUIDS 261.21(a)(1)

[Nonwastewaters]—[High TOC Ignitable Liquids Subcategory—Greater than or equal to 10% total organic carbon]

Incineration (INCIN), fuel substitution (FSUBS), or recovery (RORG) as a method of treatment*

BDAT TREATMENT STANDARDS FOR D001 IGNITABLE LIQUIDS 261.21(a)(1)

[Nonwastewaters]—[Low TOC Ignitable Liquids Subcategory—Less than 10% total organic carbon]

Deactivation (DEACT) to remove the characteristic of ignitability*

BDAT TREATMENT STANDARDS FOR D001 IGNITABLE LIQUIDS 261.21(a)(1)

[Wastewaters]

Deactivation (DEACT) to remove the characteristic of ignitability*

**BDAT TREATMENT STANDARDS FOR D001
IGNITABLE COMPRESSED GASES
261.21(a)(3)**

Deactivation (DEACT) to remove the characteristic of ignitability*

**BDAT TREATMENT STANDARDS FOR D001
IGNITABLE REACTIVES 261.21(a)(2)**

[Nonwastewaters]

Deactivation (DEACT) to remove the characteristic of ignitability*

**BDAT TREATMENT STANDARDS FOR D001
OXIDIZERS 261.21(a)(4)**

[Wastewaters and Nonwastewaters]

Deactivation (DEACT) to remove the characteristic of ignitability*

* See § 268.42 Table 1 in today's rule for a detailed description of all technologies referred to by a five letter technology code. See also part 268 appendix VI for a list of applicable technologies that used alone or in combination can achieve deactivation of ignitability.

c. Corrosive Characteristic Wastes

Paraphrasing the criteria for defining a D002 Corrosive waste (40 CFR 261.22), a waste can be a D002 waste if it is aqueous and has a pH less than or equal to 2; or it is aqueous and has a pH greater than or equal to 12.5; or it is a liquid and corrodes steel at a specified rate and temperature. EPA tentatively determined at proposal that these criteria translated into three subcategories, the Acid Subcategory, the Alkaline Subcategory, and the Other Corrosives Subcategory (54 FR 48422). In general, commenters supported this subcategorization of D002 wastes. Therefore, EPA is adopting this classification scheme in the final rule.

(1) *D002 Acid and Alkaline Subcategories.* The Acid Subcategory and the Alkaline Subcategory, refer to those D002 wastes that exhibit the properties listed in 40 CFR 261.22(a)(1) and are distinguishable by the appropriate pH specifications. The Acid Subcategory is defined as those wastes with a pH of less than or equal to 2.0, and the Alkaline Subcategory is defined as those wastes with a pH of greater than or equal to 12.5. Also by definition in § 261.22, D002 wastes in these two subcategories only include wastes which are considered to be "aqueous", due to the fact that standard pH measurements can only be performed in

the presence of significant amounts of water (i.e., pH is the measure of the concentration of hydronium ions in water).

D002 wastes in the Acid Subcategory typically include concentrated spent acids, acidic wastewaters, and spent acid strippers and cleaners. Wastes in the Alkaline Subcategory typically include concentrated spent bases, alkaline wastewaters, and spent alkaline strippers and cleaners. These wastes represent a significant portion of all hazardous wastes generated by almost every industry.

EPA proposed a treatment standard of "Base Neutralization to a pH 8 to 9 and Insoluble Salts" for the D002 Acidic Subcategory (54 FR 48422). Likewise, EPA proposed a treatment standard of Acid Neutralization to a pH 8 to 9 and Insoluble Salts" for the D002 Alkaline Subcategory (54 FR 48422).

(i.) *Comments Concerning the Proposed pH Requirements.* Treatment of acids and bases is generally referred to as "neutralization". In the proposed rule, the Agency interpreted this to mean a pH range of 8 to 9. This range was selected based on a rounding off of the pH range found in fresh water aquatic ecosystems through natural carbonate/bicarbonate buffering (i.e., pH 5.5 to 8.5). While a "true" neutral pH is equal to 7, by proposing the pH 8 to 9 range, the Agency was recognizing that even in natural systems, pH can fluctuate significantly. Thus, the Agency's underlying premise was that treatment of corrosive wastes should result in a pH range (i.e., pH 8 to 9) that was referred to as "neutral".

In addition, the Agency expressed concern on whether a waste with a pH 2 to 6 could have a negative impact on the effectiveness of a clay liner in mitigating the mobility of hazardous constituents from surface impoundments. In fact, this was one of the major concerns of Congress with respect to the statutory land disposal restrictions imposed by HSWA on all hazardous wastes with pH less than 2. (See generally 52 FR 25760 through 25792 (July 8, 1987) where EPA codified these restrictions for all corrosive wastes (without specifically referring solely to D002 wastes.)).

EPA received many comments pertaining to the impact that the pH range of 8 to 9 would have on generators and treaters of D002 wastes. Commenters documented that enormous disruptions of existing wastewater treatment systems would occur if the standard were promulgated with the proposed pH restrictions. For example, every surface impoundment or injection well receiving commingled wastes

(some of which were D002 corrosive wastes at the point of generation, but once commingled were above pH 2 (or below pH 12.5) and therefore no longer considered hazardous by section 261.22) that were outside of the pH 8 to 9 range would be in violation of the standard. This would effect thousands of such units (most of which are RCRA subtitle D units and hence not presently affected by RCRA subtitle C).

With regard to the proposed pH 8 to 9 requirement for underground injection units, several commenters stated that the proposed pH range would cause problems in many of the injection units and wells, because some metals tend to precipitate out of solution at these pH ranges resulting in plugging in either the injection unit itself or further inside the well. Commenters also stated that specific pH ranges are typically required in permits for many underground injection wells and are typically at levels less than pH 6 to ensure that the injected fluid flows properly through the injection zone without plugging.

Another commenter remarked that they treat an acidic D002 waste only to a pH of 4.5 prior to commingling with other wastes that require biodegradation. This is done in order to counter the production of alkaline ammonia during the biodegradation process, and thereby aids in maintaining a "neutral" pH in the biodegradation process.

Other commenters pointed out that a pH of 10 is often considered the optimum pH for removal of most metals from wastewaters and that requiring a pH of 8 to 9 would cause severe disruptions in most metals removal treatment systems. These treatment systems generally consist of chemical precipitation in tanks to remove metals followed by neutralization of the effluent in surface impoundments prior to discharge.

As a result of all of the comments on pH ranges mentioned above and for the reasons mentioned below, the Agency is not promulgating the proposed pH range of 8 to 9. While the Agency maintains that in some cases a pH of 8 to 9 may be considered desirable, the Agency believes the Clean Water Act, end-of-pipe, NPDES limitations will address these specific situations, where water quality issues are of concern (specifically where discharges of such neutralized wastewaters are into fresh water ecosystems). (Note: The Agency points out that pH is commonly already regulated for such discharges.)

The Agency also notes that liquids are not allowed in subtitle C landfills under section 3004(c). As mentioned by the

commenters (and discussed above), requiring a pH range of 6 to 9 before discharge to most surface impoundments will cause severe disruptions in existing treatment operations. Additionally, the Agency believes that its concern regarding the impact of corrosive wastes on the integrity of clay liners is addressed mostly by the statutory restrictions on a pH of less than 2. The Agency currently has little data on the impact that wastes containing pH of 2 to 6 may have on clay liners. Finally, regarding the proposed pH range, the Agency did not intend to interfere with optimum pH levels desired for treatment of metals in tanks, nor did it intend for these standards to interfere with other legitimate wastewater treatment operations (such as the biotreatment processes mentioned by the commenter).

(ii.) Comments Concerning the Proposed Acid and Base Requirements. EPA additionally proposed that "neutralization" of wastes in the D002 Acidic and Alkaline subcategories be accomplished specifically through the use of the corresponding neutralization chemicals (i.e., acids to neutralize the Alkaline Subcategory and bases to neutralize the Acidic Subcategory). As commenters quickly pointed out, almost all chemicals (including water which dissociates into hydronium and hydroxide ions) have some acid character and some basic character depending upon the reference chemical. That is what is historically been taught in academia as the "Lewis Acid Theory". The Agency never intended to dispute basic chemical theory, but was merely stating its preference to neutralize the corrosive characteristic of these wastes with chemicals that would result in an overall reduction in total dissolved solids in effluent (i.e., the use of these chemicals is coupled with the concept of the proposed requirement to create insoluble salts rather than the concept of neutralization to a specific pH). (See also the discussion on insoluble salts in the preamble discussion following this one.)

With respect to the use of these chemicals (i.e., acids and bases) to achieve the treatment standard, several commenters stated that it is not always necessary to use chemicals that are specifically identified as commercial acids or bases to achieve treatment of D002 wastes. In fact many facilities generate both acidic and alkaline wastes (often from different processes) and commonly use them to neutralize each other. This situation also occurs at commercial hazardous waste treatment facilities, in that the facilities will take

acid wastes from various generators and will neutralize them with alkaline wastes from other generators. In general, commercial acids and bases are used to complete the neutralization processes and often are used only for pH adjustment of the final wastewater discharges. Many commenters also pointed out that the mixing of D002 corrosive wastes with other wastewaters (even other acidic, noncorrosive wastes) will contribute to an overall neutralization due to the resultant change in pH. This is because pH is merely a measure of the concentration of hydronium ions (H^+) in water and is dependent upon the equilibrium constant for the dissociation of water into hydronium and hydroxide ions. As more water is present, the equilibrium will be shifted and thereby increase the pH; resulting in "neutralization." Because of this, EPA is specifically allowing mixing of D002 wastes with each other and with other wastewaters to remove the characteristic of corrosivity (i.e., resulting in a pH between 2 and 12.5). However, EPA's allowance of mixing wastes to remove corrosivity does not override other prohibitions on dilution of wastes for other purposes (i.e., this does not override other dilution prohibitions that may be applicable for other wastes).

Many commenters declared that incineration should also be allowed as treatment for D002 wastes, especially for organic acids, mixed D001/D002 waste streams, and other D002 wastes with organics. Pollution control devices on incinerators will remove corrosive gases from the burning of these D002 wastes. Alkaline scrubber waters are often employed in these air pollution control devices in order to neutralize acidic emissions. These scrubber waters are then further neutralized if necessary. The Agency agrees with the commenters that incineration is an applicable treatment method for some D002 wastes and is thus not precluding incineration as treatment of D002 wastes.

(iii.) Comments Concerning the Insoluble Salt Requirement. The Agency proposed that neutralization of wastes in the D002 Acid and Alkaline Subcategories should be required to result in insoluble salts. The reason was that the Agency felt that the overall dissolved solids loading on fresh water aquatic systems could be reduced by establishing such a standard, even though it would result in an insoluble sludge that would require landfilling. The Agency believed that such a standard would discourage the generation of D002 acids and alkaline

wastes and thereby promote minimization/source reduction as well as recycling of acids (either directly or after some form of pretreatment). While the Agency maintains that the goal behind the proposed standard is consistent with national policy on waste minimization and the Agency's overall concerns on cross-media impacts of both hazardous and nonhazardous constituents on the entire environment, many commenters presented technical complications with the proposed requirement on insoluble salts that the Agency has found persuasive.

The Agency received numerous comments concerning this proposed requirement indicating that neutralization and formation of insoluble salts is either impractical or technically impossible for some of the most commonly used acids and bases that become D002 wastes (such as nitric acid, hydrochloric acid, sodium hydroxide, potassium hydroxide, other acid halides). Because the salts generated from the neutralization of these particular acids and bases are very soluble in water, the proposed requirement to generate insoluble salts would result in treatment with exotic chemicals in order to comply (if there are any methods at all to create insoluble salts). The Agency concurs with the commenters. This is further supported by the fact that almost all nitrate and chloride salts of the major metals are very soluble in water.

Other commenters stated that requiring the formation of insoluble salts often will negate the use of alkaline and acidic process wastes that are generated on-site for neutralization. This would in effect, result in double the volume of insoluble salts that would have to be disposed and use up valuable virgin commercial acids and bases that otherwise would not be needed. As stated in the preceding sections of this discussion on corrosive wastes, the Agency never intended to preclude such on-site neutralization with wastes, and agrees that this would probably result in an unnecessary use of virgin materials for waste treatment.

Additionally, one commenter points out that in many cases neutralization of D002 wastes that contain organics, is often a necessary pretreatment step for other treatment processes (such as steam stripping, biological treatment and/or carbon adsorption) that remove or destroy the organics in the waste. If a sludge must be formed during the neutralization process, organic constituents that could have been destroyed or removed while in the wastewaters are instead being

transferred to the solid phase where they will be either disposed of untreated or where they may require treatment with incineration. The Agency shares the commenters concerns on treatment of organics in D002 wastes.

As a result, the Agency is withdrawing the requirement for neutralization to insoluble salts for wastes in the D002 Acid and Alkaline subcategories. In doing so, the Agency's concerns of using acids and bases to provide neutralization is a moot point.

(iv.) Promulgated Treatment Standards. For the reasons outlined in the previous discussions, the Agency is withdrawing the proposed treatment standards for D002 Acid and Alkaline Subcategories. The Agency considered promulgating a treatment standard as a specified technology, namely "Neutralization". However, the Agency found that in certain cases, "incineration" and "recovery" processes were also quite applicable to wastes in these subcategories.

In addition, many D002 wastes also are hazardous for other reasons, and may require that additional treatment processes be employed besides neutralization, incineration, or recovery. For example, a facility may have interpreted that biodegradation would have been precluded from use, for a D002 waste that also contained organics. Since biodegradation may have actually been a technically viable alternative for this waste, the facility would have had to submit a petition for a treatability variance. While the Agency probably would have granted it, the variance process would have created an unnecessary burden on both the regulatory and regulated community, and probably without incurring any additional protection of human health and the environment.

As a result, EPA is promulgating a general treatment standard for wastes in the D002 Acid and Alkaline Subcategories that allows the use of any appropriate treatment technology, namely: "Deactivation (DEACT) to Remove the Characteristic of Corrosivity". This means that the facility may use any treatment (including neutralization achieved through mixing with other wastewaters) that results in a pH above 2 but less than 12.5, and thereby removes the characteristic of corrosivity. See section 268 Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.)

EPA has adopted this standard, in part, to avoid the massive disruptions to wastewater treatment systems that would have resulted from the proposed standard (which impacts far exceeded any others that would have resulted under the proposed rule), and because the final standard does require the removal of the property of corrosivity. Corrosivity is not defined in the same way EP Toxic wastes are defined. Corrosivity is not based on a toxic constituent, where the environmental concern is mass-loading in the environment. With respect to the issue of toxics present in these corrosive wastes, EPA notes that if a corrosive waste also exhibits the toxicity characteristic, it must be treated to meet the treatment standard for the toxic constituent as well (see generally section III.A.1. of this preamble).

The Agency received many comments regarding non-liquid wastes that are corrosive and the applicability of treatment technologies for aqueous and liquid corrosive wastes to treat non-liquid corrosive wastes. The proposal did not specifically address corrosive solids because there is not a definition of corrosive solids in § 261.22 at this time. Until the Agency amends § 261.22 to include a definition for corrosive solids and promulgates a treatment technology, generators must prudently handle wastes with regard to known hazards. Although not required under current regulations, many generators of corrosive solids prefer to classify these wastes as D002 corrosives and choose waste management and disposal protocols accordingly in an added effort to protect the environment.

(2) *Other D002 Corrosives*. The third major subcategory is classified as the Other Corrosives Subcategory and is defined as those D002 wastes that exhibit corrosivity to steel as defined in § 261.22(a)(2). They often are nonaqueous corrosive wastes such as certain organic liquids, but can represent inorganic chemicals as well.

Wastes in the Other D002 Corrosives Subcategory are generated on a sporadic basis and generally in low volumes. The Agency suspects that these wastes are often identified as corrosive without performing the specified testing with steel (i.e., the corrosivity of the waste may be assumed due to the presence of known corrosive constituents). This may also be due, in part, to the high cost of testing and to the difficulties in identifying laboratories that are experienced in steel corrosion testing.

The physical and chemical characteristics of this group of wastes vary greatly. The wastes may be

aqueous or they may be primarily organic. In addition, a large variety of corrosive chemicals may appear as constituents in this type of corrosive waste. Depending on the concentration of these corrosive chemicals, they may corrode SAE 1020 steel. Examples of chemicals that may contribute to corrosivity include ferric chloride, benzene sulfonyl chloride, benzoic chloride, acetyl chloride, formic acid, hydrofluoric acid, some catalysts, various resins, metal cleaners, and etchants. Highly concentrated acids that have no water may also be included in this subcategory, since pH measurements are not possible on these wastes.

Wastes in the Other Corrosives Subcategory are often treated by deactivating the corrosive constituents of the waste with an appropriate chemical reagent. Wastes that contain high concentrations of corrosive organics are often incinerated; however, due to the great variety of potential corrosive organics, the Agency does not believe that it should establish concentration-based standards based on incineration for these D002 wastes. Removal and recovery of either organic or inorganic corrosive constituents may also be applicable technologies, since recovery could extract the corrosive constituents until the waste itself is no longer corrosive to steel.

EPA proposed a treatment standard of "Deactivation" for D002 wastes in the Other Corrosives Subcategory. The Agency took this approach for these wastes since the hazardous characteristic is based on imminent hazard (i.e., the corrosivity to steel may cause rupture of a tank or container, thus releasing the contents either suddenly or through leaks) rather than on other criteria such as levels of hazardous constituents, and that technologies exist that can completely remove this characteristic.

EPA continues to believe that the proposed standard is appropriate for wastes in the D002 Other Corrosives Subcategory and is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Corrosivity". See section 268 Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) This standard will allow the use of the "best" treatment based on the

chemical and physical characteristics of the waste.

**BDAT TREATMENT STANDARDS FOR D002
ACID SUBCATEGORY 261.22(a)(1)**

Deactivation (DEACT) to remove the characteristic of corrosivity*

**BDAT TREATMENT STANDARDS FOR D002
ALKALINE SUBCATEGORY 261.22(a)(1)**

Deactivation (DEACT) to remove the characteristic of corrosivity*

**BDAT TREATMENT STANDARDS FOR D002
OTHER CORROSIVES 261.22(a)(2)**

Deactivation (DEACT) to remove the characteristic of corrosivity*

*See section 268 appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. See also § 268.42 Table 1 for a description of the technologies indicated by a five letter code.

d. Reactive Characteristic Wastes

According to 40 CFR 261.23, there are eight criteria for defining a waste as a D003 Reactive waste. Paraphrasing these criteria, a waste can be a D003 waste if: (1) It is unstable and readily undergoes violent changes without detonating; or (2) it reacts violently with water; or (3) it forms potentially explosive mixtures with water; or (4) when mixed with water, it generates toxic gases; or (5) it is a cyanide or sulfide bearing waste which under certain conditions can generate toxic gases; or (6) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement; or (7) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or (8) it is a forbidden explosive, a Class A explosive, or a Class B explosive.

EPA tentatively determined at proposal that these eight criteria translated into five subcategories for D003 wastes (54 FR 48424). Commenters concurred with these classifications. The first subcategory is classified as the Reactive Cyanides subcategory and refers to those D003 wastes that exhibit the properties listed in § 261.23(a)(5) for cyanide. The second subcategory is classified as the Explosives subcategory and refers to those D003 wastes that exhibit the properties listed in

§§ 261.23(a)(6) through 261.23(a)(8). The third subcategory is classified as the Water Reactive subcategory and refers to those D003 wastes that exhibit the properties listed in §§ 261.23(a)(2) through 261.23(a)(4). The fourth subcategory is classified as the Reactive Sulfides subcategory and refers to those D003 wastes that exhibit the properties listed in § 261.23(a)(5) for sulfide. The fifth subcategory is classified as the Other Reactives subcategory and refers to those D003 wastes that exhibit the properties listed in § 261.23(a)(1).

For all subcategories of D003 wastes except the Reactive Cyanides, the Agency believes that development of concentration-based treatment standards would be difficult because there are no known analytical tests that are specifically designed to measure the particular reactivity associated with each D003 treatability subcategory, nor is there a test that distinguishes the reactive chemical from the deactivated chemical.

The Agency solicited comments and data on the physical and chemical characterization of all five subcategories of D003 wastes. The Agency also requested comment on the applicability of chemical deactivation, incineration, and any other type of chemical or physical deactivation technology to these wastes.

(1) *Reactive Cyanides.* D003 wastes in the Reactive Cyanides Subcategory are by definition those cyanide-bearing wastes that generate toxic gases (assumed to be hydrogen cyanide) when exposed to pH conditions between 2 and 12.5, in a sufficient quantity to present a danger to human health and the environment (40 CFR 261.23(a)(5)). Commenters requested clarification of which analytical methods should be used to determine reactive cyanide and associated toxic gas liberation. EPA's approved analytical procedures can be found in SW-846 Vol. 1C, Chapter 7 which defines the characteristic and regulation of reactive wastes. Specifically, Section 7.3.3.2 describes the "Test Method to Determine Hydrogen Cyanide Released from Wastes" which outlines the correct procedure of hydrogen cyanide gas liberation from reactive wastes. Method 9010 is the analytical method for quantitatively determining reactive cyanide concentrations.

The reactive cyanide wastes typically are generated by the electroplating and metal finishing industries, and include mixed cyanide salts, cyanide solutions, and cyanide-bearing sludges. Most of the volume of all D003 wastes that are generated can be identified as wastes

belonging to the Reactive Cyanides Subcategory. Reactive cyanide wastes are not typically placed directly in most types of land disposal units without treatment; however, it is possible that some untreated wastes are placed in surface impoundments.

Reactive cyanide wastes (like other reactive wastes) are already subject to special requirements prior to disposal in landfills, surface impoundments, and waste piles under existing regulations. Also, as a July 8, 1987 (the statutory deadline for the California list prohibitions), liquid hazardous wastes having a free cyanide concentration in excess of 1,000 mg/kg (ppm) were prohibited from land disposal. No one has suggested, however, that these existing regulations and prohibitions are sufficient to apply to the Reactive Cyanides Subcategory. The statute did not specifically identify the California list cyanides as D003 wastes, and furthermore, it did not specify a required method of treatment, nor did it establish the 1,000 mg/kg prohibition level as a "treatment standard".

The Agency believes that simple cyanides (e.g. NaCN, KCN) are more likely to react to liberate hydrogen cyanide gas since they are soluble and have weaker bond energies than complex cyanides (e.g., $\text{Fe}_3[\text{Fe}(\text{CN})_6]_2$, $\text{Ni}[\text{Fe}(\text{CN})_6]_2$, $\text{Zn}_3\text{Fe}(\text{CN})_6$). Consequently, EPA believes that simple cyanide rather than complex cyanide is the cyanide form most likely to give a waste containing cyanide the characteristic of reactivity. Accordingly, the Agency believed at the time of proposal that most D003 nonwastewaters resembled wastes containing simple cyanides (i.e., F011, F012 and P030) rather than wastes containing complex cyanides (i.e., F006, F007, F008, F009). Treatment technologies applicable for treatment of D003 reactive cyanide wastes include electrolytic oxidation, alkaline chlorination and wet air oxidation.

The Agency proposed to transfer the treatment performance of simple cyanide nonwastewaters (i.e., mixture of F011 and F012) using electrolytic oxidation followed by alkaline chlorination developed in the Second Third final rule (54 FR 26594, June 23, 1989), the nonwastewaters in the Reactive Cyanides Subcategory (54 FR 48425). In other words, the Agency believed all D003 reactive cyanide nonwastewaters could be treated to a total cyanide level of 110 mg/kg and an amenable cyanide level of 9.1 mg/kg representing treatment of wastes containing simple cyanides (i.e., F011 and F012) instead of a total cyanide level of 590 mg/kg and an amenable

cyanide level of 30 mg/kg representing treatment performance of wastes containing complexed cyanides (i.e., F006-F009). For wastewaters in the Reactive Cyanides Subcategory, EPA proposed to transfer treatment performance from treatment of F006-F009 wastewaters using alkaline chlorination, since this is the best treatment data available to the Agency for wastewaters containing high concentrations of cyanides.

With respect to the transfer being valid, several commenters submitted data indicating that D003 wastes in the Reactive Cyanides Subcategory more closely resemble the wastes containing complexed cyanides rather than the wastes containing simple cyanides and that the proposed treatment levels were unachievable for some D003 wastes because of the presence of iron cyanide and other cyanide complexes. One commenter claimed that, in many cases, iron contamination in some D003 cyanide wastes is unavoidable due to normal process operation and that a threshold level of only 50 to 100 mg/kg of iron is required to result in formation of iron cyanide complex.

Based on the high iron contents shown to be present in some D003 cyanide wastes, the Agency believes that some D003 cyanide wastes may contain complexed cyanides and thus may not be treatable to the 110 mg/kg level. One commenter suggested that the Agency develop two treatability groups for nonwastewater forms in the D003 Reactive Cyanides Subcategory based on the concentration of complex cyanide present in the waste: one group for wastes containing mostly simple cyanides (i.e., less than 110 mg/kg complex cyanide) and the other group for wastes containing high concentrations of complexed cyanides (i.e., greater than 110 mg/kg complex cyanide). EPA believes that this concept, while desirable, may not be viable because of the analytical interferences caused by the complicated matrices of untreated wastes. Furthermore, the vast majority of characterization data submitted during the comment period seem to indicate that D003 nonwastewaters more closely resemble the F006-F009 nonwastewaters instead of the F011 and F012 nonwastewaters. Therefore, the Agency is promulgating a treatment standard of 590 mg/kg total cyanide and 30 mg/kg amenable cyanide based on the treatment of wastes containing complex cyanides (i.e., F006-F009 nonwastewaters) for nonwastewaters in the D003 Reactive Cyanide Subcategory.

For the wastewaters in the D003 Reactive Cyanide Subcategory, EPA proposed a treatment standard of 1.9 mg/l total cyanide and 0.1 mg/l amenable cyanide based on alkaline chlorination. Comments and data were received from Sterling Chemicals demonstrating that alkaline chlorination did not achieve those limits for D003. Further examination of categorical wastewater discharge standards, pursuant to the Clean Water Act, supported the inability of alkaline chlorination to achieve the proposed amenable cyanide level. EPA is promulgating an amenable cyanide standard of 0.86 mg/l based on the Metal Finishing categorical wastewater discharge standards. Data submitted by Sterling Chemicals demonstrated compliance with this limit. With regard to total cyanide, the Agency is reserving the standard for further analyses to resolve the substantial variation in total cyanide levels submitted by commenters and standards established for categorical wastewater discharges. In the interim, the amenable cyanide limit will insure that alkaline chlorination of equivalent BDAT technology is utilized to comply with the land disposal restriction for reactive cyanide D003 wastes.

The Agency has chosen a concentration based treatment level for wastes in the D003 Reactive Cyanide Subcategory rather than establish "Deactivation (DEACT) to Remove the Characteristic of Reactivity" for the following reasons: First, unlike the other characteristic wastes, the Agency can identify an indicator compound (i.e., cyanide) that is known to be present in all D003 reactive cyanide wastes and can analyze the indicator compound in wastewater and nonwastewater matrices with EPA-approved SW 846 analytical test methods. (See also section III.A.6.(a) of today's preamble for a further discussion of cyanide treatment standards for other wastes and a clarification of the analytical methodology for compliance with the promulgated standards.) Second, EPA believes most D003 cyanide wastes are generated from the same types of processes that generate the F006-F012 and P030 wastes and thus, are frequently of the same type, and present similar risks when land disposed as the listed wastes. EPA does not believe that Congress precluded the Agency from establishing the same treatment standards for the D003 wastes that have been established for the listed wastes (assuming, of course, that such standards are consistent with the command of section 3004(m) to reduce

toxicity or mobility so that risks to health and the environment are minimized). Finally, the Agency suspects that some generators are currently misclassifying F006-F012 and P030 wastes as D003 reactive cyanide wastes. While this is primarily an issue for enforcement, the Agency is concerned that a less stringent standard would discourage proper identification of the F and P cyanide wastes.

The Agency realizes that reactive cyanide wastes treated to meet the promulgated standard may no longer exhibit the characteristic of reactivity (although the determination of reactivity can sometimes be difficult due to the non-quantified standard in § 261.23(a)(5)). The Agency believes this appropriate. As discussed in section III.D., the Agency sees no legal bar in establishing treatment standards that are below the characteristic level. Doing so is appropriate for these wastes because the reactivity characteristic does not evaluate the toxic nature of the wastes, because Congress specifically intended that cyanides be destroyed where possible (see statement of Senator Chafee, 130 Cong. Rec. S 9178-9 (July 25, 1984)), and because the Agency believes the similarity of most D003 wastes and the F006-F009 wastes warrants the same treatment standards for each in order to satisfy the section 3004(m) standard.

(2) *Reactive Sulfides Subcategory.* D003 wastes in the Reactive Sulfides Subcategory are by definition those sulfide-bearing wastes that generate toxic gases (assumed to be H_2S) when exposed to a pH between 2 and 12.5, in a sufficient quantity to present a danger to human health and the environment. Currently the accepted method for quantitatively determining reactive sulfides is outlined in SW-846, Vol. 1C, § 7.3.3.2 and in Method 9030.

The Agency is in the process of developing a quantitative threshold for toxic gas generated from reactive sulfide wastes. The interim value the Agency is considering is 500 mg of H_2S generated per kilogram of waste. Although this number is only an interim guideline for the purpose of BDAT determinations, the Agency proposed to use this number to identify the wastes in this subcategory (given the need for an objective means of determining the subcategory's applicability). The Agency received several comments stating that a test method should be finalized and a rationale published prior to setting this threshold as a numerical standard. EPA agrees with the commenters that for wastes in this subcategory the test method used in determining how much

gas can be released from a waste needs to be standardized before establishing a concentration based treatment standard with the test methods. Accordingly, the Agency's action today should not be viewed as redefining the characteristic for sulfide-bearing wastes.

Reactive sulfides may be treated and chemically converted to relatively inert sulfur, to insoluble metallic sulfide salts, or to soluble sulfates that can be removed or recovered. Some data indicate that these wastes can be treated by alkaline chlorination, specialty incineration, or other chemical deactivation techniques. The Agency believes that some of these wastes may also be contaminated with organic sulfides known as mercaptans. These malodorous chemicals are believed to complicate the treatment of these reactive sulfide wastes. It is believed that these wastes have posed particular treatment problems for the petroleum refining industry and the paper and pulp industry.

The Agency solicited waste characterization and treatment data that could potentially be used to develop treatment standards for these wastes. One commenter sent data demonstrating that treatment with chlorine dioxide is a very effective technology for destroying organic sulfides and mercaptans in petroleum wastes. Another commenter submitted stabilization data indicating that this treatment process can treat D003 reactive sulfide wastes by removing the characteristic. One commenter uses mercaptan-free and organic-free sulfide wastes to precipitate metals from wastewater. Another commenter uses a thermal process that converts sulfides to sulfates instead of sulfur oxides.

The Agency proposed a treatment standard of "Alkaline Chlorination, Chemical Oxidation, or Incineration Followed By Precipitation to Insoluble Sulfates" for the Reactive Sulfide subcategory. (Note: While alkaline chlorination is a form of chemical oxidation, the Agency did not want to specifically preclude the use of any particular oxidant.)

Because of the variety of treatment processes currently used to treat reactive sulfide wastes, the Agency is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Reactivity" for nonwastewaters and wastewaters in the D003 Reactive Sulfides Subcategory to allow the treatment facility the flexibility to use the "best" technology for the particular waste stream. See section 268 Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can

achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) The treatment standard is expressed as required methods of treatment rather than as a concentration-based standard because the Agency has not approved a standard analytical method for testing either sulfides or "reactive" sulfides in hazardous wastes or in treatment residues (however, as noted above, the Agency is working to develop a quantitative threshold for reactive sulfides). In the future the Agency may establish numerical standards for wastes in this subcategory.

(3) *Explosives Subcategory.* D003 wastes in the Explosives Subcategory are by definition those wastes that are capable of detonation or explosive reaction under various conditions, or are forbidden, Class A, or Class B explosives (according to 49 CFR 173.52, 173.53, and 173.88 respectively). Commenters expressed concern that many types of waste may fall into a potentially explosive classification, and requested a standardized procedure for making a reactivity determination to assist in the classification of explosive hazardous wastes. The Agency chose to rely on the current descriptive definition primarily because the available tests for measuring the various classes embraced by the reactivity definition suffer from some deficiencies.

In 1984, under an interagency agreement with the Bureau of Mines (BOM), OSW sponsored research on two test methods designed to determine whether a substance had explosive properties. However, in June 1985, the Agency issued Memorandum #7 (OSWER Dir. 9445.04(85)) that explained that the BOM test results were inconclusive, and in the interim, OSW supported the use of a battery of tests submitted by the U.S. Army to the Agency. Information on these Army tests can be obtained from the Office of Solid Waste's Methods Section (202-382-4770).

Wastes classified as D003 and belonging to the explosives subcategory, have typically been identified as being generated by the explosives industry and by the U.S. Department of Defense. While these wastes are not generated as frequently as the reactive cyanides, they are generated more often than all other reactive subcategories. Explosives are already subject to special requirements prior to disposal in landfills, surface impoundments, and waste piles under existing regulations. These explosive wastes are not typically placed in most

types of land disposal units; rather, commenters have indicated that they can be treated by technologies such as chemical oxidation or incineration. Such treatments permanently remove the explosive characteristic of this D003 waste by thermal or chemical destruction of explosive constituents.

Incineration is an applicable technology for some D003 explosive wastes. Such units are not typically found at commercial incineration facilities. The Agency is aware that incineration units specially designed and fitted with explosion-proof equipment are currently used by the Department of Defense to treat explosive wastes. One commenter suggested that the Agency divide the explosive wastes into incinerable and nonincinerable wastes. EPA, however, could not make a determination of explosive wastes that could always be incinerated 100% of the time as generated.

The Agency proposed a general standard of "Deactivation" for the D003 Explosives Subcategory. By establishing this standard, the Agency is allowing the regulated community to use that treatment technology (e.g., incineration, chemical deactivation) that best fits the type of explosive waste. The Agency took this approach for these wastes since the hazardous characteristic is based on imminent hazard (i.e., explosivity) rather than on other criteria such as levels of hazardous constituents, and because technologies exist that can completely remove this characteristic.

Due to the large number of explosive formulations and the difference in applicable treatments (see Department of the Army Technical Manual TM9-1300-214, Military Explosives), the Agency continues to believe that the proposed standard is applicable for wastes in the D003 Explosive Subcategory and is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Reactivity" for nonwastewaters and wastewaters in the D003 Explosive Subcategory. See section 268 Appendix VI of today's rule for a list of applicable technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) This standard should provide treaters of explosive wastes the ability to use the "best" treatment technology based on the chemical and physical parameters of the explosive waste, and any safety considerations.

Several commenters have indicated that mixing with water or organic liquids (i.e., kerosene) may be necessary in some cases to reduce potential for explosion and thus, ensure safe handling and/or transportation for subsequent incineration or chemical treatment of explosive wastes. EPA is not restricting the use of this practice for any waste in the D003 Explosives Subcategory.

(4) *Water Reactive and Other Reactives Subcategories.* D003 wastes in the Water Reactive or Other Reactives Subcategories can be either organic or inorganic. Water Reactive D003 wastes as defined in 40 CFR 261.23(a)(2), (3), and (4) are either very reactive with water, or can generate toxic or explosive gases with water. These reactions are usually very vigorous and therefore difficult to control. Wastes considered to belong in D003 Other Reactives Subcategory exhibit the property listed in § 261.23(a)(1). Wastes in both of these subcategories are generated on a sporadic basis and generally in low volumes. These wastes are not typically placed in land disposal units nor are they placed in surface impoundments due to their violent reactivity.

The Agency has information suggesting that some water reactives are treated by incineration. During this thermal oxidation process, the reactive organic constituents are destroyed and the reactive inorganic constituents form less hazardous oxides. Other applicable treatment technologies include controlled reactions with water, chemical oxidation and chemical reduction. All the above-mentioned technologies can remove the characteristic of reactivity.

The Agency proposed a general standard of "Deactivation" for the D003 Water Reactives and Other Reactives Subcategories. The Agency chose this approach for these wastes since the hazardous characteristic is based on imminent hazard (i.e., potential violent reactions with water) rather than on other criteria such as levels of hazardous constituents, and that technologies exist that can completely remove these reactive characteristics.

Because of the diversity in physical and chemical forms of the waste in both subcategories, it is not possible to determine a "best" technology for all wastes. The Agency is promulgating a treatment standard of "Deactivation (DEACT) to Remove the Characteristic of Reactivity" for wastes in the D003 Water Reactives Subcategory and D003 Other Reactives Subcategory to allow flexibility in the selection of the "best" technology. See section 268 appendix VI of today's rule for a list of applicable

technologies that used alone or in combination can achieve this standard. (See also § 268.42 Table 1 for a technical description of these technologies. A five letter code (acronym) for each technology has been established in order to simplify the tables.) For wastes in the D003 Water Reactives Subcategory, the standard is established only for nonwastewaters since these wastes are very reactive with water and thus cannot exist as wastewaters.

Several commenters have indicated that mixing with certain organic liquids (such as kerosene) may be necessary in some cases to reduce potential for violent reaction with water and thus, ensure safe handling and/or transportation for subsequent incineration or chemical treatment. EPA is not restricting the use of this practice for any waste in these D003 Subcategories.

BDAT TREATMENT STANDARDS FOR D003 REACTIVE CYANIDES—261.23(a)(5)

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Cyanides (total).....	590
Cyanides (amenable).....	30

BDAT TREATMENT STANDARDS FOR D003 REACTIVE CYANIDES—261.23(a)(5)

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (total).....	Reserved
Cyanides (amenable).....	0.86

BDAT TREATMENT STANDARDS FOR D003 REACTIVE SULFIDES—261.23(a)(5)

Deactivation (DEACT) to Remove the Characteristic of Reactivity*

BDAT TREATMENT STANDARDS FOR D003 Explosives—261.23(a)(6), (7), AND (8)

Deactivation (DEACT) to Remove the Characteristic of Reactivity*

BDAT TREATMENT STANDARDS FOR D003 Water Reactives—261.23(a)(2), (3), AND (4)

Deactivation (DEACT) to Remove the Characteristic of Reactivity*

BDAT TREATMENT STANDARDS FOR D003 OTHER REACTIVES—261.23(a)(1)

Deactivation (DEACT) to Remove the Characteristic of Reactivity*

*See 40 CFR part 268 appendix VI for a list of applicable technologies that used alone or in combination can achieve this standard. See also § 268.42 Table 1 for a description of the technologies as referred to by a five letter code.

e. Effect of Treatment Standards on Disposal Provisions in 40 CFR parts 264 and 265 for Ignitable and Reactive Wastes

Management practices have been established for ignitable and reactive wastes in surface impoundments, waste piles, land treatment units, and landfills (see 40 CFR 264.229, 264.256, 264.281, and 264.312, as well as 265.229, 265.256, 265.281, and 265.312). The treatment standards finalized today for ignitable (D001) and reactive (D003) wastes will supercede the above-mentioned provisions and exclusions for permissible land disposal of these waste outlined in parts 264 and 265; therefore, the Agency is amending these sections to reflect the new regulations in part 268. Facilities handling ignitable and reactive wastes will have to comply with the promulgated treatment standards for these wastes in order to land dispose them.

f. EP Toxic Halogenated Pesticide Wastes

D012—EP Toxic for Endrin.
D013—EP Toxic for Lindane.
D014—EP Toxic for Methoxychlor.
D015—EP Toxic for Toxaphene.
D016—EP Toxic for 2,4-D
D017—EP Toxic for 2,4,5-TP (Silvex)

In the November 22, 1989 proposed rule, the Agency proposed two basic options for the treatment standards for EP Toxic halogenated pesticide wastes (D012, D013, D014, D015, D016 and D017) and solicited comments on these. In one option, the Agency proposed concentration-based standards that were based on the total composition of

these pesticides in treatment residuals. As a second option, the Agency proposed concentration-based treatment standards that correspond to their respective characteristic concentrations. As an alternative, the Agency stated that technology-based treatment standards could be established that would achieve treatment to below these characteristic levels.

(1) *Nonwastewaters.* EPA proposed concentration-based standards for the nonwastewater forms of D012, D013, D014, D015, D016 and D017 that were based on the analysis of total composition based on data that clearly indicated that the pesticide constituents of concern (or pesticides with similar physical and chemical characteristics) could be incinerated to detection limits as measured in ash samples. As noted in the proposed rule, the Agency believes that these total constituent concentration-based treatment standards based on incineration, are preferable to those in the second option (i.e., standards that correspond to their respective characteristic concentrations). The Agency contends that the total constituent concentration standards assure the public that these chemicals are being destroyed to the best levels that are achievable. This comports with the statutory policy of reducing the uncertainties inherent in hazardous waste land disposal as well as specific Congressional directives to destroy hazardous organic constituents, see, e.g., 130 Cong. Rec. S 9179 (July 25, 1984) (statement of Sen. Chaffee), and results in minimization of threats to human health and the environment.

The Agency has determined that it is prudent to require that these EP Toxic halogenated pesticide wastes be treated with the best demonstrated technology in view of their toxicity: they are probable carcinogens. Since data clearly indicate that incineration represents BDAT, the Agency gave serious consideration to establishing a technology-based treatment standard of "Incineration as a Method of Treatment" for the nonwastewater forms of these wastes. However, the Agency believes that other technologies besides incineration may be able to achieve an equivalent performance. As such, the Agency is promulgating concentration-based treatment standards for all EP Toxic halogenated pesticide nonwastewaters based on total composition rather than establishing "Incineration as a Method of Treatment".

Commenters offered very little opposition to the proposed nonwastewater standards based on

analysis of total constituent concentrations, other than questioning the achievability of the standard due to differences in detection limits. Commenters submitted a limited amount of additional detection limit data for these pesticides in incinerator ash. The Agency has evaluated these additional detection limit data, along with the data used to propose the standards, in promulgating the standards for D012-D017 nonwastewaters in today's rule. The Agency believes that these data indicate that the promulgated standards are achievable, and detectable.

These nonwastewater standards are based on the analysis of total constituent concentrations. Some of the standards on their face appear higher than the characteristic levels. This is not the case, however, since the characteristic levels are based on levels in a leachate rather than total constituent analysis. Given the 20 to 1 dilution factor inherent to the TCLP (and the EP) protocol, it is apparent that none of the final treatment standards in fact exceed characteristic levels because none of them are 20 times higher than the characteristic level.

(2) *Wastewaters.* The Agency proposed one set of concentration-based standards for D012-D017 wastewaters based on detection limits of the pesticides as measured in scrubber waters. Just prior to proposal, the Agency completed its analysis of treatment performance data for wastewaters from various data sources. (See, generally, the discussion of the development of treatment standards for U and P wastewaters using these data in section III.A.5.(a)(1) to today's preamble.) As a result, the Agency proposed alternative concentration-based treatment standards for various wastewaters based on these wastewater treatment data. While the Agency did not specifically propose these as alternatives standards for wastewater forms of D012-D017, the Agency believes that these standards could have been promulgated, if it were not for circumstances discussed below.

Based on the aforementioned wastewater treatment data, the Agency has identified specific treatment technologies that are considered to be demonstrated on D012-D017 pesticide constituents (or pesticides with similar physical and chemical characteristics) and can achieve destruction of the pesticide constituents to below their respective characteristic levels. By adopting treatment methods for these wastewaters rather than concentration-based standards, the dilution prohibition attaches at the point of generation when

these wastes are managed in Clean Water Act systems, and destruction of these constituents is assured. (See section III.D. of today's preamble.) As a result, concentrations below the characteristic levels will be achieved through the use of these treatment technologies rather than through the potential use of simple dilution. The Agency is therefore promulgating technology-based treatment standards for the D012-D017 wastewaters.

The Agency has identified incineration, wet air oxidation, chemical oxidation, carbon adsorption, and/or biodegradation as BDAT treatment technologies as BDAT for D012-D017 wastes, as discussed in EPA's Final Best Demonstrated Available Technology (BDAT) Background Document for U and P Wastes and Multi-Source Leachates (F039), Volume A: Wastewater Forms of Organic U and P Wastes and Multi-Source Leachates (F039) For which There Are Concentration-Based Treatment Standards. The technology-based standards are as follows: (1) Incineration and biodegradation have been specified as BDAT for D012 and D015 wastewaters; (2) incineration and carbon adsorption for D013 wastewaters; (3) incineration and wet air oxidation for D014 wastewaters; (4) incineration, chemical oxidation, and biological treatment for D016 wastewaters; and (5) incineration or chemical oxidation for D017 wastewaters.

BDAT TREATMENT STANDARDS FOR D012, D013, D014, D015, D016, AND D017

(Nonwastewaters)		
Waste code	Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
D012.....	Endrin.....	0.13
D013.....	Lindane.....	0.066
D014.....	Methoxychlor.....	0.18
D015.....	Toxaphene.....	1.3
D016.....	2, 4-D.....	10
D017.....	2, 4, 5-TP.....	7.9

BDAT TREATMENT STANDARDS FOR D012 AND D015 (Wastewaters)

Incineration (INCIN) or Biodegradation (BIODG) as a method of treatment

BDAT TREATMENT STANDARDS FOR D013

(Wastewaters)

Incineration (INCIN) or Carbon Adsorption (CARBN) as a method of treatment

BDAT TREATMENT STANDARDS FOR D014

(Wastewaters)

Incineration (INCIN) or wet air oxidation (WETOX) as methods of treatment

BDAT TREATMENT STANDARDS FOR D016

(Wastewaters)

Incineration (INCIN) or chemical oxidation (CHOXD) or biodegradation (BIODG) as a method of treatment

BDAT TREATMENT STANDARDS FOR D017

(Wastewaters)

Incineration (INCIN) or chemical oxidation (CHOXD) as a method of treatment

3. Treatment Standards for Metal Wastes**a. Introduction**

Metal wastes are hazardous wastes containing metals or metallic compounds such as inorganic metallic salts or organometallics. Certain F, K, U, and P wastes were listed specifically for the presence of metallic compounds. Additionally, a waste can be identified as a characteristic waste based on the concentration of one of eight different metals as specified in 40 CFR 261.24: arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver (i.e., D004 through D011 respectively) at a concentration equal to or greater than the levels presented in 40 CFR 261.24 Table I—Maximum Concentration of Contaminants for Characteristic of EP Toxicity.

Treatment standards for most U and P metallic compounds are based on a quantitative analysis for the metal constituent only, and not for the specific U or P metallic salt (i.e., compound). The Agency received comments supporting this proposed approach and it agrees that regulation of only the metal constituents for these wastes will address the primary toxic hazard associated with these metallic compounds. (Except those few U and P wastes where the anionic species also poses a toxic hazard, such as for metal-cyanide salts.)

(1) *Development of Treatment Standards for Metals.* In today's rule, the Agency is promulgating treatment standards for several of the U and P wastes expressed as concentrations of specific metals. In general, performance data that are available from the treatment of various F and K wastes containing these metals have been transferred to these U and P wastes. Commenters also provided information and data to support the characterization and treatment of certain metal wastes. These data have been used in some cases to establish metal U and P treatment standards. (These comments and data are discussed in the preamble section pertaining to the specific metal waste, and are discussed in detail in the Response to BDAT-Related Comments Background Document.)

The Agency proposed a similar approach for characteristic metal wastes—i.e., transferring treatment data from F and K listed wastes to these D-coded wastes. Significant comments were received, however, describing potential problems associated with this approach that EPA finds persuasive. Commenters pointed to the fact that characteristic wastes may be generated in many different matrices and thus take any number of forms. A transfer of data from treatment of any one particular matrix would thus be unlikely to be routinely achievable unless the treatment data being transferred represented a waste more difficult to treat than any characteristic waste. The Agency has further determined that the data generally do not support the proposed transfer of concentration-based treatment standards from the specified listed wastes to these relatively non-specific characteristic wastes. The Agency found that the data and information submitted by the commenters further supported that certain matrices from particular industries (or particular waste types) appear to be so unlike the matrix of the listed waste (from which the Agency originally proposed to transfer treatment standards) that the treatment standard could not be achieved. All waste-specific comments are further addressed below in the sections pertaining to each metal, or in the Response to BDAT-Related Comments Background Document.

While there are certain treatability groups that are exceptions, the general approach for regulating metal wastes is as follows. The Agency is establishing treatment standards for arsenic, barium, cadmium, chromium, lead, and silver at a level corresponding to their respective characteristic levels. For most metals

the data received by the Agency indicate that concentrations below these characteristic levels can be achieved through the use of either stabilization processes or vitrification; however, the exact concentration achievable by stabilization processes is apparently dependent upon the industry and processes from which the waste was generated. This is most likely due to the wide variability of other constituents (both organic and inorganic) present in the waste which interfere with the performance of stabilization.

The treatment standard for D010 selenium wastes is established at a level slightly greater than the characteristic level, because the Agency had only a limited amount of data on these wastes. In fact, the majority of information suggests that while there are relatively few generators of D010 wastes, most of them are recovering the selenium from them. Treatment standards for D009 mercury wastes with high concentrations of mercury are set as required methods of treatment. See also the discussion in section III.D. of this preamble.

(2) *Treatment of Organic Debris and Inorganic Solids Debris.* Comments were received indicating that many of the D004 through D011 characteristic metal wastes may be generated in organic matrices. Rather than set up specific organic treatability groups under each characteristic metal waste code, the Agency is stating as a matter of treatment policy that prohibited metal wastes that are generated as an organo-metallic or in an organic matrix can be incinerated (in accordance with the technical operating requirements of 40 CFR 264 or 265 Subpart O) to destroy the organo-metallic bond or the organic matrix containing the metal, prior to subsequent treatment of the ash (if necessary), in order to comply with a concentration-based standard or prior to application of the technology-based metal treatment standard. This includes characteristic metal wastes that are identified specifically as "debris". D004 through D011 wastes identified as debris that are comprised primarily of organic materials are referred to as "organic debris" (e.g., rags, paper, cardboard, clothes, gloves, paints, paint chips, wood, grubbing materials, blankets, hoses, bags, resins, plastic liners and PVC piping). (This does not preclude the washing or extraction of metals from "organic debris" that is only a characteristic wastes due to surface contamination (i.e., provided the residual "organic debris" is no longer a characteristic waste for metals). In fact, much of the D004-D011 "organic debris"

may be treatable by washing or extraction rather than incineration. However, incineration may be a preferred pretreatment when the "organic debris" are expected to contain organo-metallics or are otherwise impregnated with inorganic metal dyes or pigments (e.g., paints, paint chips, and/or resins)).

The Agency also received comments requesting that the Agency clarify the appropriate treatment for characteristic metal wastes that are identified as slags, glass, concrete, bricks, and other inorganic solid debris. They stated that these materials would probably have to be crushed or otherwise reduced in size prior to stabilization in order to comply with the D004 through D011 treatment standards. The Agency agrees that these as well as other similar wastes form a different treatability group, and is identifying this group of D004 through D011 wastes as the "inorganic solids debris" treatability group. Wastes in this treatability group are defined in § 268.2(a)(7) of today's rule as follows: "nonfriable inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require cutting, or crushing and grinding in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: (1) Metal slags (either dross or scoria); (2) glassified slag; (3) glass; (4) concrete (excluding cementitious or pozzolanic stabilized hazardous wastes); (5) masonry and refractory bricks; (6) metal cans, containers, drums, or tanks; (7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment; and (8) scrap metal as defined in 40 CFR 261.1(c)(6). (Note: The 9.5 mm requirement on sieve is based on a similar requirement for pretreatment of samples that are to be analyzed using the TCLP. This size also approximates the size of small pebbles that are often incorporated into some forms of concrete.)

While the Agency is establishing a separate treatability group for these "inorganic solids debris", it is promulgating the same concentration-based treatment standards for these wastes as for other characteristic metal wastes. Thus, there are no separate treatment standards for inorganic solid debris D004 through D011 wastes appearing in today's rule. The Agency has determined, however, that there is a national capacity shortage for treatment of this treatability group. Therefore, the standards for D004 through D011 wastes do not apply to "inorganic solids debris" until May 8, 1992.

Several commenters suggested that treatment standards should not apply at all to these wastes; that no treatment technology is technically applicable to these wastes; and that these wastes should be allowed to land disposed as is. Other commenters pointed out that crushing processes create dust emissions or discharges to surface waters that may result in a significant increase in releases of toxic constituents to the environment. They pointed out that stabilization should not be necessary because of the relatively impermeable nature of these inorganic solids and that stabilization results in a significant increase in volume of waste to be land disposed.

While the Agency finds these comments persuasive, it is somewhat limited by RCRA section 3004(m) into developing treatment standards for these wastes, since absent a treatment standard, the statutory land disposal prohibition applies. However, from a purely common sense standpoint, it may make little sense to pulverize these relatively cement-like materials only to re-cement them again before land disposal. The Agency believes today's actions provide the opportunity to revisit these standards during the two-year national capacity variance and to address these commenters concerns in greater detail. In addition, the Agency points out that many of these same issues will be addressed in a forthcoming proposed rule for soil and debris.

(3) *Reexamination of Proposed of Co-disposal Prohibitions.* EPA requested comments at proposal on whether it should establish requirements under 40 CFR parts 264 and 265 for certain chemical species of arsenic, selenium, and mercury. The proposed requirements called for segregating certain wastes containing these metals in monofills or in separate cells within landfills, and for prohibiting the addition of alkaline materials to these wastes. These proposed requirements were the result of available data showing that the solubility of certain metal species is likely to increase under alkaline leaching conditions as compared to their relative insolubility under acid conditions (see 54 FR 48430, 48441). Several comments were received addressing this issue, most of which stated that specific co-disposal requirements are not needed at this time because operators of landfills must monitor leachate collection systems for the migration of metals. Other commenters pointed out that some operators of landfills already segregate these particular metal-bearing wastes as

part of their waste analysis plan, and such requirements should be made on a site- and waste-specific basis. In addition, vendors of specialized stabilization materials submitted data that show some promise in treating low concentration of these alkaline-soluble metal species.

EPA finds these comments persuasive and is therefore not promulgating its proposed co-disposal prohibitions for wastes containing arsenic, selenium and mercury. Additional information is necessary to develop a comprehensive national prohibition standard for these wastes. EPA also concurs with commenters that permit writers can effectively address these co-disposal prohibition requirements on a case-by-case basis under the omnibus authority in RCRA section 3005(c)(3).

b. Arsenic

- D004—EP toxic for arsenic
- K031—By-product salts generated in the production of MSMA and cacodylic acid.
- K084—Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
- K101—Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
- K102—Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
- P010—Arsenic acid
- P011—Arsenic (V) oxide
- P012—Arsenic (III) oxide
- P036—Dichlorophenylarsine
- P038—Diethylarsine
- U136—Cacodylic acid

These wastes are grouped together because they all contain arsenic as the primary hazardous constituent. Like other metals arsenic exhibits a positive valence state; however, it shows little tendency to exist as solitary cationic species in aqueous matrices. Arsenic typically exists in aqueous conditions as oxo-anions (e.g., arsenic appears primarily as anionic arsenite (AsO_2^-) or arsenate (AsO_4^{3-})). This behavior is important, because selection and performance evaluation of treatment technologies for other metals are based primarily on the cationic behavior of the metals in aqueous conditions (i.e., wastewaters and leachates). Thus, treatment technologies for wastewaters and nonwastewaters containing arsenic are often different from technologies for wastes containing only other metal constituents.

(1) *Nonwastewaters.* To identify the technologies that are applicable for

treating metals in nonwastewaters, the Agency evaluates treatment technologies that either reduce the leaching of the metals or recover the metals for reuse. The Agency identified stabilization technologies (e.g., cement, asphalt, vitrification), and recovery as potentially applicable technologies for treatment of arsenic present in nonwastewater matrices.

(a) Inconclusive Stabilization Performance Data. EPA has relatively inconclusive performance data for stabilization of arsenic in three different wastes using nine different binders. Analysis of these data indicates that the effectiveness of any particular stabilization binder appears to be highly dependent upon the waste types. This result is what might be expected giving the chemical nature of arsenic (see preceding discussion of arsenic chemistry) and the relative sensitivity of the effectiveness of stabilization processes with respect to the presence of organics and organo-metallics.

Data on a K031 waste with an untreated leachability of 533 mg/l (based on analysis of an EP extract) indicate that the leachability of arsenic decreases somewhat for all binders. The best results were obtained from asphalt stabilization, which provided reductions to 25.3 mg/l (EP). Data on a D004 waste identified as an arsenic sulfide waste show an increase in leachability when cement, silicate polymer, clay, and polyethylene binders are used. However, data on this waste using an asphalt binder indicated a reduction in leachability of arsenic from 41 mg/l to 1.7 mg/l (EP). Data and information on a smelter dust that leaches arsenic indicate that cement binders can increase the leachability of the arsenic, while silicate polymers and asphalt binders decrease the leachability. However, these data do not contain operating information (e.g., binder to waste ratios) or QA/QC information.

The Agency has also tested cement, lime/fly ash, and kiln dust stabilization on K031 nonwastewaters that when untreated contain more than 130,000 ppm total arsenic and leach 5,930 mg/l (based on analysis of a TCLP extract). Some of the TCLP data on the K031 wastes that were "stabilized" with cement, appear to indicate an increase in arsenic leachability of 10 percent. The best results were achieved when the lime/fly ash binder was used, however, these data show minor reductions of arsenic from 5,930 mg/l to 4,687 mg/l in the TCLP extract.

Chemfix submitted performance data for a proprietary "alkaline stabilization system". These limited data show an acid production byproduct liquid waste

(believed to be a D004) with 73,000 ppm total arsenic leaching 2.7 mg/l arsenic in the treatment residue TCLP leachate. No binder-to-waste ratios, binder additives or untreated TCLP concentrations were presented, making it difficult to assess the viability of this treatment process for all D004 nonwastewaters, in particular those arsenic wastes known to contain organics.

Data were submitted by the Hazardous Waste Treatment Council (HWTC) showing stabilization using proprietary reagents of a boiler stack residue designated D004, generated from the demolition of stacks and site closure of an electric utility. The reagents are added to induce cementitious, siliceous, and pozzolanic stabilization reactions. The solid waste was first slurried with tap water to facilitate reaction with the reagents. The data show reductions of arsenic in the TCLP leachate from 409 mg/l to 2.27 mg/l. The volume ratio of waste to binder was 1 to 1; consequently, the volume for disposal increased by 100 percent. The Agency is uncertain that this technology would be applicable for wastes containing organics or organic arsenicals.

Another commenter, Solidiawaste, submitted stabilization data for D004 arsenic sulfide wastes using a proprietary silicate-rich matrix under neutral or slightly alkaline conditions. Under these conditions, the arsenic sulfide may have been converted to an insoluble complex silicoarsenate compound. The data show an untreated waste containing 35,000 ppm total arsenic, which after treatment contains 0.08 mg/l arsenic in the TCLP leachate. The commenter did not submit TCLP data for the untreated waste, information concerning waste to binder ratios, or analytical QA/QC data. The Agency is also uncertain that this technology would be applicable for wastes containing organics or organic arsenicals.

(b) Performance Data Indicating Broader Applicability. The Agency received data from American NuKEM demonstrating that incineration and/or chemical oxidation followed by coprecipitation and subsequent stabilization is effective treatment for a variety of arsenic wastes. The Agency believes that the arsenic compounds treated by this procedure are first oxidized to the arsenate form by either thermal and/or chemical treatment. The arsenate, which ends up in the scrubber water (in the case of incineration) or in the wastewater (in the case of the chemical oxidation), is then coprecipitated with iron salts. (Note: The coprecipitation process is very pH dependent and even under optimum

conditions the amount of ferric hydroxide generated is two to eight times the concentration of ferric arsenate precipitated.) The iron precipitate containing the arsenate is then stabilized with dolomitic lime.

Performance data submitted by American NuKEM for their chemical oxidation wastewater treatment train described above indicate that a D004 arsenic sulfide waste containing 750,000 ppm total arsenic can be treated to 0.75 mg/l (TCLP). However, these data do not indicate whether the arsenic sulfide waste was significantly diluted prior to treatment. In addition, it is important to note that the stabilization step with dolomitic lime required careful control to avoid making the stabilized mass significantly alkaline, implying that the arsenic may have been quite leachable under alkaline conditions and thus, may not be truly "stabilized".

Performance data were also submitted by American NuKEM using incineration followed by treatment of scrubber water indicate that organo-arsenic wastes designated as a combined P011/D004 waste with concentrations up to 1,200 total arsenic can be effectively treated. The treatment facility states that essentially all of the arsenic compounds in the feed volatilize during incineration and are completely oxidized to arsenic oxides and ultimately to arsenate ions, which are removed by flue gas scrubbing using alkaline solution scrubbers with large liquid-to-gas ratios. As mentioned above, the scrubber water treatment (discussed in a subsequent discussion on treatment of arsenic wastewaters) consists of coprecipitation with iron salts and stabilization of the precipitate. No data on the characterization or treatment of the incinerator ash residual were submitted. Also, the commenter failed to provide untreated TCLP results or waste-to-binder ratios.

(c) Vitrification Performance Data. As an alternative to conventional stabilization processes such as cementitious stabilization for arsenic wastes, the Agency identified vitrification as technology that is applicable to nonwastewaters containing arsenic (54 FR 48431-33). Vitrification is a technology that uses heat generated by electrodes or direct flame to melt a mixture of glass formers and waste materials into a molten slag, which then cools and incorporates the metals and other materials into this glass/slag matrix. This technology can be applied to wastes containing organic as well as inorganic forms of arsenic since it operates at high temperatures

(1200 °C to 1500 °C) that will destroy the organics present in the wastes.

The Agency solicited and received comments on this stabilization technique for arsenic wastes. Several commenters said that vitrification is neither "demonstrated" nor "available" to treat arsenic-containing wastes. The Agency also received comments supporting the argument that vitrification can treat arsenic wastes effectively and that the units are available for sale. One commenter even conducted a study that determined that vitrification would provide a significantly better method of disposal than other stabilization processes for D004 arsenic sulfide wastes generated from phosphoric acid purification containing 2 to 3% total arsenic. This determination was made because the waste volume for disposal is reduced by more than 75%, even though fixation and fluxing agents were added, and the resultant product leaches arsenic levels less than 0.5 mg/l (TCLP). However, the commenter did not submit TCLP results on the untreated waste or analytical QA/QC data.

Other data available to the Agency indicate that vitrification can incorporate arsenic in concentrations up to 23.5% into a glass/slag matrix with a maximum leachability of arsenic at 1.8 mg/l (EP). In all, these data consist of 14 separate data points, with arsenic concentration in the untreated wastes ranging from 0.3% to 23.5%. Data on the treated (i.e., glassified) wastes ranged from 0.007 mg/l to 1.8 mg/l (EP). All of these data clearly indicate that vitrification can consistently achieve stabilization of arsenic to leachate levels below the characteristic level, 5.0 mg/l (based on EP). However, these data did not have any analytical QA/QC or any information about volume increases/reductions on the treatment residues.

Several commenters expressed concern about air emissions associated with the vitrification units. The Agency believes that these concerns are addressed because these devices will typically have to be permitted under 40 CFR part 264 subpart X and will therefore have to meet designated air permit requirements. In addition, one commenter said that to avoid arsenic loss due to vaporization, a special furnace configuration with a recycling vapor scrubbing system is being investigated for use with the facility's vitrification unit. Thus, the Agency anticipates that this technology currently under development will result in an additional safety precaution (with

regards to potential air emissions) for this technology in the near future.

(d) Determination of BDAT for Nonwastewaters. For the proposed rule, the Agency determined that vitrification was the "best" technology for treatment of nonwastewaters containing arsenic. EPA made this determination based on the performance data available at the time of proposal. Most data that was then available appeared to indicate that conventional stabilization (e.g., cement) was not an effective technology for arsenic wastes since the stabilized wastes showed little reduction in arsenic leaching or leached more arsenic than the unstabilized wastes. In the proposed rule, the Agency requested that facilities submit data demonstrating treatment of arsenic nonwastewaters.

Several commenters submitted new data that appear to indicate that wastes containing high concentrations of specific inorganic forms of arsenic can be treated by stabilization using cement, silicates, and/or proprietary binder mixtures. Generally, these stabilization data are relatively inconclusive, due to the lack of necessary treatment performance data and to the relatively limited applicability of these stabilization processes to wastes containing organics or organo arsenicals. In addition, while the data do indicate low levels of leachable arsenic are obtained, in some cases the reductions may be attributed to dilution with the binders caused by undesirable high binder-to-waste ratios (resulting in considerable increases in the amount of waste to be land disposed). While the Agency believes that these stabilization technologies have considerable drawbacks, the data do appear to indicate that they may provide adequate treatment for some specific forms of D004 inorganic arsenic wastes. However, the Agency has not based BDAT treatment standards for all D004 wastes on these stabilization technologies. The Agency is not precluding their use, but cautions that their use should be determined on a case-by-case basis. At this time, the Agency cannot determine a separate treatability subcategory for D004 wastes for which these technologies could be used to establish treatment standards.

The technology that appears to have a broader applicability to wastes containing organics or organo arsenicals is the American Nukem process (i.e., the process where the arsenic is first thermally or chemically oxidized, coprecipitated with iron or aluminum salts, and then stabilized in an insoluble form such as ferric arsenate). Unfortunately, this treatment may also

increase the amount of waste for land disposal because of the large amounts of ferric hydroxide that may be precipitated with the ferric arsenate. However, because of the broader applicability of this technology, the Agency considered this process to be an alternative technology to vitrification for K031, K084, K101, K102, P036, P038, U136 and D004 wastes containing organics and organo arsenicals.

The Agency still believes that vitrification represents the "best" technology because the data support treatment of arsenic present at percentage concentrations along with volume reductions for land disposal. The Agency also believes that incineration or complex chemical treatment followed by stabilization may work for some forms of arsenic in some wastes, but the increases in volume for disposal make this technology less desirable than vitrification.

(e) Treatment Standards for Nonwastewaters. The Agency used the vitrification data from the study that used EP toxicity testing to evaluate treatment performance. These EP leachate data were used to calculate the treatment standard because one of the fourteen data points represents a waste containing 23.5 percent arsenic whereas the vitrification data that were based on TCLP analyses represent a waste containing only 3 percent arsenic. EPA hence believes that the EP vitrification data demonstrate treatment of a waste matrix that is more difficult to treat.

EPA calculated the treatment standard for arsenic nonwastewaters based on the highest leachate data point of 1.8 mg/l for the matrix containing 23.5 percent arsenic. Analytical recovery data were transferred from the Agency's analysis of K102 incinerator ash (which had the appearance of a slag) were used to adjust the value for analytical accuracy. The adjusted value was multiplied by a variability factor of 2.8, and a concentration-based treatment standard for arsenic of 5.6 mg/l in the leachate (measured by the EP toxicity test) was calculated.

The Agency is transferring the concentration-based treatment standard of 5.6 mg/l in the EP toxicity leachate arsenic to K031, K084, P010, P011, P012, P036, P038, and U136 nonwastewaters, primarily due to similarities in total arsenic concentrations anticipated in these wastes when compared to the 23.5% total arsenic that was vitrified (i.e., the basis of the 5.6 mg/l standard). For example, waste characterization data indicate total arsenic concentrations of 0.1 to 18% for K031 and 10 to 25% for K084, with theoretical

arsenic content in the U and P wastes ranging from approximately 25% total arsenic in P036 to a maximum of 75% in P011. While some of these U and P wastes may contain percentage levels of arsenic greater than the amount in the untreated waste used to develop the treatment standard (i.e., 23.5 percent), the Agency believes that the arsenic content in these wastes are similar enough to transfer this standard. In addition, for such wastes, the Agency believes that more glass-forming reagents can be added to the molten slag/waste mixture during the vitrification process in order to achieve the promulgated treatment standard. Based on EPA's analysis of additional vitrification data, the Agency believes that the performance of the vitrification technology and analytic variability of treatment residues will not change significantly for different arsenic-containing wastes; thus, this transfer is legitimate.

For D004 nonwastewaters, EPA is promulgating the characteristic level of 5.0 mg/l arsenic as the treatment standard. The Agency has taken this approach because available data indicate that treatment below the characteristic level is achievable (albeit the extent is not readily ascertainable for the entire group of D004 wastes) and because of the concern for the potential regulatory disruptions and confusion that could be created by establishing a standard slightly higher than the characteristic level. In addition, given the statutory hard hammer, EPA would not establish a treatment standard at a higher level unless there clearly was a problem treating to the hard hammer level. Although the data are equivocal, the Agency does not believe that treatment to the characteristic level is unachievable. Furthermore, the Agency believes that persons will normally try to ensure that their waste no longer exhibits a characteristic in order to have less expensive subtitle D disposal, and also because these technologies cannot easily be "turned off" at precisely the characteristic level, so that the characteristic level will more readily be achieved.

Since the vitrification performance data that EPA used to develop the nonwastewater treatment standards for arsenic were EP toxicity leachate data, the Agency has based the nonwastewater standards on the arsenic concentration in the EP leachate. However, since the Agency has some information that appears to indicate that the TCLP test is more aggressive than the EP test for determining arsenic leachability, the Agency is establishing

that if a waste does not achieve the arsenic nonwastewater standard based on analysis of a TCLP extract but achieves the standard based on analysis of an EP extract the waste is considered to be in compliance with the arsenic nonwastewater standard. Thus, a facility can use the TCLP test to demonstrate compliance for D004, and also K031, K064, K101, K102, P010, P011, P012, P036, P038, and U136 nonwastewaters.

(f) *Comments Concerning Recovery.* The Agency believes that for some wastes, recovery of arsenic may be feasible with high-temperature metal recovery technologies used by mining operations. Information available to the Agency indicates that arsenic trioxide recovered as a by-product of copper and gold mining operations has been used by the wood preserving industry as a raw material in the formulation of wood preservatives. Currently smelters located in the United States are not accepting hazardous wastes to recover arsenic trioxide; however, the idea is being investigated by a smelter located in Canada who is planning to market copper arsenate as a wood preservative in the Northwest. The plan, still under consideration, is to have the smelter accept back arsenic-bearing residues from the copper arsenate customers. The Agency requested comments and data on the applicability of recovery technologies for wastes containing arsenic. One commenter claimed that while recovery options may be technically viable, the current market does not make recovery of arsenic economical.

(2) *Wastewaters.* The Agency identified chemical precipitation technologies as applicable treatment technologies for arsenic-containing wastewaters. When evaluating precipitation technologies to determine BDAT for arsenic wastewaters, the Agency considered not only the efficiency of removal of these metals from the wastewater, but also the physical and chemical state of the arsenic that ends up in the wastewater treatment residues.

(a) *Identification of BDAT.* Wastewater treatment for most metals is typically based on precipitation with anionic species such as hydroxide or sulfide. Soluble arsenic species have been removed from wastewaters by using lime (calcium hydroxide) as a precipitant, resulting in arsenic precipitation as a calcium salt (calcium arsenate) rather than as a hydroxide as is typical for most other metals. Sulfide precipitation using sodium sulfide or hydrogen sulfide as reagents has also

been reported as being partially effective for wastewaters containing arsenic in the form of arsenates, but relatively ineffective for arsenites. While arsenic sulfide is relatively insoluble in water under acid conditions, information indicates that the leachability (i.e., solubility) of the arsenic sulfide increases under alkaline conditions. Additionally, coprecipitation with iron salts generates a relatively insoluble ferric arsenate precipitate, but the nature of the reaction also generates ferric hydroxide, which causes an increase in sludge volume for disposal.

The Agency solicited comment on whether it should specify the precipitating reagent for all wastewaters containing arsenic as part of the treatment standard. Commenters said that the Agency should not specify which reagents should be used to precipitate arsenic from wastewaters because the chemical matrix of each wastewater is unique and therefore each wastewater should be evaluated individually to determine the appropriate reagent for removing arsenic. Based on the diversity of waste characterization data for the arsenic wastes, the Agency agrees with the commenters and is not specifying precipitating reagents.

(b) *Standards for Arsenic-Containing Wastewaters.* In the proposed rule, the Agency based a treatment standard of 0.79 mg/l arsenic for all D004 wastewaters on performance data demonstrating the precipitation of arsenic from wastewaters identified as D004 from the veterinary pharmaceutical industry. The treatment system consisted of precipitation using lime followed by manganese sulfate and ferric sulfate in a three-stage alkaline process. The untreated wastewater data were for a waste consisting of a mixture of organo-arsenicals and inorganic arsenic compounds in concentrations up to 1,600 ppm. At the time of the proposed rule, the Agency believed that these data represented a D004 wastewater matrix that would be the most difficult to treat.

Some commenters have indicated that they cannot treat to the proposed levels because some D004 wastewaters require more extensive treatment trains in order to treat other metals, and also contain organics, which interfere with the treatment of the arsenic. One commenter described a treatment process that required a reduction step for hexavalent chromium and an oxidation step with peroxides or permanganates to treat the organo-arsenicals. Reduction of the chromium is required to precipitate chromium

hydroxide at high pH. The addition of oxidizing agents to destroy the organo-arsenical compounds will reoxidize the trivalent chromium to hexavalent chromium, and consequently the chromium will be leachable from the waste. This commenter requested that the Agency reconsider treatment to the characteristic level because experience indicates that a level of 5.0 mg/l can be achieved but not a level of 0.79 mg/l. However, the commenter submitted no data to substantiate this claim. Other commenters also indicated difficulty meeting the proposed level of 0.79 mg/l arsenic when treating scrubber waters containing arsenic and wastewaters containing hexafluoroarsenate compounds.

Based on the information in the comments, the Agency believes that it may not be possible for all generators of D004 wastewaters to meet a level of 0.79 mg/l arsenic. In addition, and more important, EPA has determined not to impose treatment standards below characteristic levels for characteristic wastewaters (i.e., is choosing to apply the prohibition at the point of disposal) in order to properly integrate Clean Water Act (CWA) programs with the RCRA land ban, and due to general protectiveness of class I nonhazardous UIC well disposal for dilute metals. Hence, EPA is promulgating a treatment standard of 5.0 mg/l arsenic for D004 wastewaters. It should be mentioned that EPA still believes precipitation to be BDAT for arsenic wastewaters because even a difficult to treat waste (i.e., the hexafluoroarsenate waste) shows a reduction in total arsenic concentration.

The constituents for which P010, P011, and P012 wastes are listed are all inorganic forms of arsenic. The constituents for which P036, P038, and U136 wastes are listed are all organic forms of arsenic. K031 and K084 are typically generated as process wastes that contain mixtures of both organic and inorganic forms of arsenic. Although all of these wastes are typically generated as nonwastewaters, the Agency expects that wastewater forms of these wastes may be generated from incidental spills or from the treatment process itself and thus require treatment standards. The Agency is transferring the D004 performance data and concentration-based treatment standard of 0.79 mg/l to K031, K084, P010, P011, P012, P036, P038, and U136 wastewaters. The Agency has chosen to transfer treatment performance from the treatment of the D004 veterinary pharmaceutical wastewaters because these wastewaters should contain

similar organo-arsenical and inorganic arsenic compounds that can be removed by lime followed by manganese sulfate and ferric precipitation.

(3) *Revisions to K101 and K102 Treatment Standards.* In the First Third Final Rule (53 FR 31170, August 17, 1989), the Agency established two subcategories of K101 and K102 nonwastewaters based on the concentration of arsenic in the waste. A low arsenic subcategory was established for waste containing less than 1 percent arsenic and a high arsenic subcategory for waste containing 1 percent or greater. In today's rule, the Agency is changing the nonwastewater standards for K101 and K102 promulgated in the First Third Final Rule as proposed by eliminating the low and high level arsenic subcategories and by replacing the existing metal standards with a concentration-based treatment standard for arsenic of 5.6 mg/l (measured in the EP extract) based on the performance of vitrification. The organic standards will remain the same as those established in the First Third Final Rule.

The Agency is also promulgating new wastewater treatment standards for K101 and K102 in today's rule. Standards for K101 and K102 wastewaters were promulgated in the First Third rule (53 FR 31170, August 17, 1988) and were applicable to all forms of K101 and K102 wastewaters (i.e., they did not distinguish between high arsenic or low arsenic subcategories). These promulgated standards were based on the same D004 wastewater treatment data used in today's proposal to establish arsenic standards for other K, U, and P wastes. In the process of reevaluating the D004 wastewater treatment data for today's rule, however, EPA discovered an error in the calculation of the promulgated K101 and K102 wastewater standards for the metal constituents. The Agency is correcting this error by amending the wastewater standards for the metal constituents (arsenic, cadmium, lead, and mercury) in K101 and K102 as proposed. Therefore, a new treatment standard of 0.79 mg/l for arsenic, 0.24 mg/l for cadmium, 0.17 mg/l for lead, and 0.82 mg/l for mercury is being promulgated. Since there was no error in the calculation of the promulgated standards for the organic constituents, they are not being changed. The promulgated standards for the organics are being presented for convenience of the reader.

BDAT TREATMENT STANDARDS FOR D004

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, EP leachate ¹ (mg/l)
Arsenic.....	5.0

BDAT TREATMENT STANDARDS FOR D004

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Arsenic.....	5.0

BDAT TREATMENT STANDARDS FOR K031, K084, P010, P011, P012, P036, P038, AND U136

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, EP leachate ¹ (mg/l)
Arsenic.....	5.6

BDAT TREATMENT STANDARDS FOR K031, K084, P010, P011, P012, P036, P038, AND U136

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Arsenic.....	0.79

BDAT TREATMENT STANDARDS FOR K101

[Nonwastewaters²]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)	Maximum for any single grab sample, EP leachate ¹ (mg/l)
Nitroaniline.....	14	NA
Arsenic.....	NA	5.6

BDAT TREATMENT STANDARDS FOR
K101

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Ortho-nitroaniline.....	0.27
Arsenic.....	0.79
Cadmium.....	0.24
Lead.....	0.17
Mercury.....	0.082

BDAT TREATMENT STANDARDS FOR
K102

[Nonwastewaters *]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)	Maximum for any single grab sample, EP leachate ¹ (mg/l)
Ortho-nitrophenol.....	13	NA
Arsenic.....	NA	5.8

BDAT TREATMENT STANDARDS FOR
K102

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Ortho-nitrophenol.....	0.028
Arsenic.....	0.79
Cadmium.....	0.24
Lead.....	0.17
Mercury.....	0.082

¹ The TCLP test can also be used to demonstrate compliance for these wastes.

* This removes subcategories based on high and low arsenic content.

c. Barium

D005 Characteristic Barium Wastes
P013 Barium Cyanide

The Agency proposed treatment standards for all D005 wastes (wastes containing 100 mg/l barium as measured in the EP leachate) as well as for all barium cyanide wastes listed as P013 (54 FR 48434). The proposed wastewater treatment standard for D005 and P013 was 1.15 mg/l, based on a limited amount of data from the EPA Office of Water's Effluent Guidelines program. The proposed nonwastewater treatment standard for D005 and P013 was expressed as a method of treatment, "Acid or Water Leaching Followed by Chemical Precipitation as Sulfate or Carbonate; or Stabilization". An

alternative for all characteristic wastes was also presented, that of establishing the characteristic level as the treatment standard.

Because the proposed treatment standards were based on very limited data, the Agency solicited comments and data on waste characterization and treatment. Several data sets were received pertaining to D005 nonwastewaters. These data have been used in today's rule to support that D005 nonwastewaters can be treated to levels below the characteristic level of 100 mg/l. In most cases, however, the data were not adequate to support a specific treatment standard for D005 and P013 because they lacked QA/QC information, influent/effluent levels, or did not provide enough data points to be representative of these wastes. One data set was used, however, to establish today's final treatment standard for P013 nonwastewaters, as is further discussed in section (2) below.

Several comments were received on the proposed approach for regulating D005. No comments were received pertaining specifically to P013. Additional comments other than those addressed in this preamble were received on the proposed approach for regulating barium wastes. All comments and the Agency's responses are found in the Response to BDAT-Related Comments Document, in the RCRA Docket.

(1) *D005—Characteristic Barium Wastes.* Today's rule promulgates concentration-based treatment standards for all D005 wastes expressed as the characteristic level for barium, 100 mg/l. The Agency is adopting this approach because of the data deficiencies discussed above, and issues that were raised in the public comments that are discussed in the following paragraphs.

Several commenters requested that the treatment standard be set at the characteristic level. As mentioned above, the Agency received data for D005, all of which demonstrates treatment to below the characteristic level of 100 mg/l. Because D005 wastes are so diverse (in fact, an organobarium waste stream was identified by two commenters when the Agency primarily characterized this waste as an inorganic waste stream) and the data received during the comment period so inconclusive as to establishing a concentration-based treatment standard for all D005 wastes, the Agency is promulgating the characteristic level as the treatment standard. The Agency is confident, however, based on the data received, that treatment to achieve the

100 mg/l level is possible for both wastewater and nonwastewater forms of D005.

Many commenters requested that a concentration-based standard be established for D005 nonwastewaters rather than the proposed method of treatment. As explained above, this is the approach that is being promulgated in today's rule. The Agency prefers to set a concentration-based treatment standard rather than specifying a method of treatment because it allows the treater of any of the various forms of D005 maximum flexibility in the choice of treatment technology most appropriate for the waste. Additionally, some commenters disagreed with the proposed specification of precipitating reagents (i.e., precipitation as sulfate or carbonate). The Agency agrees that specifying precipitating reagents may cause unnecessary problems for the treatment industry in that treatment of barium often takes place in a waste stream containing other metals for which the specified reagent is inappropriate.

Commenters opposed the proposed D005 wastewater treatment standard as being unattainable, stating further that the 1.15 mg/l standard is overly restrictive because it is very close to the Agency's drinking water standard. Only one data point was received during the comment period for treatment of D005 wastewaters, not enough data to support a concentration-based standard for the diverse forms of D005 wastewaters. Additionally, some commenters disagreed with EPA's discussion of typical precipitation reagents suitable for D005 (and P013). The Agency has data indicating that barium is usually precipitated as a sulfate salt.

Commenters expressed concern that the Agency should neither set precipitation as a required method of treatment for these wastewaters nor specify required precipitation reagents. The Agency is not promulgating a treatment standard expressed as a required method, and agrees that specifying precipitating reagents may cause unnecessary problems for the treatment industry.

(2) *P013—Barium Cyanide.* Today's rule promulgates barium treatment standards for P013, barium cyanide wastes. Treatment standards for cyanide in P013 were promulgated in the June 23, 1989 final rule for Second Third wastes (54 FR 26614).

Data was provided during the comment period on stabilization of D005 nonwastewaters that is being used as the basis of a treatment standard for barium in P013 nonwastewaters. Based on these data, a treatment standard of

52 mg/l has been calculated. Use of this data for P013 is justified even though it was not used for D005 nonwastewaters. As one of the "P" listings, P013 is a specific waste, while D005, a characteristic waste, may take diverse forms. Generally, the more specific P013 is expected to be characterized consistently. The data is appropriate for establishing a waste-specific treatment standard for P013 because the waste's properties are not likely to change. Therefore, the standard should be achievable for all P013 nonwastewaters.

No data were received during the comment period to set a treatment standard for P013 wastewaters. Commenters objected to the proposed 1.15 mg/l D005 wastewater standard as being unattainable, and the Agency is considering these comments applicable to P013 as well. Commenters also objected to the specification of precipitation reagents for D005 wastewaters. The Agency is therefore disinclined to establish a method of treatment (i.e., chemical precipitation with specified reagents) for P013 wastewaters. In the absence of any data on treatment of P013 wastewaters, therefore, the Agency is not promulgating a barium wastewater treatment standard. The cyanide in P013 wastewaters is regulated under the land disposal restrictions (54 FR 26614); therefore, P013 wastewaters will not be subject to the "hard hammer" (i.e., banned from land disposal on May 8, 1990).

BDAT TREATMENT STANDARDS FOR D005

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample TCLP leachate (mg/l)
Barium.....	100

BDAT TREATMENT STANDARDS FOR D005

(Wastewaters)

Regulated constituent	Maximum for any single grab sample (mg/l)
Barium.....	100

BDAT TREATMENT STANDARDS FOR P013

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample TCLP leachate (mg/l)
Barium.....	52

d. Cadmium

D006—Characteristics cadmium wastes.

Today's rule promulgates wastewater and nonwastewater treatment standards for D006 wastes. Comments and data were received asserting that it was not possible to meet the proposed treatment standards for D006 cadmium, which data EPA finds persuasive. Data are also insufficient to reliably establish a standard below the characteristic level that is generally achievable. Data were submitted during the comment period, however, indicating that the wastes can be treated to meet the characteristic level. Therefore, the Agency is promulgating the characteristic level of 1.0 mg/l cadmium (as measured by the TCLP) as the treatment standard for D006 nonwastewaters and wastewaters. EPA is also establishing an additional treatability group for cadmium batteries that are characteristic hazardous wastes. The standard for cadmium batteries is thermal recovery.

In the proposed rule, EPA proposed regulation of cadmium in D006 wastes at treatment levels below the characteristic level. Two commenters submitted performance data showing various wastes treated by different stabilization technologies (e.g., different chemical reagents) and data supporting that the proposed standards were unachievable. The data, however, showed that D006 wastes can be treated to meet treatment levels at or about the characteristic level of 1.0 mg/l for cadmium (as measured by TCLP for nonwastewaters) once the proper chemical reagents and waste to binder ratios are used. Based on these data, EPA is not finalizing the proposed treatment standards for D006 and instead, is promulgating treatment standards at 1.0 mg/l cadmium for both wastewater and nonwastewater (as measured by TCLP) forms of D006.

Some facilities submitted comments asserting that their wastes were unique or simply unable to meet concentration based treatment standards developed by the Agency and requested that EPA promulgate a method of treatment for their D006 wastes. These facilities failed

to identify a method of treatment that may meet BDAT criteria or to provide adequate data that may enable EPA to assess the validity of their claims. As a result, these facilities' claims of not even being able to treat to the characteristic levels must be addressed (if at all) by requesting a treatability variance, as provided in 40 CFR 268.4.

EPA proposed that cadmium-containing batteries be a separate subcategory of D006 wastes. See 54 FR 48436, listing several examples of industries, manufacturing processes, or commercial users that generate cadmium batteries. The proposed rule called for batteries containing leachable cadmium above 1.0 mg/l (as measured by EP Toxicity) to be treated for cadmium recovery in thermal recovery units as a prerequisite for land disposal.

Commenters fully supported the Agency's determination that thermal recovery of cadmium represents BDAT for D006 wastes in the cadmium-containing battery subcategory. Their comments pointed out that these wastes are routinely treated in industrial furnaces such as smelters for the recovery of cadmium and other valuable metals.

Commenters asked the Agency to clarify in its final rule the status of residues from cadmium battery recycling operations. Cadmium is typically recovered in pyrometallurgical operations or by smelting (typically as a byproduct in zinc smelting operations). Batteries can also be broken to extract recoverable cadmium, which cadmium is then sent to thermal recovery. Residues from these various operations, including air pollution control sludges, thermal recovery furnace residues, and residues from battery breaking, are no longer in the cadmium-containing battery subcategory. If they continue to exhibit the characteristic for cadmium, however, they would still be prohibited wastes in the D006 treatability group and would have to be treated to meet the standard for that treatability group (i.e., treated so that they no longer exhibit the characteristic). Residues most likely to exhibit the characteristic for cadmium are the residues from battery breaking, and air pollution control residues from thermal recovery.

Commenters also questioned whether small consumer-type nickel cadmium rechargeable dry cell batteries were covered by the prohibition. EPA is making no determination in this rule whether such batteries are hazardous wastes. This is a question of fact based upon whether such batteries exhibit the EP characteristic when a representative sample of the battery is tested. In

addition, many of these batteries, even if hazardous, would be household hazardous wastes and thus are excluded from all subtitle C regulation (40 CFR 261.4(b)(1) and 268.1(b)).

BDAT TREATMENT STANDARDS FOR D006

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample TCLP leachate (mg/l)
Cadmium.....	1.0

BDAT TREATMENT STANDARDS FOR D006

[Wastewaters]

Regulated constituent	Maximum for any single grab sample (mg/l)
Cadmium.....	1.0

BDAT TREATMENT STANDARDS FOR D006

[Cadmium-Containing Batteries]

Thermal Recovery of Metals or Inorganics (RTHRM)
as a Method of Treatment

e. Chromium

D007—EP Tox for Chromium

U032—Chromic acid (H_2CrO_4 , calcium salt)

EPA is promulgating a treatment standard of 0.094 mg/l chromium (total), as measured in the leachate generated by use of the TCLP for nonwastewater forms of U032. The wastewater treatment standard for U032 is 0.32 mg/l chromium (total). For nonwastewater and wastewater forms of D007, EPA is promulgating a treatment standards of 5.0 mg/l chromium (total) (as measured by TCLP for nonwastewaters). A technical description of U032 and D007 can be found in the listing documents for each waste.

Several commenters objected to the proposal to regulate total chromium rather than hexavalent chromium in D007 and U032. They believe that EPA should only regulate hexavalent chromium since "EPA has recognized that only the hexavalent chromium presents a threat to humans and the environment * * *". The Agency is not persuaded by these arguments, maintaining that treatment of total chromium will provide the most effective regulation of hexavalent forms. These comments moreover improperly

characterize the Agency's position, which is long-established, and is not being reopened for consideration in this rule. Under Subtitle C, EPA regulates on a total chromium basis unless it is demonstrated that chromium is exclusively (or nearly exclusively) trivalent, the chromium is generated from a process that uses only trivalent chromium, and that the waste is managed in non-oxidizing environments. See § 261.4(b)(6)(i) (1980). To date, EPA is unaware of any generator submitting a demonstration to EPA for processing. EPA repeats that it is not reopening this long-settled issue in this proceeding.

Detailed discussions of the development of treatment standards for D007 and U032 can be found in the final BDAT Background Document for these wastes in the RCRA docket.

(1) D007. EPA proposed concentration-based treatment standards for D007 wastewaters and nonwastewaters based on a transfer of treatment standards for K062. (K062 wastes are spent pickle liquors generated by the iron and steel industry.) This was because the chromium standards that were promulgated for K062 wastes were based on treatment of a mixture of K062 and other EP Toxicity wastewaters (including D007 wastes). The treatment process included hexavalent chromium reduction (to the trivalent state) followed by chemical precipitation, settling, filtering, and dewatering of solids. As an alternative, the Agency also proposed treatment standards for D007 wastes based on a transfer of chromium standards promulgated for F006 wastes (wastewater treatment sludges from the treatment of wastewaters from the electroplating industry). Treatment data for F006 wastes were based on the performance of conventional cementitious or pozzolanic stabilization.

(i) Wastewaters. Commenters indicated that the proposed levels for D007 wastewaters based on the transfer from K062 wastes (i.e., 0.32 mg/l) could not be achieved for the majority of their D007 wastes. In support of their position, they submitted ten specific sets of data on the treatment of various D007 wastes. However, these data primarily included treatment information with an emphasis on the nonwastewater residues and did not include very much data on the wastewater residuals. Data from one commenter supported their claim, but indicated that the characteristic level for chromium (i.e., 5.0 mg/l) could generally be achieved. While these wastewater data were mostly above the proposed 0.32 mg/l standard for chromium, none of these data submitted could be used to

support an alternative wastewater treatment standard that is below the characteristic level. Based on these data and for reasons outlined in section III.D. of today's preamble, the Agency is not promulgating the proposed treatment standard of 0.32 mg/l and, instead, is establishing the characteristic level (i.e., 5.0 mg/l) as the treatment standard for D007 wastewaters.

(ii) Nonwastewaters. Except for D007 refractory bricks (see discussion below), the majority of the commenters believed that the 0.094 mg/l TCLP standard based on a transfer from K062 wastes could not be achieved. However, the alternative standards proposed for D007 nonwastewaters (i.e., 5.2 mg/l TCLP based on the transfer from F006 and capping the standard at the 5.0 mg/l characteristic level) could be achieved on a routine basis. In support of their position, they submitted ten specific sets of data on the treatment of various D007 wastes. The Agency examined the quality and completeness of these data for the nonwastewater residues.

The Agency determined that eight of the ten data sets could not support the development treatment standards due to a significant lack of information on: influent concentrations, waste source descriptions, binder/waste ratios, treatment operating/design information, the existence of a pretreatment step (hexavalent chromium reduction), and/or quality assurance and quality control information. The Agency also determined that the other two data sets also have some deficiencies in the above criteria, but do represent similar treatment trains used to establish the chromium standards for K062 and F006. The Agency emphasizes that none of these ten data sets are as complete as the data for either F006 or K062.

In considering the usefulness of the two data sets that are more complete than the others, the Agency examined what treatment standards would have been if they were derived from these data. One data set (from Cyanokem) would have resulted in a standard of 0.86 mg/l and another data set (using only 10 of the more complete data points from the HWTC) would have resulted in a standard of 0.74 mg/l. (Note: Both are based on TCLP analysis.)

However, the HWTC data contained an additional 32 incomplete treatment data points (no untreated TCLP analyses), many of which could not meet the 0.86 mg/l or the 0.74 mg/l treatment standards. Assuming that these previously rejected 32 data points represent valid treatment, the Agency decided that both the 0.86 mg/l and the 0.74 mg/l standards calculated on just 20

data points were not achievable on a routine basis. The Agency found that it was difficult to ascertain (per treatment facility) the mixing ratios of waste volumes that were received from each of the different industries. While the data indicated that some wastes contained very high concentrations of chromium, the lack of information on mixing ratios and feed rates made it difficult to assess the true effectiveness of treatment (i.e., the Agency could not determine the chromium concentration of the mixed D007 wastes just prior to treatment.)

The Agency points out that the data from Cyanokem represented primarily treatment of liquid wastes (some with very high concentrations of chromium). Some of the sludges generated from this process did not require further treatment (i.e., stabilization). This same situation occurred with the process used to establish the promulgated treatment standards for K062 wastes, in that the wastewater treatment process employed for treating the combined K062/D007 wastes was effective enough that the treatment sludges were not characteristic for chromium and did not require any further stabilization. (Thus, the derivation of the 0.094 mg/l proposed standard for D007 wastes.) While Cyanokem's data clearly indicated that the proposed 0.094 mg/l could not be achieved and thus implying that their combined D007 wastes were more difficult to treat, their data did not represent wastes similar to those represented by the HWTC data which was comprised primarily of sludge stabilization data.

The Agency then decided to examine what the treatment standard would be based on all of the data from Cyanokem and the HWTC (i.e., using all 52 data points, except for one from the HWTC data that the Agency believes to be an outlier). In doing so, it significantly increased the number of data points and also represented a greater variety of wastes from a greater cross-section of industries. Despite all of this, the Agency took a conservative approach and assumed that proper and effective treatment had occurred for all of the data.

The resultant standard using these combined data was 4.3 mg/l based on TCLP. While the combined data are technically "weak" due to various deficiencies in BDAT information, the combined two data sets do reflect the treatment of a greater variety of wastes. The Agency contemplated promulgating the 4.3 mg/l standard as an alternative to the 5.2 mg/l from F006; however, this level is so close to the 5.0 mg/l characteristic level that the Agency does

not believe the significant regulatory disruptions and uncertainties inherent in applying direct part 268 regulation to subtitle D facilities is warranted.

The Agency notes that the 5.2 mg/l F006 standard was also generated by the commercial treatment industry and that further combination of the F006 data with the commenters' data would probably result in a standard even closer to the characteristic level of 5.0 mg/l. As it is, a measurement of 4.3 mg/l by the TCLP test is approximately 86% of the 5.0 mg/l characteristic level and within the analytical error that may be expected for such an analysis.

As a result of these comments and data, EPA is withdrawing both of the proposed treatment standards for D007 wastes (i.e., the transfer from F006 and from K062). While the Agency contemplated promulgating the 5.2 mg/l F006 standard, it is even closer to the characteristic level than the 4.3 mg/l calculated using the commenters' data. The treatment standard promulgated today, therefore, is set at 5.0 mg/l chromium (total) (as measured by TCLP). While the majority of commenters supported this approach from a policy standpoint, the Agency is convinced that the available data submitted by them clearly indicate the validity of the achievability of this standard.

(iii) D007 Refractory Bricks. Some D007 nonwastewaters are generated in the form of refractory bricks containing percent levels of hexavalent chromium. The Agency has identified one facility that is recovering chromium using a high temperature thermal recovery process. The bricks are crushed and recycled as feedstock along with other raw materials in the manufacture of refractory bricks or metal alloys. This recovery technology is currently used for bricks that contain up to 20% chromium but the facility believes the technology can treat bricks containing up to 40% chromium. However, the facility also indicated that there are upper limits on the amount of phosphorus present in the bricks that would lower the quality of the product.

EPA has determined that this thermal recovery process is an alternative treatment for some forms of these D007 refractory bricks. However, the Agency is currently uncertain to what extent this thermal recovery technology is demonstrated for all of the various types of refractory bricks currently being land disposed. Thus, the Agency is not establishing high temperature thermal recovery as a treatment standard for these D007 wastes, but is not precluded from doing so in the future. At the same

time, facilities are not precluded from using this technology for these types of wastes.

Some commenters submitted data on the stabilization of these spent refractory bricks. These data are one of the seven data sets rejected by the Agency for reasons outlined in section III.A.2.(e)(1) above. These data consist of analysis on two TCLP extracts of crushed refractory brick that were subjected to two different stabilization technologies. One technology utilized cement as a stabilization reagent and achieved a treated TCLP level for chromium of 70 mg/l. The other technology was a glassification process that achieved a treated TCLP level for chromium of 110 mg/l. While these performance data are incomplete, they appear to indicate that chromium bricks could be more difficult to treat than the other chromium containing wastes tested by EPA (K062 or F006) or, more likely, that stabilization of chromium bricks may need to be preceded by a hexavalent chromium reduction step. Congress in fact contemplated that hexavalent chromium would be reduced to the maximum extent possible before prohibited wastes are land disposed. Statement of Senator Chaffee, 130 Cong. Rec. S 9178 (July 25, 1984). EPA thus does not view these data as representing BDAT, nor as minimizing threats to human health and the environment.

See also preceding section III.A.3.(a)(2) discussing treatment standards for inorganic solids debris (including refractory bricks) and the two year national capacity variance granted for these wastes.

(2) U032. The treatment standards promulgated today for U032 are transferred from the treatment of K062 wastewaters and nonwastewaters. EPA believes that K062 wastes are more difficult to treat than U032 wastes, in that U032 wastes should contain lower concentrations of potentially interfering metals than K062 wastes and should primarily contain only one specific chromium compound (i.e., the calcium salt of chromic acid). Because of this, EPA sees no technical bar to transferring data to establish treatment standards for U032 wastewaters and nonwastewaters.

BDAT TREATMENT STANDARDS FOR D007

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	5.0

BDAT TREATMENT STANDARDS FOR D007

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chromium (Total).....	5.0

BDAT TREATMENT STANDARDS FOR U032

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	0.094

BDAT TREATMENT STANDARDS FOR U032

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chromium (Total).....	0.32

f. Lead

- D008—EP toxic for lead.
 P110—Tetraethyl lead.
 U144—Lead acetate.
 U145—Lead phosphate.
 U148—Lead subacetate.
 K069—Emission control dust/sludge from secondary lead smelting.
 K100—Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.

(1) *D008 Wastes.* The Agency, as one alternative, proposed treatment standards below the characteristic levels for nonwastewaters and wastewaters as 0.51 mg/l TCLP and 0.04 mg/l, respectively. The Agency also proposed an option of capping the treatment standards for D008 at the characteristic level. Additional data and comments were received that indicated that the proposed levels of 0.51 mg/l TCLP and 0.04 mg/l were unachievable

for many D008 wastes on a routine basis. After detailed analysis of the available data, EPA concludes that treatment to 5.0 mg/l EP best represents the achievable treatment standard for the entire spectrum of D008 nonwastewaters. In addition, EPA is establishing the treatment standard for wastewaters at the characteristic level for the reasons stated in section III.D of the preamble.

(a) *Nonwastewaters.* The Agency proposed a cut-off concentration of 2.5% total lead as a means of distinguishing between those essentially inorganic nonwastewaters containing recyclable levels of lead and those which can be effectively stabilized. Consequently, the Agency proposed two treatability groups for lead based on the 2.5% cutoff as the Low and High Lead Subcategory. The Agency solicited comments on the use of the cutoff level and whether the 2.5% total lead gives an accurate description of lead that can be recycled from D008 nonwastewaters. Many commenters requested that the Agency not promulgate the cutoff level. In fact, many commenters suggested that it is not economically feasible to recycle lead from wastes with less than 25% lead. Many commenters (including those from secondary lead industry itself) also stated that lead concentrations are not the sole measure of recyclability. The commenters presented data that indicates that D008 nonwastewaters with greater than 2.5% total lead can often be stabilized. Therefore, the Agency has decided not to promulgate the cutoff levels and has decided not to adopt proposed high and low lead treatability groups for D008 nonwastewaters and instead to promulgate generically applicable treatment standards.

In addition, the Agency proposed and solicited comments on three options for the development of treatment standards for D008 nonwastewaters. The first option was to develop a numerical treatment standard for those D008 nonwastewaters that can be stabilized. Consequently, the Agency proposed a numerical treatment standard of 0.51 mg/l for leachable lead based on a transfer of the performance of stabilization for F006 wastes. The second option was to specify Thermal Recovery as a method of treatment as the treatment standard for D008 nonwastewaters where the lead could be recovered. The third option was to limit the treatment standard for D008 nonwastewaters to the characteristic level.

During the comment period, the Agency received D008 nonwastewater

data from various sources. Most of the data came from stabilizing specific D008 nonwastewaters. Some of the data were from the foundry industry, secondary lead smelters, the glass industry, and commercial treaters of D008 nonwastewaters. The majority of the data received by the Agency did not have the proper QA/QC, corresponding influent and effluent data, and design and operating parameters, so the Agency is hesitant to use the data in developing treatment standards. The Agency, nevertheless, evaluated all of the data to assess the range of waste variability and what standard could typically be achieved.

Stabilization data was submitted by the foundry industries by Wheland Foundry and the American Foundrymen. The untreated lead concentration ranged up to 88 mg/l leachable using the EP toxicity test. An analysis of the data indicates that the performance of the treatment system could achieve leachable levels of lead lower than the characteristic level. In fact, the highest leachable concentration of lead is 1.4 mg/l. Although these data showed that the leachable concentration of lead was below the characteristic level, the leachable level for cadmium was higher than the characteristic level. These data clearly show that the other metals in the wastes could affect the performance of stabilization for this waste. Put another way, this means (assuming proper treatment performance) that the performance of the treatment system could achieve concentration levels below the characteristic level for lead but levels higher than the characteristic level for cadmium.

Data was submitted by two glass manufacturers, Vision Ease and Ciby-Geigy Corporation. Vision Ease submitted treatment data for stabilization of ground glass particles, wastewater treatment sludges, and polishing and grinding dust. The type of binder used was hydrated lime and sodium monophosphate. The commenter indicated that these untreated wastes contained total lead concentrations greater than 2.5% and leached higher than the characteristic level; however, no actual influent concentrations were submitted. The commenter also did not submit QA/QC data. If the Agency calculated a treatment standard using the stabilized data, the standard would be the characteristic level of 5.0 mg/l measured by the EP test.

Ciby-Geigy submitted treatment data for waste produced in the manufacture of glass enamels. These wastes were produced from equipment and container washing during the manufacturing

process. These wastes were treated by a wastewater treatment system that generated a sludge that exhibited the characteristic of toxicity for lead. The commenter submitted two sets of data. The first set of data was treatment of a 25.6% lead oxide sludge by stabilizing with clays, flints, and calcium chloride and then heating the waste to a maximum temperature of 1850 degrees Fahrenheit to produce a ceramic material. This ceramic material leached lead concentration ranging from 0.2 to 0.4 ppm as measured by the EP test. If the Agency calculated a treatment standard for this waste, the treatment standard would be 0.89 mg/l measured by the EP test. For this data set, there was no untreated leachable concentrations of lead, therefore the Agency cannot determine whether the waste was hazardous before treatment. The second data set contained lead oxide concentration ranging from 13% to 75%. The waste was mixed with borax and then heated to a maximum temperature of 1950 degrees Fahrenheit. This ceramic material leached lead at levels ranging from 0.2-40 ppm measured by the EP test. Of the 11 data points that were collected by the commenter, 4 of the 11 would fail the EP test. The Agency did not use these data to calculate a treatment standard, however, because each used different binder ratios. These two data sets from glass manufacturers clearly show the diversity of the waste and a difference in treatable levels. In some cases stabilization can reduce leachability of lead at, or somewhat below, the characteristic level.

The Agency received data from the Secondary Lead Smelters Association (SLSA) on the treatment of slag by stabilization. The wastes contained total concentrations of up to 10 percent lead. The types of binders that were used were portland cement, polymers, and silicates. The commenter submitted approximately 110 data points from two different plants. The binder to waste ratios ranged from 1 to 2, to 1 to 15. In the data submission, there was no QA/QC data and no corresponding influent leachable lead concentration. One data set was based on use of portland cement as a stabilizing agent with a binder to waste ratio ranging from 1 to 5, to 1 to 10. The Agency calculated a treatment standard of 2.47 mg/l was measured by the TCLP from these data. The other data set was based on the use of polymers and silicates as stabilizing agents with binder to waste ratio ranging from 1 to 5, to 4 to 10. There were approximately 94 data points, and of these data points, one was above the

characteristic level for lead. The Agency used these data to calculate a treatment standard of 4.82 mg/l as measured by the TCLP.

The Hazardous Waste Treatment Council (HWTC) submitted eight data sets for the treatment of D008 nonwastewaters. There was no QA/QC and influent leachable concentration of lead. The data set with the highest concentration of total lead was a zinc ammonium chloride solid from the manufacture of containers. This waste had a total lead concentration of 49,000 ppm. This waste was stabilized to a leachable level of lead ranging from 6.47 to 8.7 ppm as measured by the TCLP. This stabilized waste represented a volume increase ratio ranging from 1.8 to 2.5.

The data set with the next highest total lead concentration was generated from an incinerator fly ash from the aerospace industry that contained 810 ppm of total lead. Based on the data provided in the comments, this waste would not be considered characteristically hazardous due to the fact that the untreated leachable level for lead is 0.0749 ppm. This waste was treated by stabilizing with a binder to waste ratio ranging from 0.89 to 2.8. The treated leachable levels ranged from 0.1 to .27 ppm as measured by the TCLP.

The third highest data set represented data from three soils contaminated with lead and petroleum, with concentrations ranging from 29 to 561 ppm total lead. This waste contained total lead concentration of 29 ppm, and had a corresponding untreated leachable level of 6.01 ppm as measured by the TCLP, which is above the characteristic level. These soils resulted in the best treatment, with levels ranging from .066 to 0.257 ppm as measured by the TCLP. This represented a volume increase ranging from 1.6 to 3.4.

The HWTC provided three other data sets representing waste generated as water filtrate and sludge from the manufacture of conduit, as ammonium hydroxide sludge from electroplating, and as sump sludge from the reconditioning of metal drums. These wastes had total lead concentrations ranging from 234 to 460 ppm. There was no untreated TCLP data corresponding to the total lead levels. The stabilized wastes ranged in concentration from .06 to .10 ppm as measured by the TCLP. The binder to waste ratio ranged from 1.6 to 3.5.

Of these data, the waste with the highest total lead concentration shows treatment levels barely above the characteristic level of 5 ppm. These data show that a high concentration of lead

(approximately 5%) could barely be stabilized to the characteristic level (although the data are so sparse that no hard conclusions are possible). These data also show that most of the untreated wastes discussed in the HWTC comments did not exhibit a characteristic before stabilization. Also, these data highlight the diversity of D008 nonwastewaters that can be treated.

The HWTC commented on data submitted to EPA from the Secondary Lead Smelters Association (SLSA). The HWTC concluded that the treatment data support concentrations of lead below the characteristic level. The HWTC also stated that these data support the proposed BDAT treatment standard of 0.51 mg/l, or at least achieving levels below the characteristic level. The HWTC points out that agents such as fly ash, lime, and sulfide would provide for a higher degree of stabilization than just adding portland cement.

The Agency does not agree with the HWTC that these data support treatment levels significantly below the characteristic level. The data provided by SLSA clearly show that two treated data points of 87 were above the characteristic level. The Agency used the data to calculate a treatment standard of 4.82 mg/l, very close to the 5.0 mg/l characteristic level. In addition, the Agency does not agree with HWTC that other stabilizing agents may provide a higher degree of stabilization. At the least, the proposition is not self-evident. The data provided by SLSA show treatment by three types of binders and a significant range of binder to waste ratios. Using the highest binder to waste ratio for these wastes, the treated level is higher than the characteristic level. (In addition, there are issues of whether stabilization of slag is appropriate treatment. See discussion of inorganic debris in preamble section III.A.1.a.(2).)

The Agency does not believe that the data it received in response to the proposed rule represent the entire spectrum of characteristic lead nonwastewaters. Also, these data do not support the assumption that characteristic lead nonwastewaters can typically be treated to levels significantly less than the EP characteristic level. The limited amount of data does not reflect the full measure of waste variability inherent in a characteristic waste, particularly variability of matrices and lead concentrations. In addition, the commenters do not address how treatability of other metals could be affected by optimized lead treatment,

nor has EPA had the time to address this issue. With the treatment of the Vision Ease waste to 5.0 mg/l as measured by the EP and the SLISA data demonstrating treatment to 4.82 mg/l as measured by the TCLP, and data points above the characteristic level submitted by the waste treatment industry, the Agency is adopting for nonwastewater forms of D008 wastes, the treatment standard equal to 5.0 mg/l as measured by the EP procedure. The Agency is adopting this approach to address the range of variability inherent in the D008 wastes.

Because a facility may generate a waste containing lead and other metals, the TCLP (which is required for most other metals) may be used to measure compliance with this standard. EPA is not basing the standard for D008 on the TCLP, however, because that protocol is more aggressive for lead than the EP. The Agency is not sure that levels of 5.0 mg/l as measured by the TCLP are typically achievable. The TCLP can be used to demonstrate compliance. However, if the analysis shows that the waste leaches below 5.0 mg/l for lead as measured by the TCLP, then the facility has complied with the standard. If the waste leaches above 5.0 mg/l for lead, then the facility may analyze the sample using the EP procedure. (It should be noted, however, that if a waste exhibits the amended toxicity characteristic, it must still be managed in a Subtitle C facility even if it is not prohibited from land disposal).

(b) Wastewaters. In the November 22, 1989, proposed rule, the Agency proposed a treatment standard for D008 wastewaters of 0.04 mg/l based on a transfer of the performance of precipitation with lime and sulfide, filtration, and settling for K062 wastewaters. In addition, the Agency solicited comments on the approach of specifying a precipitant as a method of treatment for D008 wastewaters. Comments were solicited on whether the Agency should develop treatment standards based on data provided from the primary and secondary lead smelters industries as part of the Agency's effluent limitation guidelines program.

Many commenters questioned the Agency's technical capabilities of the transfer of the performance of the treatment system for K062 wastes as compared to D008 wastewaters. In particular, the commenters pointed out that the untreated K062 wastewaters had low concentration of lead compared to the D008 wastes as actually generated. However, commenters submitted additional data indicating that although the 0.04 mg/l for lead was

unachievable, precipitation and filtration treatment could achieve concentrations of lead in the effluent lower than the characteristic level.

In particular, the Agency received treatment data for D008 wastewaters from three sources. One set of data submitted to the Agency was from the Battery Council, Inc (BCI). These data represented a small portion of the data that was collected in the effluent limitations guidelines program for the battery and nonferrous metals point source category. BCI's contention was that if the Agency decides to develop treatment standards lower than the characteristic level for D008 wastewaters, then the Agency should base the levels on the effluent guidelines for the battery and nonferrous metals categories. The Battery Council submitted treatment data using the following treatment technologies: lime settling, lime settling and filtration, and carbonate precipitation, settling, and filtration. This data showed influent concentration levels ranging up to 300 ppm. The data showed a substantial reduction of lead and other metals from the treatment system. BCI submitted corresponding quality assurance/quality control (QA/QC) information for the data. If the Agency uses the data from the treatment system, the calculated treatment standard would be roughly 0.6 mg/l, an order of magnitude lower than the characteristic level.

In addition, the Agency received D008 wastewater data from Tricil Environmental Services, a treater of D008 and other characteristically hazardous wastewaters. However, this waste was commingled with other waste before treatment, thereby blending down such that the concentration of lead would be lower than what was actually reported. Data was submitted on the treatment of lead by precipitation with phosphate, followed by settling, and filtration. The concentration of lead in the influent before blending down ranged up to 50,000 ppm. If the Agency used all of the treatment data in order to calculate a treatment standard, the performance of the treatment system indicates that a calculated treatment standard is 0.2 mg/l, which is more than an order of magnitude lower than the characteristic level. The Agency would hesitate to use the data in developing treatment standards for D008 wastewaters due to the lack of QA/QC data and corresponding influent and effluent data. Because of the initial concentration of lead and concentrations of other dissolved metal, the Agency believes that these wastes

represent the variability associated with the characteristic wastes.

Also, the Agency received treatment data from a foundry facility treating D008 wastewater. This data represents treated wastewaters by precipitation with high magnesium lime and filtration. The lead concentration in the untreated wastewater ranged up to 276 mg/l. If the Agency used all of the treatment data, the calculated treatment standard is 0.4 mg/l, which is an order of magnitude lower than the characteristic level. For this data, the Agency evaluated the QA/QC data, the design and operating parameters, and corresponding influent concentrations.

Based on the evaluation of all of the wastewaters data received from comments, as well as the various Clean Water Act, effluent limitation guidelines and pretreatment standards regulating lead (for example, the Combined Metals Data Base and regulations for primary lead, secondary lead and battery manufacturing), the Agency concludes that well designed and well operated treatment systems can achieve total concentrations of lead lower than the characteristic level. As explained in Section III.D, however, EPA has determined not to require hazardous wastewaters to be treated to levels less than the characteristic level in order to avoid significant and potentially environmentally counterproductive disruptions to the NPDES/pretreatment and UIC programs.

In addition, many commenters suggested that the Agency not specify a precipitant as a method of treatment for D008 wastewaters. Many commenters suggest that particular precipitants may perform better depending on the characteristics of the waste. For example, Tricil Environmental points out that phosphate is a superior precipitant than carbonate or sulfate because of the low solubility of lead phosphate. The Agency agrees with the commenters and is not promulgating a precipitant as a method of treatment. In fact, the Agency is promulgating the treatment standard at the characteristic level, thereby treating and generators of D008 wastewaters may select any precipitant in order to meet the characteristic level.

(c) Lead Acid Batteries. For lead acid batteries, the Agency is promulgating a standard of "Thermal recovery of lead in secondary lead smelters (RELEAD)". (See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.) The Agency believes that virtually all of

the treaters of lead acid batteries are using a recovery process.

Incidentally, the Agency notes that lead acid batteries themselves, when stored, are not considered to be land disposed because the battery is considered to be a container (see 40 CFR 264.314(d)(3)). Battery storage, however, typically is subject to the subpart J storage standards (relating to secure storage, secondary containment in some instances, and other requirements). See subpart G of part 266.

Other commenters questioned whether the slag or matte from recovery processes would need further treatment and whether these wastes should be placed in monofills. The residuals from the recovery process are a new treatability group (i.e. the residues are not lead acid batteries) and therefore their status as prohibited or nonprohibited is determined at the point the residues are generated. Such residues would thus only be prohibited and therefore require further treatment if they exhibit a characteristic. See discussion of inorganic debris in section III.A.3.a of today's rule.

(2) *P110, U144, U145, and U146 Wastes.* The Agency proposed wastewater treatment standards for lead for P110, U144, U145, U146 based on a transfer of the performance of precipitation with lime and sulfide, filtration, and settling for K062 wastewaters. While these U and P codes represent primarily organo-lead compounds and one may consider that the transfer from an inorganic lead to an organic lead is not feasible, no comments were received indicating the lack of achievability. The Agency's judgment is that the standard is technically feasible. Therefore, the Agency is promulgating a standards for lead in P110, U144, U145, U146 wastewaters of 0.04 mg/l as proposed.

The Agency has determined that some nonwastewater forms of lead wastes including P110, U144, U146, and some D008 wastes, would need to be incinerated prior to stabilization due to the presence of high concentrations of organics in order to achieve a treatment standard based on stabilization. This is primarily because the organics typically interfere with conventional stabilization processes (particularly at concentrations exceeding 1% TOC). The Agency has data on the incineration on organic wastes containing up to 1,000 mg/kg lead (such as K087 wastes) followed by stabilization of the ash. These data indicate that the proposed standard (i.e. 0.51 mg/l leachable lead) can be

achieved for wastes that also contain significant concentrations of organics, provided the organics are destroyed by pretreatment. Lead acetate (U144) and lead subacetate (U146) are anticipated to be less difficult (or at least of similar difficulty) to treat than tetraethyl lead. The Agency is therefore promulgating the 0.04 mg/l standard for organo-lead compounds, P110, U144, and U146.

Additionally, the Agency received no comments on the feasibility of the transfer of lead in K062 wastewaters to lead phosphate U145. Therefore, the Agency will promulgate as proposed.

(3) *K069.* In today's rule, the Agency is promulgating treatment standards for K069 nonwastewaters in the Calcium Sulfate Subcategory, and for wastewater forms of K069. In addition, the Agency is revoking the no land disposal based on recycling as a treatment standard for the Non Calcium Sulfate Subcategory for K069 nonwastewaters and is promulgating "Thermal Recovery of Lead in Secondary Lead Smelters (RLEAD)". See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

For K069 wastewaters, the Agency is promulgating treatment standards for cadmium and lead. For cadmium, the treatment standard is based on the performance of chemical precipitation with lime and sulfide and sludge dewatering for K062 wastes. For lead, the treatment standard is based on the performance of chemical precipitation with magnesium hydroxide followed by clarification and sludge dewatering for D008 wastewaters. This treatment data was submitted as part of the public comment period. The Agency believes that these wastewaters better represent a K069 wastewater due to the concentration of lead (i.e. up to 300 ppm). The Agency believes that the performance of both technologies can achieve the regulated concentration due to the fact that both precipitating agents are hydroxides.

BDAT for K069 nonwastewaters in the Calcium Sulfate Subcategory is stabilization. The Agency believes that there is only one generator of this waste and that this waste cannot be directly recycled to recover lead. The waste characterization data from the one generator indicated that this waste contains metal constituents such as cadmium and lead. The metal concentrations range up to 3300 ppm.

For the K069 nonwastewaters in the Calcium Sulfate Subcategory, the

Agency is transferring the performance of stabilization of K061 to K069 nonwastewaters. This is a technically feasible transfer because the K061 waste is a more difficult waste to treat. In fact, the lead concentrations in K061 waste ranges up to 20,300 ppm thus, the performance of the treatment system can be legitimately transferred.

(4) *K100.* In today's rule, the Agency is promulgating treatment standards for wastewaters and nonwastewater forms of K100 wastes as proposed. For cadmium and total chromium in K100 wastewaters, treatment standards are based on a transfer of the performance of chromium reduction followed by lime and sulfide precipitation, and dewatering for K062 wastes. For lead in K100 wastewaters, treatment standard is based on the performance of chemical precipitation with magnesium hydroxide followed by clarification and sludge dewatering for D008 wastewaters. The Agency believes that both technologies can achieve the concentration of the regulated constituents due to the fact that both precipitating agents are hydroxides. For K100 nonwastewaters treatment standards are based on the transfer of the performance of stabilization for F006 wastes.

Treatment standards for K100 wastes were originally scheduled to be promulgated as part of the Third Third rulemaking. However, a treatment standard of "No Land Disposal Based on No Generation" for K100 nonwastewaters was promulgated on August 8, 1988 and subsequently revised on May 2, 1989 (54 FR 18836) to be applicable only to "Nonwastewater forms of these wastes generated by the process described in the listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)." The Agency received no comments on the treatment standards for K100 wastes; therefore, the Agency is promulgating as proposed.

BDAT TREATMENT STANDARDS FOR D008

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample, EP (mg/l)
Lead.....	5.0

BDAT TREATMENT STANDARDS FOR D008

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Lead	5.0

BDAT TREATMENT STANDARDS FOR D008

[Lead Acid Batteries]

Thermal recovery (RLEAD) of lead in secondary lead smelters

BDAT TREATMENT STANDARDS FOR P110, U144, U145, AND U146

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Lead	0.040

BDAT TREATMENT STANDARDS FOR P110, U144, U145, AND U146

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Lead	0.51

BDAT TREATMENT STANDARDS FOR K069

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium	1.6
Lead	0.51

BDAT TREATMENT STANDARDS FOR K069
CALCIUM SULFATE SUBCATEGORY

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Cadmium	0.14
Lead	0.24

BDAT TREATMENT STANDARDS FOR K069
NON-CALCIUM SULFATE SUBCATEGORY

[Nonwastewaters; Revised From No Land Disposal]

Thermal recovery of lead in secondary lead smelters (RLEAD)

BDAT TREATMENT STANDARDS FOR K100

[Wastewaters; Revised From No Land Disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium	1.6
Chromium (Total)	0.32
Lead	0.51

BDAT TREATMENT STANDARDS FOR K100

[Nonwastewaters; Revised From No Land Disposal]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Cadmium	0.066
Chromium (Total)	5.2
Lead	0.51

* See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in parentheses.

g. Mercury

D009—EP toxic for mercury.

K071—Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.

K106—Wastewater treatment sludges from the mercury cell process in chlorine production.

P065—Mercury fulminate.

P092—Phenylmercury acetate.

U151—Mercury.

EPA is today promulgating treatment standards for D009, K106, P065, P092, and U151. EPA has revised the proposed regulatory approach for some of these wastes in response to comment. EPA is also withdrawing the proposed revisions for K071 nonwastewaters. These wastes are described fully in the respective Listing Background Documents.

(1) *Review of BDAT for Nonwastewaters.* EPA identified thermal recovery processes, acid leaching, stabilization, and incineration as BDAT for mercury wastes. Commenters questioned whether thermal processing of mercury should be the basis (or the exclusive basis) for the treatment standard. Use of thermal processing raises issues of cross-media

transfer of mercury, as well as the environmental benefit of thermal processing over stabilization or land disposal. Other comments questioned the amenability of mercury sulfide wastes to stabilization as well as EPA's proposed restrictions on co-disposal of mercury wastes with alkaline wastes. The stabilization comments and the co-disposal issues are addressed in section III.A.3.a.

Multimedia issues raised by thermal processing of mercury materials involve the potential transfer of mercury and sulfur dioxide from the retorting/roasting chambers to downstream air pollution control devices (APCD) and potentially to environmental media (e.g., air to water). Specifically, commenters felt that EPA had not properly addressed the issue of mercury air emissions from retorting and urged EPA to quantify mercury emissions prior to determining whether roasting or retorting represents BDAT for mercury and sulfide wastes (i.e., K106).

The Agency acknowledges the legitimacy of the commenters' concerns, which the Agency shares. The Agency discussed the issue of air controls for mercury retorting at 54 FR 48501. In addition, the Agency provided calculations in the administrative record for the proposed rule of the potential amounts of sulfur dioxide emissions to the air that could result from the retorting or roasting of mercury sulfide wastes such as K106, based on available performance data from a facility thermally processing cinnabar ores. EPA also included the document entitled, "Review of National Emission Standards (NESHAPs) for Mercury" (EPA 450/3-84-014, 1984) in the proposed administrative record. In this 1984 document, EPA provided quantitative analysis for the potential of mercury air emissions from several industrial operations that include the thermal processing of cinnabar ores as well as the retorting of mercury containing wastes.

The available air emission information shows that both mercury and sulfur dioxide emissions can be effectively controlled by well designed and well operated air pollution control devices that allow for the recovery of valuable mercury. Based on available air emission information, performance data from the thermal processing of cinnabar ores, and performance data from the retorting/roasting of mercury wastes, EPA determined that retorting/roasting represent BDAT for mercury wastes. EPA reaffirms this determination in today's rule. In order to assure that air emissions from mercury

are controlled adequately, the Agency is specifying as part of BDAT that the retorting unit either (a) be subject to the mercury NESHAP; (b) be subject to a BACT or LAER standard for mercury imposed pursuant to a PSD permit; or (c) that it be subject to a state permit that establishes emission limitations (within the meaning of section 302 of the Clean Air Act) for mercury. The Agency believes that with such air emission controls retorting is a treatment technology that minimizes threats to human health and the environment and so satisfies the requirements of section 3004(m). (Pending amendments to the Clean Air Act may also result in imposition of standards for these units.) (The Agency's authority to impose these conditions on performance of a mercury retorting device comes directly from its authority under section 3004(m) to establish methods of treatment. EPA is indicating here that part of the designated method includes operating pursuant to standards that prevent cross-media contamination. Such standards are enforceable under RCRA pursuant to the authority in section 3008(a).) In addition, as discussed more fully below, the Agency believes that this technology is preferable to stabilization.

Several commenters believe that the treatment standards of roasting and retorting are not needed for K106 wastes that are generated as mercury sulfides. According to the commenters, these K106 wastes contain mercury in one of its less soluble forms. As a result, the commenters argued that sulfide stabilization—including the sulfide precipitation treatment that generates the K106—should be considered a mode of treatment under RCRA section 3004(m). The commenters also believe the migratory potential of mercury from sulfide sludges to the air or water is less than what could result from retorting/roasting.

EPA has evaluated these comments carefully but determined that treatment standards for those mercury wastes amenable to recovery should be based on recovery technologies. There is a strong preference in the land disposal restrictions legislation for treatment standards to be based on recovery where possible (e.g., S. Rep. No. 284 at 17). This preference is reinforced by the overall goals of RCRA to encourage waste minimization and resource recovery (e.g., RCRA section 1003(a)(6)). The Agency further concludes that compliance with the mercury NESHAP, PSD BACT/LAER controls, or state permitting requirements will ensure that air emissions of mercury are controlled

so as to be protective of human health and the environment. Commenters also raised the potential for fugitive air emissions from mercury waste handling operations preceding retorting. Since retorters would normally require RCRA storage permits, however, permit writers are able to craft controls to adequately control fugitive emissions using the omnibus authority in RCRA section 3005(c)(3). (The Agency intends to issue guidance to permit writers on this matter.)

EPA has also considered the argument that wastes from retorting will contain a more leachable form of mercury than at least the mercury sulfide wastes (such as K106) being smelted in the unit. Although this will be true in some cases, as demonstrated in the record leachable mercury in retorting wastes will still be at low levels, and well below the characteristic level. More important, there will be less mercury to leach because most mercury will be recovered as product. The Agency estimates, based on data from the thermal processing of cinnabar ores and the retorting/roasting of a mixture of K071 and K106 wastes, that mercury retorting can recover 98–99% of mercury contained in the feed material. The overall potential of disposed mercury to be released to the environment will thus be significantly reduced. Retorting/roasting also achieves volumetric waste minimization compared to stabilization, because it reduces the overall volume of waste to be disposed, unlike stabilization which increases overall volume. The Agency thus concludes that retorting/roasting is the appropriate method of treatment for recoverable mercury wastes. As explained below, however, the Agency has modified its proposed approach with respect to which mercury wastes are recoverable.

(2) *Revisions to the Cut-Off Level for Mercury Subcategories.* EPA proposed a cut-off level of 18 mg/kg of total mercury in a hazardous waste to delineate two subcategories of mercury wastes (54 FR 48441–42), high and low, with high mercury wastes being required to meet a standard based on recovery. The 18 mg/kg cut-off level was calculated from two sets of retorting/roasting data collected by EPA. One data set represents the retorting/roasting of mercury chloride/mercury sulfide wastes (mixture of K071 and K106). The other data set represents the thermal processing of cinnabar ores which the Agency believes can simulate the retorting/roasting of mercury sulfide sludges (i.e., K106 wastes) because wastewater treatment sludges (including sulfide sludges) are routinely burned in multiple hearth furnaces, the same (or

similar) type of furnace that processes cinnabar ores. EPA relied on the K071/K106 treatment residual data, on the analytical data of cinnabar ore thermal recovery, and on the performance data from the thermal processing of cinnabar ores for the purpose of calculating the 18 mg/kg cut-off level. The level reflected the Agency's view of mercury levels remaining after properly conducted recovery, and assumed that any higher level is recoverable. The majority of the commenters have submitted comments and data urging EPA to reconsider the proposed cut off level of 18 mg/kg in the retorting residual use at proposal to define the two subcategories of mercury wastes.

The Chlorine Institute (CI) and OxyChem have submitted performance data based on the retorting/roasting of mercury wastes. The Chlorine Institute's performance data consists of bench- and pilot-scale test studies for the roasting of K106 having mercury sulfide species. OxyChem performance data consist of full-scale retorting tests of K106 and D009 wastes. None of OxyChem's K106 and D009 wastes had mercury sulfide species.

The Chlorine Institute's data show that mercury sulfide sludges (K106 wastes) differ from cinnabar ores with regard to the concentration of chloride salts. The Chlorine Institute believes that the high concentrations of chloride salts in K106 are likely to interfere with the overall performance of retorting/roasting operations. As explained in detail in the BDAT and Response to Comments Background Documents, however, EPA believes these chloride salts can be effectively controlled by a pretreatment step prior to retorting/roasting along with the optimized operation of the retorting/roasting process.

The Chlorine Institute also believes that their roasting data show that higher concentrations of residual mercury, in the order of 180 mg/kg mercury, may be left behind in the residues from retorting/roasting operations. OxyChem likewise believes that their performance data show that lower concentrations of residual mercury cannot routinely be achieved and thus should not be required for mercury wastes below 260 mg/kg.

Another commenter pointed out more fundamentally that EPA should base the cut-off level for "Mercury Subcategories" not on treated residuals from the retorting/roasting operations but rather on mercury concentrations in the waste before retorting. In other words, the determination of what is recoverable should not be determined

solely by levels reflecting mercury treatment. The commenter also believes that basing the cut-off level of "High Mercury Subcategory" on untreated mercury concentrations will better reflect similar BDAT determinations EPA had made for other recoverable wastes such as K061. EPA's data for untreated mercury wastes being retorted/roasted domestically show minimum concentrations of mercury up to 255 mg/kg (for a mixture of K106 and K071 wastes).

Based on these comments, EPA is revising the proposed cut-off level from the proposed 16 mg/kg to 260 mg/kg (rounded to two significant figures). Although the new cut-off level is based on the available data for low mercury concentrations of untreated mercury wastes being retorted/roasted, EPA points out that this new cut-off level of 260 mg/kg should not be deemed as a relaxation of the standard or treatability group. Instead, the new cut-off level takes into account consistency in identifying treatability groups and the variability inherent to mercury sulfide wastes, as documented by EPA's thermal processing data of cinnabar ores and the fact that available data on these low levels of recoverable mercury fully support that well-designed and -operated thermal recovery processes allow routine recovery of valuable mercury.

For the purpose of this rule, mercury nonwastewaters with mercury concentrations equal to or above 260 mg/kg mercury belong to the High Mercury Subcategory. Mercury nonwastewater with mercury concentrations below the 260 mg/kg mercury belong to the Low Mercury Subcategory.

(3) *Standards for All Wastewaters.* EPA is promulgating a treatment standard of 0.030 mg/l mercury for K106, P065, and P092. This treatment standard is based on the precipitation of mercury from wastewaters identified as K071 from the chlor-alkali industry using sulfide as the precipitant.

EPA acknowledges that there may be certain wastewaters that may require combinations of other wastewater treatment technologies which may include either additional treatment (for the destruction or removal of organics) or additional treatment by sulfide precipitation and filtration for the purpose of meeting today's treatment standards. The use of other wastewater treatment technologies are not precluded by this rule. This determination seems to be supported by the concurrence of other commenters either with the proposed standards or with EPA's determination of BDAT for mercury wastewaters.

Some commenters objected to EPA's rationale to transfer the K071 performance data to K106, P065, P092, U151, and D009 wastewaters. Among these commenters, one believes the proposed treatment standards are based on performance data that may not take into account other forms of mercury constituents which can be less amenable to sulfide treatment. However, this commenter submitted no specific data and thus failed to demonstrate that combinations of other wastewater technologies are unable to meet the standards.

Other commenters concurring with EPA's identification of BDAT believe EPA should base the treatment standards on the Office of Water (OW) performance data supporting the treatment standards for multi-source leachate. These commenters believe the OW-performance data represent the treatment of a more diverse universe of K071 wastewater than the one tested by EPA. These alternative performance data result in a treatment standard of 0.11 mg/l mercury.

The multi-source leachate treatment performance data represent the treatment provided by sulfide chemical precipitation to different characteristic wastewaters that may include K071 wastewaters. EPA believes that the data developed from treating the specific mercury wastes is preferable to a transfer of performance data. Moreover, the commenters advocating the transfer submitted no data and so failed to demonstrate unachievability of the standards or whether their wastes are significantly different from the treated wastewaters supporting the proposed standards. The Agency is not convinced by these comments and thus, is promulgating treatment standards for K106, P065, P092, and U151 as proposed.

For D009 wastewaters, EPA proposed two regulatory options. One option was to transfer K071's performance treatment data and require a level of treatment below the D009 characteristic level. The other option was to set a treatment level at the characteristic level. For reasons discussed in preamble section III.D., EPA is promulgating treatment standards at the characteristic level of 0.20 mg/l mercury for D009 wastewaters as measured by TCLP.

(4) *Standards for K106 and U151 Nonwastewaters.* EPA is promulgating treatment standards for these two wastes as proposed (54 FR 48441). The threshold for the High and Low Mercury Subcategories is revised, however, as explained in section (2) above.

High Mercury Subcategory K106 and U151 wastes are required to be treated by retorting/roasting as a prerequisite

for land disposal. Residues from retorting/roasting operations are not prohibited from land disposal unless they leach mercury above 0.2 mg/l, as measured by the TCLP (see § 268.9 of the final rule indicating that normally any disposal of a waste exhibiting a characteristic is prohibited). Data indicate, however, that residues from retorting these wastes do not leach mercury at this level. Residues unacceptable for land disposal (i.e., above 0.2 mg/l) are required to comply with the appropriate standards for K106 or U151 wastes (i.e., High or Low Mercury Subcategory) presented below. It is impermissible to dilute a High Mercury Subcategory waste to reduce the mercury concentration to less than 260 mg/kg.

For K106 and U151 nonwastewaters in the "Low Mercury Subcategory" (i.e., less than 260 mg/kg) the Agency is promulgating a treatment standard of 0.025 mg/l mercury as measured by the TCLP leachate. This level is transferred from acid leaching data for K071 nonwastewaters. Residues from this acid leaching process must be evaluated for mercury content to determine whether they should undergo retorting/retorting. K106 and U151 nonwastewaters that contain less than 260 mg/kg and that also leach less than 0.025 mg/l mercury (as measured in the TCLP extract) are considered to have met the BDAT and can be land disposed.

(5) *Withdrawal of Proposed Revisions to K071 Nonwastewaters.* EPA proposed that certain K071 nonwastewaters be retorted or roasted (54 FR 48442). The Chlorine Institute and generators of K071 submitted comments to EPA emphasizing that existing treatment standards should not be revised. These commenters pointed out that their K071 wastes currently being land disposed already have low concentrations of mercury (10 to 120 mg/kg mercury, average) which EPA had deemed to meet the requirement of 3004(m) of HSWA. They believe these low mercury concentrations are unattractive for retorting/roasting operations. In addition, they believe that retorting/roasting may have not been demonstrated for these K071 wastes since the available data to EPA for the retorting/roasting of K071 wastes describe the treatment of untreated K071 wastes having low mercury concentrations of up to 255 mg/kg.

Although EPA believes these treated forms of K071 can be treated by retorting/roasting, EPA is not adopting the proposed revisions to K071 wastes because their recyclability is

questionable. The existing standard for these wastes thus will stay in place (53 FR 31166, August 17, 1988 and § 268.41 (treatment standard for K071 nonwastewaters)). However, today's decision does not preclude the Agency from revising the K071 treatment standards if new data become available.

(6) *Standards for P065 and P092 Nonwastewaters.* EPA is promulgating incineration as the treatment standard for P065 and P092 nonwastewaters followed by recovery or treatment of mercury from the incineration treatment residues if those residues are in the high mercury subcategory. (As noted at proposal, these organo-mercury wastes are not directly amenable for recovery, but must be pretreated to destroy carbon-metal bonds (54 FR 48442).) Incineration nonwastewater residues from these wastes that are above or equal to 260 mg/kg are considered to belong to the High Mercury Subcategory and thus must be recovered by retorting or roasting. Incineration wastewater residues must meet the treatment level of 0.030 mg/l mercury as a prerequisite for land disposal. Nonwastewater residues from retorting/roasting operations are not prohibited from land disposal unless they leach mercury above 0.2 mg/l, as measured by the TCLP. Retorting/roasting residues unacceptable for disposal (i.e., above 0.2 mg/l) are required to comply with the appropriate standards for the High or Low Mercury Subcategory, depending on whether their total mercury concentration exceeds 260 mg/kg. Incineration residues below 260 mg/kg are considered to belong to the Low Mercury Subcategory which are not prohibited from land disposal unless they leach mercury above 0.025 mg/l (as measured in the TCLP extract). See section (4) above for a discussion of this mercury leach level.

(7) *Standards for D009 Nonwastewaters.* The treatment standards for D009 nonwastewaters in the High Mercury Subcategory are promulgated as "Roasting or Retorting as a Method of Treatment, or Incineration followed by Roasting or Retorting of Incinerator nonwastewater residues (e.g., calcinates, soot, ash, or wastewater treatment sludges from the treatment of incineration scrubber waters) provided such residues exceed 260 mg/kg total mercury. Residues from retorting/roasting operations are not prohibited from land disposal unless they leach mercury above 0.20 mg/l, as measured by the TCLP. Retorting/roasting residues unacceptable for disposal (i.e., above 0.20 mg/l) are required to comply with the appropriate

standards for the High or Low Mercury Subcategory. The applicable standards for wastes in the Low Mercury Subcategory are discussed at the end of this section. As a result, if the initial organic content is too high for the retorting or roasting, incineration can be used as a pretreatment step to the retorting/roasting.

At least one facility submitted data showing that wastes with concentrations of semivolatile organics up to 30 percent are currently being retorted outside the United States. The facility described its waste as a mercury spent catalyst contaminated with an intermediate chemical used in the manufacture of polymers. The facility sends this D009 waste overseas for the purpose of direct retorting of mercury. Based on this information, EPA believes the proposed standards can be promulgated as proposed.

Several commenters have identified a list of D009 wastes which they believe meet EPA's criteria of contaminated soils and debris. The commenters believe this list of D009 debris are not amenable to retorting/roasting. However, they have proposed alternative treatment standards based on the use of a chemical decontamination technology. The chemical decontamination standards require the use of three steps: (1) Decontamination of debris wastes based on polysulfide or hydrochloride solutions; (2) triple water rinses of the chemically decontaminated wastes; and (3) (sulfide) chemical precipitation of mercury from contaminated solutions and water washes. The chemically decontaminated and triple water rinsed debris would not be prohibited from land disposal.

EPA has been unable to determine whether the alternative chemical decontamination technology specifically represents BDAT for these wastes. EPA currently lacks performance data from the use of this technology on D009 debris wastes. If performance data become available, the Agency may be publishing revisions to today's standards as it continues the general effort to develop separate standards for soil and debris wastes. See also section III.A.3.(a)(2) for a further discussion of treatment for inorganic solids debris.

Another reason that the Agency is not adopting these procedures as the treatment standard for mercury debris is the possibility that mercury could ultimately be recovered. One commenter provided information indicating that their facility routinely recovers chromium from debris such as waste refractory bricks containing chromium.

The bricks are crushed and recycled as feedstock along with other raw materials in the manufacture of refractory brick. EPA believes that this recycling technology (following pretreatment) may be generally applicable and can be used to treat at least some D009 debris.

For D009 wastes in the Low Mercury Subcategory, EPA is promulgating a treatment standard of 0.20 mg/l, as measured by the TCLP. Achievability of these standards are supported by K071 treatment data and other stabilization data submitted to the Agency. The Final BDAT Background Document for Mercury contains a detailed technical discussion for the development of all the treatment standards promulgated today.

BDAT TREATMENT STANDARDS FOR K106 AND U151

[All nonwastewaters in the High Mercury Subcategory (i.e., greater than or equal to 260 mg/kg total mercury)]

Roasting or Retorting (RMERC)

BDAT TREATMENT STANDARDS FOR K106 AND U151

[Nonwastewaters that are residues from RMERC and are in the Low Mercury Subcategory (i.e., less than 260 mg/kg total mercury)]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Mercury.....	0.20

BDAT TREATMENT STANDARDS FOR K106 AND U151

[Nonwastewaters that are not residues from RMERC and are in the Low Mercury Subcategory (i.e., less than 260 mg/kg total mercury)]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Mercury.....	0.025

BDAT TREATMENT STANDARDS FOR K106 AND U151

(Wastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Mercury.....	0.030

BDAT TREATMENT STANDARDS FOR D009

[All nonwastewaters that contain mercury and organics (and are not incinerator residues) and are also in the High Mercury Subcategory (i.e., greater than or equal to 260 mg/kg total mercury)]

Incineration of wastes with organics and mercury (IMERC) or roasting/retorting (RMERC)

BDAT TREATMENT STANDARDS FOR D009

[Nonwastewaters that are inorganics (including incinerator residues and residues from RMERC) and are in the High Mercury Subcategory (i.e., greater than or equal to 260 mg/kg total mercury)]

Roasting or retorting (RMERC)

BDAT TREATMENT STANDARDS FOR D009

[All nonwastewaters in the Low Mercury Subcategory (i.e., less than 260 mg/kg total mercury)]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Mercury	0.20

BDAT TREATMENT STANDARDS FOR D009

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Mercury	0.20

BDAT TREATMENT STANDARDS FOR P065

[All nonwastewaters that are not incinerator residues and are not residues from RMERC; regardless of Mercury Content]

Incineration of wastes with organics and mercury (IMERC)

BDAT TREATMENT STANDARDS FOR P092

[All nonwastewaters that are not incinerator residues and are not residues from RMERC; regardless of Mercury Content]

Incineration of wastes with organics and mercury (IMERC) or roasting/retorting (RMERC)

BDAT TREATMENT STANDARDS FOR P065 AND P092

[Nonwastewaters that are either incinerator residues or residues from RMERC, and are in the High Mercury Subcategory (i.e., greater than or equal to 260 mg/kg total mercury)]

Roasting or retorting (RMERC)

BDAT TREATMENT STANDARDS FOR P065 AND P092

[Nonwastewaters that are incinerator residues (and are not residues from RMERC) that are also in the Low Mercury Subcategory (i.e., less than 260 mg/kg total mercury)]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Mercury	0.025

BDAT TREATMENT STANDARDS FOR P065 AND P092

[Nonwastewaters that are residues from RMERC and are in the Low Mercury Subcategory (i.e., less than 260 mg/kg total mercury)]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Mercury	0.20

BDAT TREATMENT STANDARDS FOR P065 AND P092

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Mercury	0.030

h. Selenium

D010—EP toxic for selenium
P103—Selenourea
P114—Thallium selenite
U204—Selenious acid
U205—Selenium disulfide

For the proposed rule the Agency had no specific treatment data on RCRA hazardous wastewaters or nonwastewaters containing significant quantities of selenium (54 FR 48433). However, based on the similarities in chemical behavior of arsenic and selenium, the Agency extrapolated the treatment performance data for arsenic-containing wastewaters and nonwastewaters to the selenium-containing wastewaters and nonwastewaters, respectively.

(1) *Standards for Selenium-Containing Nonwastewaters.* The Agency believes that for most wastes containing high concentrations of selenium, recovery of selenium is feasible using recovery technologies used by copper smelters and copper refining operations. The Agency does not have any performance data for selenium recovery, but

information available to the Agency indicates that recovery of elemental selenium out of certain types of scrap material and other types of waste is currently practiced in the United States. The Agency requested comments and data on the applicability of these, and any other, recovery technologies for wastes containing selenium; however, the Agency received no responses to these issues.

The Hazardous Waste Treatment Council (HWTC) submitted treatment performance data for stabilization of selenium wastes using proprietary reagents to induce cementitious, siliceous, and pozzolanic stabilization reactions. One data set shows a D010 waste containing selenium concentrations of 5 ppm total selenium and 2.97 mg/l in the TCLP extract reduced to concentrations of 0.282 mg/l in the TCLP extract. The binder-to-waste ratio was 1 to 1. Another data set shows results for treatment of a mineral processing waste believed to be a D010 waste because of the high selenium concentrations in the TCLP leachate. The waste contains up to 700 ppm total selenium and 3.74 mg/l selenium in the TCLP leachate. The treated residuals leach between 1.80 and 0.154 mg/l selenium based on TCLP methodology. This waste also contains high concentrations of arsenic, cadmium, and lead. The binder to waste ratios varied from 1.3 to 2.8.

Data were also submitted by the HWTC for the stabilization of wastes containing selenium dioxide (U204) and selenium sulfide (U205). Data for stabilization of the discarded pure product show values of 30 and 6.05 mg/l in the TCLP leachate for U204 and U205, respectively. The binder-to-waste ratios were 1.8 for each study. Data for stabilization of spiked soil samples containing 1000 ppm of the U204 compounds show values of 45.6 mg/l in the unstabilized TCLP leachate and 2.88 mg/l in the stabilized TCLP leachate. Data for stabilization of spiked soil samples containing 1000 ppm of the U205 compounds show values of 0.207 mg/l in the unstabilized TCLP leachate and 0.154 mg/l in the TCLP leachate.

For the proposed rule, the Agency had no stabilization data for selenium and could not investigate the potential problems in stabilization for high concentrations of selenium. The Agency believed, based on selenium's chemical similarities to arsenic, that the same complications would occur (e.g., increased leaching when using alkaline binders). Therefore, the Agency determined that vitrification was the "best" technology for selenium wastes

and extrapolated the performance data for vitrification of arsenic to D010 nonwastewaters and proposed the same concentration-based standard, 5.6 mg/l selenium as measured in the leachate generated by the EP toxicity test (54 FR 48432). In a similar manner, the Agency proposed to transfer this concentration-based treatment standard of 5.6 mg/l selenium to P103, P114, U204, and U205 nonwastewaters. The Agency has received a comment indicating that selenium parallels the melting behavior of arsenic and that the transfer of performance data was valid; however, no performance data for the vitrification of selenium were submitted during the comment period.

EPA still believes that vitrification is an applicable technology for treatment of selenium wastes based on the history of the commercial glass industry using the metal as an additive and the melting behavior of selenium, which is similar to that of arsenic. However, unlike arsenic, no known generators of selenium wastes are investigating vitrification as a treatment technology. The Agency continues to believe that most wastes containing high levels of selenium are being recovered because of the high market value of selenium (approximately \$10.00/pound).

The Agency has developed performance standards based on stabilization as BDAT since the only treatment data submitted by commenters, and available to the Agency, were for the stabilization of selenium. Because EPA has information indicating that wastes containing high concentrations of selenium are rarely generated and land disposed, the Agency does not believe that the pure product and simulated wastes are representative of wastes that would require stabilization treatment but are more representative of wastes that should be recovered for the selenium content. Consequently, the Agency is not using any performance data for treatment of these wastes, but is using the performance data for the D010 waste containing up to 700 ppm selenium since this waste contains more selenium than the other wastes and is believed to be the most difficult to treat waste. Based on these data, the Agency has used an analytical recovery of 85 percent to calculate a corrected average concentration of 0.80 mg/l. Next, multiplying the corrected value by a variability factor of 7.15 (calculated from the same selenium treatability data) gives a treatment standard of 5.7 mg/l selenium in the TCLP leachate. The Agency is transferring the stabilization performance from D010 to P103, P114,

U204, and U205 because EPA believes this waste to be most representative of wastes requiring stabilization and not recovery.

Because this treatment standard (5.7 mg/l) is above the level of leachable selenium that defines the waste as D010 (1.0 mg/l), D010 wastes that are generated at a level between 5.7 mg/l and 1.0 mg/l meet the treatment standard but are still considered to be hazardous wastes (assuming the TCLP value exceeds 1.0 mg/l) and, therefore, must be land disposed in a subtitle C facility.

(2) *Standards for Selenium-Containing Wastewaters.* Based on the lime, manganese sulfate, and ferric precipitation wastewater treatment data used to calculate the proposed standards for the arsenic wastewaters, the Agency proposed a treatment standard of 0.79 mg/l selenium for the selenium in D010, P103, P114, U204, and U205 wastewaters (54 FR 48431). The Agency also proposed a second option of limiting the treatment standard for D010 wastewaters to the characteristic level of 1.0 mg/l.

The Agency solicited comments regarding the transfer of the arsenic performance data to selenium wastewaters and specifically solicited additional treatment data for wastewaters containing treatable levels of selenium that would classify the wastewaters as D010 prior to treatment. Although several commenters support EPA's determination that arsenic and selenium typically exist in aqueous conditions as oxo-anions and do not exhibit the cationic behavior of other metals, they do not agree that all selenium and arsenic species can be removed by the use of the same treatment technology (i.e., chemical precipitation).

One commenter sent treatment data indicating that precipitation of selenium using ferric chloride at pH 7.0, calcium hydroxide at pH 12.1, aluminum at pH 7.0, ferrous iron at pH 7.0, or sodium sulfide at pH 6.5 could not achieve the level of 0.79 mg/l selenium. Another commenter said that selenium cannot be removed from wastewaters using lime, but can be removed by sulfide treatment. The commenter stated that for the treatment to be effective a pH of less than 2.0 is required.

The Agency received information about the treatment performance of selenium removal using sulfide treatment. This information indicates that selenium can be reduced in wastewaters to the characteristic level (i.e., 1.0 mg/l selenium). Additionally, the precipitate contains elemental

selenium, which can be recovered and sold for reuse. Based on the new performance data the Agency is promulgating a treatment standard of 1.0 mg/l selenium for the selenium in D010, P103, P114, U204, and U205 wastewaters.

BDAT TREATMENT STANDARDS FOR 103, P114, U204, and U205

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP leachate (mg/l)
Selenium.....	5.7

BDAT TREATMENT STANDARDS FOR D010, P103, P114, U204, and U205

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Selenium.....	1.0

i. Silver

D011—Characteristic for Silver
P099—Potassium silver cyanide
P104—Silver cyanide

(1) *D011.* In the proposed rule for nonwastewaters and wastewater forms of D011, the Agency proposed treatment standards and methods of treatment below the characteristic level (0.072 mg/l measured by TCLP and 0.29 mg/l). Commenters indicated that these levels were unachievable for many D011 wastes, such as silver thiosulfate complex waste generated from the photoprocessing industry. This waste is very stable and is not always amenable to recovery or stabilization. The Agency also proposed an option of capping the treatment standards for D011 at the characteristic level. Based on the comments received, the Agency has determined that this second option better represents the overall achievability of treatment for D011 wastes.

(a) *Wastewaters.* In the proposed rule, the Agency proposed a treatment standard for D011 wastewaters of 0.29 mg/l based on data from the EPA Office of Water's Effluent Guidelines program. In addition, the Agency solicited comments on whether it should specify the use of chloride as the precipitating reagent for all wastewaters containing silver. Commenters opposed specifying

BDAT TREATMENT STANDARDS FOR
P113, P115, U214, U215, U216, AND
U217

(Nonwastewaters)

Thermal recovery (RTHRM) or stabilization (STABL)
as a method of treatmentBDAT TREATMENT STANDARDS FOR P113,
P115, U214, U215, U216, AND U217

(Wastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Thallium	0.14

k. Vanadium

P119—Ammonium vanadate
P120—Vanadium pentoxide

At proposal, the Agency had no data from the treatment of P119 and P120 nonwastewaters upon which to establish concentration-based treatment standards. The Agency had data, however, on the recovery of vanadium from spent catalysts that typically contain about 5% vanadium. The Agency also anticipated that wastes containing vanadium could also be stabilized. This recovery and stabilization information were the basis of the proposed nonwastewater treatment standard for P119 and P120 expressed as required methods of treatment: thermal recovery or stabilization. Commenters generally supported the proposed nonwastewater treatment standard.

One commenter, however, suggested that the thermal recovery treatment standard should be revised to include recovery by dissolution, chemical precipitation, followed by thermal treatment. The Agency agrees that pretreatment practices such as dissolution, chemical precipitation, cation exchange, or resin adsorption that are performed in tanks or containers are not precluded by today's final treatment standard. However, since these recovery processes are not precluded by any treatment standard (as long as the recovery is not performed in land disposal units) and since the Agency currently lacks information to clarify a description of a specific thermal recovery process for vanadium wastes in § 268.42 Table 1 (i.e., it is uncertain that the thermal recovery process for vanadium matches the description for thermal recovery listed under the five letter technology code

identified as RTHRM), the Agency is promulgating a standard for P119 and P120 that only specifies stabilization as a method of treatment.

A treatment standard was proposed for vanadium wastewaters of 0.042 mg/l based on data from the EPA Office of Water's Effluent Guidelines program. Commenters asserted that this wastewater treatment standard and was unattainable and was probably due to the effects of dilution. Upon reexamination of these data, the Agency tends to agree that this low level was due to dilution and is, therefore, not promulgating this treatment standard in today's rule. The Agency received data that were classified as Confidential Business Information during the comment period from a proprietary wastewater treatment technology. Since these data reflect the actual treatment of P119 and P120 wastewaters (and the Agency has no other treatment data for these wastes) the Agency has decided to use them to calculate today's final wastewater treatment standard of 28 mg/l.

The proposed rule included a statement that P119 and P120 nonwastewaters can be generated as spent catalysts from chemical production or as fly ash from the iron and steel industry. Commenters pointed to this statement as a mistake, and requested clarification on the definition of P119 and P120 wastes. The Agency regrets the confusion that was caused by this statement and agrees that it was a mistake. The statement would actually apply to vanadium-containing compounds that do not meet the definition of listed P119 and P120 wastes (i.e., they are not unused commercial chemical products). Spent catalysts and iron and steel industry fly ash are not classified as P119 and P120.

Commenters requested that the Agency establish another treatability group for P119 and P120 nonwastewaters because containers or container liners from the shipment of ammonium metavanadate or vanadium pentoxide as commercial chemical products may become P119 or P120 hazardous waste. The Agency disagrees that another treatability group is needed. In the event that a non-empty container from the shipment of P119 or P120 is generated and today's treatment standard cannot be met, the generator may petition the Agency for a variance from the treatment standard.

BDAT TREATMENT STANDARDS FOR P119
AND P120

(Nonwastewaters)

Stabilization (STABL) as a method of treatment

BDAT TREATMENT STANDARDS FOR
P119 AND P120

(Wastewaters)

Regulated constituent	24 hour composite sample, total composition (mg/l)
Vanadium.....	28

4. Treatment Standards for Remaining F
and K Wastes

a. F002 and F005

F002—The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichloro-fluoromethane, and 1,1,2-trichloroethane: all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

F005—The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

EPA is promulgating treatment standards for 1,1,2-trichloroethane, benzene, 2-ethoxyethanol, and 2-nitropropane. EPA has revised its proposed approach for wastewaters in response to comments. These four organic compounds were added as hazardous constituents to the F002 and F005 spent solvents in 1986 (see 51 FR 6737, February 25, 1986). Today's treatment standards only apply to these four new solvents. Treatment standards for other solvents in F002 and F005 remain as promulgated in the 51 FR 40572, November 7, 1986, Solvents and Dioxins Rule. A technical description of these four new spent solvents can be found in the Listing Document for F002 and F005, as amended in 1986, and in 40 CFR 261.31.

precipitating reagents stating that most wastewater streams contain more than one metal and the use of a required precipitating agent for one metal could interfere with the precipitation of any other metals in the waste stream. The Agency agrees with the commenter's position and is therefore not specifying precipitating agents for silver.

The Agency also solicited comments on the applicable technologies to treat silver wastewaters to the proposed concentration based standard. Based on a review of the comments, the Agency received information that indicated that ion exchange is an applicable technology for silver wastewaters, but will not be able to achieve the proposed standards. Therefore, because of the lack of treatment data and because of the diversity of D011 wastewaters, the Agency is promulgating the treatment standard for D011 wastewaters at the characteristic level of 5.0 mg/l as measured by the EP toxicity.

(b) Nonwastewaters. The Agency proposed three options for treatment standards for D011 nonwastewaters. One option was based on the inherent economic value of silver and the general lack of treatment data for wastes containing various levels of silver. This option proposed "Recovery as a Method of Treatment". Another option proposed was to transfer the performance of stabilization for F006 wastes to silver non-wastewater (i.e. a numerical treatment standard of 0.072 mg/l as measured by the TCLP). The third alternative for the characteristic wastes was to establish the treatment level at the characteristic level of 5.0 mg/l as measured by the EP toxicity. The Agency solicited data on the treatment of D011 nonwastewaters. No data was received but many comments pointed out that the proposed treatment standard is unachievable. The commenters claimed that silver in many D011 nonwastewaters can not be recovered because these wastes contain silver sulfate complexes. In addition, many commenters stated that the treatment standard of 0.072 mg/l is not achievable due to the diversity of the D011 wastes. The Agency agrees with the commenters that some of the D011 wastes can not be recovered or be treated to the treatment level. The commenters did not provide any treatment data for D011 nonwastewaters but did provide substantial technical arguments (based on the chemical nature of wastes classified as D011 nonwastewaters) that recovery is not an applicable technology for all D011 nonwastewaters and that the performance of stabilization for

D011 nonwastewaters may not achieve similar treated concentrations of silver. Therefore, the Agency is promulgating the treatment standards for D011 nonwastewaters at the characteristic level of 5.0 mg/l measured by the EP toxicity.

(2) P099 and P104. The Agency is promulgating the wastewater treatment standard for silver as proposed. The Agency received no comments disputing the technical feasibility of the transfer of the Effluent Guidelines data to P099 and P104 wastewaters. As a point of clarification, the Agency is promulgating a numerical treatment standard as opposed to a method of treatment for silver. Treatment standards for cyanides contained in P099 and P104 wastewaters, and cyanides as well as silver in P099 and P104 nonwastewaters, were promulgated in the Second Third final rule on June 23, 1989 (54 FR 26614).

BDAT TREATMENT STANDARDS FOR D011

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample total composition (mg/l)
Silver	5.0

BDAT TREATMENT STANDARDS FOR D011

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample total leachate by TCLP (mg/l)
Silver	5.0

BDAT TREATMENT STANDARDS FOR P099 AND P104

[Wastewaters]	
Regulated constituent	Maximum for any 24 hour composite sample total composition (mg/l)
Silver	0.29

See also the promulgated standards for cyanides in the Second Third Final Rule.

j. Thallium

P113—Thallic oxide
P114—Thallium (I) selenite
P115—Thallium (I) sulfate
U214—Thallium (I) acetate
U215—Thallium (I) carbonate

U216—Thallium (I) chloride
U217—Thallium (I) nitrate

In today's rule, the Agency is promulgating nonwastewater and wastewater treatment standards for P113, P115, U214, U215, U216, and U217 thallium wastes as proposed. No comments were received addressing the proposed approach for regulating these wastes.

The Agency proposed to establish a thallium nonwastewater treatment standard for P114, thallium selenite, expressed as recovery or stabilization as a required method of treatment. A thallium wastewater treatment standard was also proposed, 0.14 mg/l. These thallium treatment standards are not being promulgated today. The Agency is promulgating, however, P114 treatment standards for selenium nonwastewaters and wastewaters (see preamble section III.A.3.h.). The Agency is taking this action because it believes that the treatment of selenium in P114 will also provide substantial treatment of thallium.

The Generator Survey indicates that most thallium nonwastewaters are characterized as inorganic salts used as research chemicals, or off-specification or out-dated materials. The Agency believes that due to the relatively high economic value of thallium, generators have an economic incentive to investigate recovery options and source reduction techniques. There may be cases, however, at very low concentrations and low waste volumes when recovery may not be a viable alternative for thallium wastes. No comments were received on the proposed nonwastewater standard, therefore, the Agency promulgating the nonwastewater treatment standard expressed as required methods: "Recovery or Stabilization". (See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.)

Most thallium wastewaters are characterized as metallic acidic liquids. Thallic hydroxide is very insoluble, therefore, thallium wastes can be treated by chemical oxidation followed by chemical precipitation with hydroxide reagents, settling and filtration, in order that most of the thallic compounds will precipitate out into the sludge. The Agency proposed a treatment standard for thallium wastewaters based on data from the EPA Office of Water's Effluent Guidelines program of 0.14 mg/l. No comments were received on this proposed treatment standard, therefore, the Agency is promulgating as proposed.

The Agency received comments addressing various issues related to these wastes. One commenter pointed out that there were discrepancies between the proposed treatment standards for 1,1,2-trichloroethane in both wastewater and nonwastewater forms of F002. The discrepancies occurred in the concentration-based standards presented in the preamble, and the regulation (see 54 FR 48461, November 22, 1989). A similar discrepancy occurred in the wastewater treatment standard for 2-nitropropane in F005. EPA thanks the commenter for pointing out these typographical errors. The proposed BDAT Background Document Amendment for F002 and F005 confirms that the concentration-based standard for 2-nitropropane in wastewater forms of F005 in the preamble discussion was in error. The concentration-based standards printed in the regulatory tables for 1,1,2-trichloroethane wastewaters and nonwastewaters likewise were in error. The preamble and the proposed Background Document Amendment presented the correct treatment standards. The correct treatment standards are being finalized in today's rule.

(1) *Revisions to the Proposed Rule for Wastewaters.* Other commenters urged the Agency to develop treatment standards for wastewater forms of F002 and F005 based on residues from wastewater treatment technologies rather than incineration scrubber waters. Commenters felt that EPA has several performance data from wastewater treatment technologies treating wastewaters containing the same or similar constituents to F002 and F005 which EPA can use in order to develop treatment standards. Commenters emphasize that these performance data better represent the treatment of organic-containing wastewaters rather than incineration scrubber waters alone.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third Wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards.

Commenters to the proposed First Third, Second Third, and Third Third rules almost unanimously supported that EPA should promulgate wastewater standards based on the performance of

specific wastewater treatment rather than incinerator scrubber water constituent levels. After reviewing all available data and comments, the Agency agrees with these comments, and is promulgating concentration-based treatment standards for 1,1,2-trichloroethane and benzene based on wastewater treatment data rather than scrubber water for all wastes that were proposed in the Third Third rule. While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying the wastewater treatment standards for F002 and F005.

(2) *Treatment Standards for 1,1,2-Trichloroethane (F002) and Benzene (F005).* The treatment standards promulgated today for organics in wastewater forms of F002 and F005 are based on performance data generated from one, or a combination of two or more of the following BDAT technologies: Biological treatment, steam stripping, carbon adsorption, liquid extraction, and others. (See Section III.A.6.(3) of today's preamble for a discussion of these performance data.) Those treatment standards are expressed as concentration levels for 1,1,2-trichloroethane (F002) and benzene (F005).

The treatment standards promulgated for organics in nonwastewater forms of F002 and F005 are based on incineration. These treatment standards are expressed as concentration based standards for 1,1,2-trichloroethane (F002) and benzene (F005).

Each treatment standard is based on the treatment of another waste containing the same or similar constituents to the one of concern. EPA believes that none of the constituents in F002 and F005 are likely to interfere with the treatment of organics in F002 and F005. As a result, EPA is transferring the available performance data to these two wastes.

(3) *Treatment Standards Expressed as Methods of Treatment for 2-ethoxyethanol and 2-nitropropane.* Comments were received indicating drastic detection limits discrepancies in nonwastewater forms that contain 2-nitropropane. The proposed treatment standards relied on pilot scale data from the stripping of synthetic wastewaters along with incineration performance data for a waste containing a constituent as difficult to treat as 2-nitropropane. Based on the available data, EPA believes that 2-nitropropane

may not be amenable to analytical quantification and thus, a concentration-based treatment standard is not be a viable regulatory option at this time. (See section III.A.5.b)

Another problematic constituent is 2-ethoxyethanol. As with 2-nitropropane, the proposed treatment standards relied on in-house treatment studies and performance data from similar wastes. For 2-ethoxyethanol, EPA specifically conducted bench-scale studies for the biological treatment of synthetic wastewaters spiked with 2-ethoxyethanol. Modifications to existing analytical test methods were needed in order to enable EPA to analyze these two organic constituents in wastewaters and nonwastewaters. EPA has determined that the available information is insufficient to promulgate concentration-based treatment standards for wastewater and nonwastewater forms of F005 at this time. As a result, EPA is withdrawing the proposed concentration based treatment standards for F005 wastes that contain 2-nitropropane and 2-ethoxyethanol respectively (i.e., F005 wastes that are listed due to the presence of these constituents). EPA is instead promulgating required methods as the treatment standard.

EPA proposed incineration or steam stripping followed by carbon adsorption as methods of treatment for F005 wastewaters containing 2-nitropropane. This proposal relied on in-house pilot scale steam stripping studies of 2-nitropropane as well as a transfer of steam stripping data for wastewaters containing nitrobenzene. EPA's in-house treatment study indicated that 2-nitropropane is likely to form an azeotrope with water. Therefore, any technology-based treatment standard that specifies steam stripping for these wastes must also specify (or at least emphasize) operating conditions capable of treating this type of azeotrope (or prevent its generation). At this time, EPA lacks sufficient information to develop such detailed standards. EPA is thus withdrawing steam stripping as part of an alternative technology-based treatment standard.

The Agency has determined that chemical oxidation followed by carbon adsorption as well as wet air oxidation followed by carbon adsorption represent BDAT for F005 wastes listed for 2-nitropropane. This determination is based on available performance data for wastewaters containing organic constituents that are as difficult to treat as 2-nitropropane. EPA does not expect any of the other constituents in F005 wastewaters to interfere with the

treatment of 2-nitropropane when treated by these technologies. As a result, EPA is promulgating these two treatment trains along with incineration as technology-based treatment standards for F005 wastewaters listed for 2-nitropropane.

Based on the revisions to the proposed treatment standards for F005 wastewaters containing 2-nitropropane, EPA is also withdrawing its proposed criteria for defining wastewaters in this category of F005 wastewaters (i.e., less than 4% TOC and less than 1% TSS.) The definition of wastewaters and nonwastewaters is thus consistent with those established for all hazardous wastes (i.e., as defined in section 268.2(a)(6) of today's rule but not including the wastewater definitions excluded in § 268.2(a)(6) (i) through (iv).)

EPA is promulgating the proposed technology-based treatment standards for F005 wastes listed for 2-ethoxyethanol as incineration or biodegradation. EPA believes that these technologies are BDAT based on a transfer of information on the treatment of n-butyl alcohol using activated sludge. EPA believes that n-butyl alcohol is as difficult to treat as 2-ethoxyethanol.

For nonwastewater forms of F005 containing these two constituents, EPA is promulgating a treatment standard of "Incineration" as a method of treatment. EPA is specifying further that incinerators operate in accordance with the technical requirements of part 264 subpart O or part 265 subpart O. Residues from incineration are not precluded from land disposal. However, nonwastewater forms of F005 resulting from the required wastewater treatment processes must comply with the incineration treatment standards as a pre-requisite for land disposal.

BDAT TREATMENT STANDARDS FOR F002, LISTED FOR 1,1,2-TRICHLOROETHANE

[Nonwastewaters]	
Regulated constituent	Maximum for any single, grab sample, total composition (mg/kg)
1,1,2-Trichloroethane	7.8

BDAT TREATMENT STANDARDS FOR F002, LISTED FOR 1,1,2-TRICHLOROETHANE

[Wastewaters]	
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
1,1,2-Trichloroethane	0.030

BDAT TREATMENT STANDARDS FOR F005, LISTED FOR BENZENE

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	3.7

BDAT TREATMENT STANDARDS FOR F005, LISTED FOR BENZENE

[Wastewaters]	
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Benzene	0.070

BDAT TREATMENT STANDARDS FOR F005, LISTED FOR 2-NITROPROPANE OR 2-ETHOXYETHANOL

[Nonwastewaters]
Incineration (INCIN) as a method of treatment

BDAT TREATMENT STANDARDS FOR F005, LISTED FOR 2-ETHOXYETHANOL

[Wastewaters]
Incineration (INCIN); or biodegradation (BIODG) as methods of treatment

BDAT TREATMENT STANDARDS FOR F005, LISTED FOR 2-NITROPROPANE

[Wastewaters]
Incineration (INCIN); chemical oxidation (CHOXD) followed by carbon adsorption (CARBN); or wet air oxidation (WETOX) followed by carbon adsorption (CARBN) as methods of treatment

b. F006 and F019

In today's final rule, the Agency is promulgating an amendment to Method 9012, used for analyzing wastes for cyanides. In this amendment, the Agency is specifying that in order to determine compliance with the promulgated treatment standards for nonwastewaters in cyanides, a facility must use a 10 gram sample size and a distillation time of 1 hour and fifteen minutes.

In the June 23, 1989 Second Third final rule, the Agency promulgated treatment standards for amenable and total cyanide constituents for the electroplating, heat treating, and acrylonitrile F and K wastes (54 FR 26610-26615). The Agency transferred certain of these treatment standards to the cyanide wastes listed as P waste codes. The analytical method used to measure cyanide concentrations in treatment residues (thereby determining compliance with the treatment standard) was SW-846 Method 9012.

Commenters suggested that the Agency not amend the analytical method and that the Agency conduct a study that investigates improvements for the analytical method for cyanides and treatment of F006 wastes. The Agency appreciates the commenters' concerns about the analytical method. The Agency is aware that analytical problems exist for measuring total and amenable cyanides in nonwastewaters. The Agency believes that these problems exist because there is no specific sample size and distillation time specified in Method 9012. Because a generator or treater may use any sample size or distillation time, the Agency has decided to amend the analytical method 9012 by promulgating constraints on sample size and distillation time of 10 grams and one hour and fifteen minutes, respectively. In fact, the sample size and the distillation time used to develop the treatment standards for F006, F007, F008, and F009 nonwastewaters were 10 grams and one hour and fifteen minutes, respectively (see RCRA Docket LD10-L0032, letter dated May 1, 1989).

By promulgating these specifications on sample size and distillation time, the Agency believes that compliance with the BDAT treatment standard will occur as a result of actual treatment. EPA does not believe that this promulgated clarification to the analytical method affects the achievability of the cyanide standards already promulgated. After the close of the Second Third rulemaking, a potential loophole in the cyanide analytic method was brought to EPA's attention. The Agency solicited

information from generators and treaters as to the sample size and distillation time used as standard operating procedures. These facilities indicated that they were achieving the F006 nonwastewater cyanide standard by using a sample size of less than 5 grams and a distillation time of 1 hour (see administrative record for cyanide wastes in today's notice. Also, see 54 FR 48447 noting this information for public comment in this rulemaking). Therefore, the Agency believes that the data in the Second Third rule documenting achievability of the cyanide treatment standard reflects the analytic procedure being promulgated today.

(1) *F006 Wastewaters.* Today's rule promulgates wastewater treatment standards for amenable and total cyanides and metal constituents for F006 wastewaters as proposed. (Nonwastewater standards for F006 metal constituents were promulgated in the First Third final rule, and nonwastewater standards for F006 cyanides were promulgated in the Second Third final rule.) Wastewater treatment standards are based on the performance of alkaline chlorination for the amenable and total cyanides, and chromium reduction followed by chemical precipitation using lime and sulfides and sludge dewatering for the metals. Detailed information on F006 waste characterization and the technical feasibility of the transfer of the performance of the treatment systems can be found in the Final Addendum to the Best Demonstrated Available Technology (BDAT) Background Document for F006.

In addition, commenters believe that the transfer of the treatment for K062 wastewaters to F006 wastewaters is inappropriate. The Agency disagrees with the commenters and believes that the transfer is technically feasible because of the high concentration of metals in K062 as compared to F006 wastewaters, making these wastes more difficult to treat. Furthermore, in determining today's promulgated standards, the Agency also evaluated performance data that were developed by EPA's Office of Water for hydroxide precipitation, sedimentation, and filtration for wastes from the metal finishing industry. However, the Agency did not use these data to develop today's promulgated F006 metal standards because the metal finishing waste characterization data indicated that the untreated concentrations of these metals in these wastewaters were low compared to those in F006 wastewaters. The Agency believes, therefore, that these treatment data for

the metal finishing wastewater streams do not represent treatment of F006 wastewaters and may result in wastewater treatment standards that would be unachievable for actual F006 wastewaters. Thus, the Agency is not promulgating F006 wastewater treatment standards based on these data.

BDAT TREATMENT STANDARDS FOR F006

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (Total).....	1.2
Cyanides (Amenable).....	.86
Cadmium.....	1.6
Chromium.....	.32
Lead.....	.040
Nickel.....	.44

(2) *F019.* Today's rule promulgates treatment standards for amenable and total cyanides and total chromium in F019 wastewaters and nonwastewaters. The treatment standards for the amenable and total cyanides in the F019 wastewater and nonwastewaters are based on the performance of alkaline chlorination. The treatment standard for the chromium in the F019 wastewater is based on chromium reduction followed by precipitation with lime and sulfide and sludge dewatering. Treatment standard for the chromium in the F019 nonwastewater is based on stabilization.

In the proposed rule, the Agency solicited comments on two options. The first option proposed concentration-based treatment standards for cyanides based on the performance data for wet air oxidation (that is the 390 mg/kg and 20 mg/kg for total and amenable cyanides, respectively). The second option proposed was to transfer the concentration-based treatment standards for cyanides based on the performance of alkaline chlorination for F006-F009 (electroplating wastes) to F019 wastes (that is the 590 mg/kg and the 30 mg/kg for total and amenable cyanides, respectively).

Based on a review of the comments, the majority of the commenters suggested that the Agency promulgate a standard based on the 590 mg/kg limit. The commenters suggest that the electroplating wastes are similar to the F019 waste because of the iron concentration in the untreated wastes. Therefore, the Agency is promulgating cyanide standards based on a transfer of the performance of the treatment

system for electroplating wastes. The Agency believes that the transfer is technically feasible because of the following reasons. First, the Agency believes, as stated in the Final Second Third Rule, that these wastes contain high concentration of iron complex cyanides. The waste characterization data for F006 through F009 indicate that the influent iron concentrations, in some cases, are similar to the F019 wastes based on available waste characterization data. Second, at the time of the proposed rule, the only relevant treatment data available to the Agency to establish treatment standards for these wastes were the performance of wet air oxidation of F019 wastes and from the transferred performance of alkaline chlorination for F006 through F009 wastes. The Agency was reluctant to use the wet air oxidation data to develop treatment standards for F019 because of the analytical discrepancies in the influent concentration of cyanides of typical F019 wastes, suggesting strongly that the wastes treated were unrepresentative. Therefore, the Agency solicited comments on the use of wet air oxidation or any other technology used to develop treatment standards for F019 wastes. During the comment period, the Agency received no treatment data and many comments questioned whether wet air oxidation is applicable technology for these wastes or is demonstrated on a full scale basis. Therefore, the Agency's only alternative in developing cyanide treatment standards for the waste—given the lack of any other data and absence of comment—is to transfer the performance of alkaline chlorination of the electroplating wastes to the F019 wastes.

In addition, the Agency is promulgating a treatment standard for amenable cyanides in F019 nonwastewaters based on the reproducibility of the analytical method for total cyanides. Details of the calculation of the amenable cyanide standards can be found in the background document. The Agency used a similar procedure for developing treatment standards for amenable cyanides in F006-F012 wastes in the Second Third Final Rule (see 54 FR 20611).

The Agency is promulgating treatment standards for total chromium in F019 wastewaters based on the performance of chromium reduction, lime and sulfide precipitation, and sludge dewatering for K062 wastewaters. The Agency believes that this is a technically feasible transfer due to the influent total chromium concentration of 7000 ppm for

K062 is similar to the concentration of chromium in F019 wastewaters.

The Agency is also promulgating treatment standards for total chromium in F019 nonwastewaters based on a transfer of performance data from the stabilization of F006 wastes. The Agency believes that the transfer of the performance of stabilization data from F006 to F019 is technically feasible due to the higher concentration of metals within F006 wastes (i.e. up to 3000 ppm).

BDAT TREATMENT STANDARDS FOR F019

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (total).....	1.2
Cyanides (amenable).....	0.86
Chromium (total).....	0.32

BDAT TREATMENT STANDARDS FOR F019

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Cyanides (total).....	590
Cyanides (amenable).....	30
	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	5.2

c. F024

F024—Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in 261.31 or 261.32.)

Wastes identified as F024 are generated primarily by facilities in the organic chemicals manufacturing industry, specifically those engaged in the production of chlorinated aliphatic hydrocarbons. Detailed technical descriptions of the production processes generating these wastes can be found in

the listing background document prepared by EPA for this waste code.

Today's rule amends the treatment standards promulgated on June 23, 1989, for F024 (54 FR 26615) by revising the treatment standards to take account of the presence of chlorinated dibenzodioxins and furans in some nonwastewater and wastewater forms of F024, and still allow for proper treatment of these wastes. Today's rule also promulgates the treatment standards proposed on November 22, 1989, for metal constituents in nonwastewater forms of F024. BDAT treatment standards for nonwastewater metals are based on stabilization of F024 incinerator ash using a cement binder. Other treatment technologies that can achieve these concentration-based treatment standards are not precluded from use by this rule. EPA is promulgating treatment standards for three metal constituents, chromium, lead, and nickel, in nonwastewater forms of F024. The complete list of regulated constituents and treatment standards for this waste are presented in the tables at the end of this section. Treatment standards for volatile and semivolatile organic constituents in F024 nonwastewaters and volatile and semivolatile organic and metal constituents in F024 wastewaters were promulgated on June 23, 1989 (54 FR 26615) and are not being amended by this rulemaking unless specifically stated.

Several commenters confirmed EPA's inquiry in the Third Thirds proposed rule (54 FR 48450) that some treatment facilities that previously treated F024 are now refusing to do so because the treatment standards for F024 include standards for various chlorinate dibenzo-dioxins and furans. Commenters agreed that this is the case and documented the current refusal of commercial treatment facilities to accept this waste, whether or not the waste actually contained any chlorinated dibenzo-dioxins and/or furans. All of the commenters agreed that the existence of a dioxin standard is the basis for the refusal to treat. This has resulted in a capacity shortage for treatment of F024 wastes. Commenters further stated that if the treatment standards for other organic constituents in F024 were met, they believed that the treatment standards for the chlorinated dibenzo-dioxins and furans would also be met. Two commenters suggested specific constituents that may be used as surrogates for the chlorinated dibenzo-dioxins' and furans' treatment standards.

The Agency may elect not to regulate every BDAT List constituent that is present or suspected to be present in a listed waste. Frequently, EPA elects an appropriate subset of constituents for regulation in order to facilitate compliance and enforcement. In selecting constituents for regulation, the Agency considers, among other factors, the relative difficulty involved in treating each constituent by the treatment technology identified as BDAT. The subset of constituents selected should ensure that other constituents of concern are adequately treated when the treatment standards for the regulated constituents are met. Waste characteristics affecting the performance of the treatment technology (WCAPs) are used to identify the hardest to treat constituents present in a waste. These constituents may then be selected for regulation and used as surrogates for other non-regulated constituents of concern to ensure that they are adequately treated. For incineration technologies, WCAPs include a constituent's boiling point for nonwastewater residuals and a constituent's bond dissociation (BDE) for wastewater residuals. Constituents with higher boiling points and BDEs are considered to be more difficult to treat than those with lower boiling points and BDEs for nonwastewater and wastewater residuals, respectively.

The Agency did not feel the surrogates suggested for the chlorinated dibenzo-dioxins and furans in F024 wastes by the two commenters were appropriate because they were not more difficult to treat than these constituents (with boiling points ranging from 400 to 500 degrees Celsius and BDEs ranging from 960 to 2,490 kcal/mole), and therefore would not ensure adequate treatment of the chlorinated dibenzo-dioxins and furans. Also, the Agency attempted on its own to develop surrogates, but was unable to identify an appropriate surrogate that was present at treatable levels in all of the wastes containing the chlorinated dibenzo-dioxin and furan constituents. At best, achieving all of the non-dioxin/furan standards' serves as a generalized indication that treatment for dioxins and furans was probably also effective.

The concentration-based treatment standards that were promulgated for the chlorinated dibenzo-dioxins and furans in F024 (54 FR 26615) may hinder effective treatment because of the refusal of treatment facilities to accept these wastes due to the perceived stigma of managing wastes containing chlorinated dioxins and furans. Also, as noted, the Agency is unable to select an

appropriate particular surrogate which would ensure adequate treatment of these constituents. Finally, the Agency believes that incineration technologies can effectively treat chlorinated dibenzo-dioxins and furans based on the results obtained from the Agency-sponsored incineration treatment test of F024 wastes containing these constituents.

Therefore, based on the above considerations, the Agency is revising the treatment standards promulgated on June 23, 1989 to specify incineration as a method of treatment for F024 wastes (organic constituents only). If these wastes are incinerated, the record indicates that dioxins and furans, as well as all of the other hazardous constituents in the waste will be substantially destroyed. To ensure that incineration is fully effective, the Agency will also retain in the rule the existing standards for organics promulgated in the Second Third rule. Thus, there will be no specific standard for dioxins and furans in the rule, which should alleviate the treatment industry's reluctance to accept these waste. The § 268.7 certification would refer to the designated method for treating this waste, and certify that the standards for organic hazardous constituents (which do not include dioxins and furans) have been satisfied. Standards for metals would remain as numerical limits, however. These standards are discussed below. (Ordinarily the Agency would not alter a regulatory standard due to industry recalcitrance. In this case, however, the clear existence of a problem, the Agency's desire to have industry resume treatment of these wastes (there was no capacity shortfall until EPA promulgated the Second Third treatment standard), and the statutory prohibitions on disposal and storage (which foreclose all legitimate waste management options) have led EPA to revise the treatment standard.)

Two commenters stated that the proposed treatment standards for metal constituents may preclude F024 from being accepted at commercial incineration facilities. The Agency feels that the treatment standards calculated from stabilization testing of F024 incinerator ash appropriately reflect the level of performance achievable via stabilization for chromium, lead, and nickel in F024. In addition, EPA has not received treatment performance data from the regulated community indicating that the proposed treatment standards cannot be met. Therefore, the Agency has no reason to believe that the treatment standards proposed for chromium, lead, and nickel in

nonwastewater forms of F024 cannot be reliably met on a routine basis and is not revising the proposed treatment standards in today's rule.

One commenter expressed concern that other forms of incineration (i.e., liquid and gas phase incineration) are precluded from use in meeting the treatment standards for organic constituents in F024 if rotary kiln incineration is specified as BDAT. Liquid injection incineration and fluidized bed incineration may provide equivalent levels of treatment to rotary kiln incineration and, therefore, may be considered equivalent BDAT technologies for organic constituents in liquid and solid forms of F024, respectively. As is the case for all concentration-based treatment standards promulgated in the land disposal restrictions program, the use of other treatment technologies that can achieve the promulgated concentration-based treatment standards in F024 is not precluded by the second third rule (54 FR 26615). Nor is the incineration standard specified as an alternative treatment standard in today's rule based on any particular type of incineration.

One commenter stated that the treatment standards promulgated for the nine volatile and semivolatile organic constituents in nonwastewater forms of F024 (54 FR 26615) were set below practical quantitation limits (PQLs) and should be revised. The commenter is incorrect. The treatment standards for these nine organic constituents in nonwastewater forms of F024 were based on the detection limits of these constituents achieved on F024 residuals analyzed following the Agency-sponsored incineration treatment test. The PQLs the commenter refers to were obtained from analyzing a non-F024 incinerator ash.

One commenter expressed concern that the definition of F024 had been revised to include wastewaters. The wastewater treatment standards adopted for F024 are applicable to wastewater residuals derived from the treatment or leaching of nonwastewater forms of F024 as defined in 40 CFR 261.31. This does not include process wastewaters from the production of chlorinated aliphatic hydrocarbons.

BDAT TREATMENT STANDARDS FOR F024

[Nonwastewaters]

Incineration (INCIN) as a method and meet the following standards

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
2-Chloro-1,3-butadiene	0.28
3-Chloropropene	0.28
1,1-Dichloroethane	0.014
1,2-Dichloroethane	0.014
1,2-Dichloropropane	0.014
cis-1,3-Dichloropropene	0.014
trans-1,3-Dichloropropene	0.014
Bis(2-ethylhexyl)phthalate	1.8
Hexachloroethane	1.8

Regulated constituent	Maximum for any single grab sample TCLP (mg/l)
Chromium (total)	0.073
Lead	0.021
Nickel	0.088

BDAT TREATMENT STANDARDS FOR F024

[Wastewaters]

Regulated constituent	Maximum for any single grab sample total composition (mg/kg)
2-Chloro-1,3-butadiene	0.28
3-Chloropropene	0.28
1,1-Dichloroethane	0.014
1,2-Dichloroethane	0.014
1,2-Dichloropropane	0.014
cis-1,3-Dichloropropene	0.014
trans-1,3-Dichloropropene	0.014
Bis(2-ethylhexyl)phthalate	0.036
Hexachloroethane	0.036
Chromium (total)	0.35
Nickel	0.47

d. F025 Waste

F025—Condensed light ends, spent filters and filter aids and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five with varying amounts and positions of chlorine substitution.

On December 11, 1989, (54 FR 50968) EPA amended its regulations under RCRA by listing as hazardous one generic category of waste generated during the manufacture of chlorinated aliphatic hydrocarbons by free radical catalyzed processes having carbon

chain lengths ranging from one to five (EPA Hazardous Waste No. F025). The listing of EPA Hazardous Waste No. F025 becomes effective on June 11, 1990. In anticipation of this listing, the Agency proposed concentration-based treatment standards for F025 wastes in the November 22, 1989 land disposal restrictions proposal (54 FR 48450) for third third wastes. The Hazardous and Solid Waste Amendments of 1984 (HSWA) require the Agency to determine specific treatment standards which the waste must achieve prior to land disposal within six months of the listing of the waste as hazardous. Therefore, today's rule promulgates final treatment standards for wastewater and nonwastewater forms of F025 waste as proposed.

F025 wastes are characterized as condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons. For the purposes of establishing treatment standards, the wastes have been grouped into two subcategories: condensed light ends and filters/aids and desiccants. Available characterization data suggest that different constituents may be contained in each of these subcategories. As such, the Agency is promulgating concentration-based treatment standards to reflect these differences in physical and chemical composition. Concentration-based treatment standards for all wastewater and nonwastewater forms of F025 are promulgated today based on the transfer of performance data used in the development of treatment standards for specific U and P wastes that are constituents in the various F025 subcategories. (See sections III.A.2.c. and III.A.2.d. for additional information). Because no comments were received on the proposed regulation for any of the specific constituents of F025 wastewaters or nonwastewaters, the Agency assumes that generators and treaters of F025 agree with EPA's assessment of the treatment of this waste. Further information on the development of treatment standards can be found in the Background Document for F025 Wastes in the RCRA docket.

BDAT TREATMENT STANDARDS FOR F025

[Nonwastewaters]

[Light Ends Subcategory]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Chloroform.....	6.2
1,2-Dichloroethane.....	6.2
1,1-Dichloroethylene.....	6.2
Methylene chloride.....	31
Carbon tetrachloride.....	6.2
1,1,2-Trichloroethane.....	6.2
Trichloroethylene.....	5.6
Vinyl chloride.....	33

BDAT TREATMENT STANDARDS FOR F025

[Wastewaters]

[Light Ends Subcategory]

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Chloroform.....	0.046
1,2-Dichloroethane.....	0.21
1,1-Dichloroethylene.....	0.025
Methylene chloride.....	0.089
Carbon tetrachloride.....	0.057
1,1,2-Trichloroethane.....	0.054
Trichloroethylene.....	0.054
Vinyl chloride.....	0.27

BDAT TREATMENT STANDARDS FOR F025

[Nonwastewaters]

[Spent Filters/Aids and Desiccants Subcategory]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Chloroform.....	6.2
Methylene chloride.....	31
Carbon tetrachloride.....	6.2
1,1,2-Trichloroethane.....	6.2
Trichloroethylene.....	5.6
Vinyl chloride.....	33
Hexachlorobenzene.....	37
Hexachlorobutadiene.....	28
Hexachloroethane.....	30

BDAT TREATMENT STANDARDS FOR F025

[Wastewaters]

[Spent Filters/Aids and Desiccants Subcategory]

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Chloroform.....	0.046
Methylene chloride.....	0.089
Carbon tetrachloride.....	0.057

BDAT TREATMENT STANDARDS FOR F025—Continued

[Wastewaters]

[Spent Filters/Aids and Desiccants Subcategory]

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
1,1,2-Trichloroethane.....	0.054
Trichloroethylene.....	0.054
Vinyl chloride.....	0.27
Hexachlorobenzene.....	0.055
Hexachlorobutadiene.....	0.055
Hexachloroethane.....	0.055

e. K001 and U051

K001—Bottom sediment sludge from the treatment of wastewaters from wool preserving processes that use creosote and/or pentachlorophenol.

U051—Creosote

As noted in the November 22, 1989 proposal (54 FR 48410), U051 wastes differ from other U wastes in that the waste is not defined by one chemical or constituent, but by a group of chemicals defined by the generic term of "creosote". Creosote is a derivative of coal that contains a wide range of constituents including cresols, phenols, naphthalene, benz(a)anthracene, benzo(a)pyrene, fluoranthene, chrysene, indeno(1,2,3-cd)pyrene and acenaphthalene. Today's rule promulgates final treatment standards for U051 (creosote) wastewaters and nonwastewaters as proposed. The regulated constituents are naphthalene, pentachlorophenol, phenanthrene, pyrene, toluene, xylenes and lead. The treatment standards for the organic constituents were established based on the performance of incineration of K001 waste. Treatment standards for lead were based on the transfer of performance standards from the stabilization of lead in K001 nonwastewaters and chemical precipitation of lead in K001 wastewaters. Treatment standards for K001 wastewaters and nonwastewaters were promulgated in the First Third final rule on August 8, 1988. Because no comments were received on the proposed regulation for any of the specific constituents of U051, EPA assumes that generators and treaters of this waste agree with EPA's assessment of the treatment of U051 wastes.

The Agency is also promulgating, as proposed, revisions to the concentration-based treatment standards for K001 organics due to a mathematical error that was made in the

calculation of the original standards. These revisions have been reflected in the U051 standards. Additional information on the revised standards can be found in the Addendum to the K001 and U051 Background Document.

As EPA noted in the November 22, 1989 proposal (54 FR 48410), if U051 is simply discarded before it is used (for example because it is off-specification) then it would be unlikely to have all of the same contaminants as K001 wastes. On the other hand, when U051 is spilled at a wood preserving site, then it could contain the same contaminants, in particular pentachlorophenol and lead, as K001 wastes due to the high potential for cross-contamination due to prior use of pentachlorophenol at the site. Since the Agency anticipates that most of the U051 wastes come from spill residues at wood preserving sites, EPA is conservatively promulgating standards that include those constituents that are likely to be present in this form of the waste. In situations where a facility never used pentachlorophenol or where the U051 is only anticipated to be generated as an off-spec product (and pentachlorophenol was never used in the production equipment), EPA anticipates that the facility's waste analysis plan could be revised so that only the constituents that are likely to be present in that form of the waste are monitored.

BDAT TREATMENT STANDARDS FOR K001 AND U051

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Naphthalene.....	1.5
Pentachlorophenol	7.4
Phenanthrene.....	1.5
Pyrene.....	1.5
Toluene.....	28
Xylene(s).....	33
Lead.....	0.51

BDAT TREATMENT STANDARDS FOR K001 AND U051

(Wastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Naphthalene.....	0.031
Pentachlorophenol	0.18
Phenanthrene.....	0.031
Pyrene.....	0.028
Toluene.....	0.028
Xylene(s).....	0.032
Lead.....	0.037

f. K002, K003, K004, K005, K006, K007, K008

K002—Wastewater treatment sludge from the production of chrome yellow and orange pigments.

K003—Wastewater treatment sludge from the production of molybdate orange pigments.

K004—Wastewater treatment sludge from the production of zinc yellow pigments.

K005—Wastewater treatment sludge from the production of chrome green pigments.

K006—Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).

K007—Wastewater treatment sludge from the production of iron blue pigments.

K008—Oven residue from the production of chrome oxide green pigments.

In today's rule, the Agency is promulgating nonwastewater and wastewater treatment standards for waste codes K002 through K008. BDAT for metal constituents in K002, K003, K004, K005, K006 (anhydrous), K007, and K008 nonwastewaters are based on the performance of chemical precipitation, sludge dewatering, and filtration. BDAT for chromium in K006 (hydrated) is based on the performance of stabilization for F006 wastes. BDAT for cyanides in K005 and K007 wastewaters is based on the performance of alkaline chlorination. BDAT for metal constituents in K002, K003, K004, K005, K006, K007, and K008 are based on chromium reduction, chemical precipitation, and sludge dewatering. For K005 and K007 nonwastewaters, the Agency is reserving the treatment standard for amenable and total cyanides. The Agency believes that these wastes contain treatable concentrations of cyanides. Because the Agency did not propose treatment standard for cyanides in these wastes, in this rule the Agency is providing notice that standards will be proposed for restrictions in a future rulemaking. Detailed technical descriptions of the specific production processes generating

these wastes can be found in the Background Document for Inorganic Pigment Wastes.

(1) *Nonwastewaters.* In the Second Third Final Rule (53 FR 26594, June 23, 1989), EPA promulgated treatment standards of "No Land Disposal Based on No Generation" for K005 and K007 wastes. In today's final rule, the Agency is revoking these standards and is promulgating numerical treatment standards because a source wishing to manufacture these pigments in the future would be forced to apply for a variance from the treatment standard (40 CFR 268.44).

In the First Third Final Rule, EPA also promulgated a standard of "No Land Disposal Based on No Generation" for K004 and K008. EPA modified this standard to apply only to certain newly generated waste as part of the May 2, 1989, Final Rule (54 FR 18836). On January 11, 1989, EPA also proposed to modify this designation to "No Land Disposal Based on Recycling". During the comment period for the Second Third Proposed Rule, EPA received information that the recycling operation under consideration for these wastes may involve a limited captive market for the waste by-product; therefore, not all generators would be able to sell their processed K004 and K008. As a result, EPA revoked the "No Land Disposal Based on No Generation" standard in the Second Third Final Rule (54 FR 26617) and is promulgating numerical treatment standards for these wastes in today's rule.

For the K002, K003, K004, K005, K006 (anhydrous), K007, and K008 nonwastewaters, EPA is transferring the performance of the treatment of precipitation, sludge dewatering, and filtration for K062 nonwastewaters to these wastes. The Agency believes that these wastes are similar to K062 because the wastewaters from which K062 sludge are derived are similar in nature to the inorganic pigment wastewaters (i.e., consisting of inorganic constituents).

In the case of hydrated K006 nonwastewaters, EPA is promulgating treatment standards for this waste based on a performance of stabilization of F006. The Agency believes that this is a technically feasible transfer because of the chromium content and other dissolved metals which are in higher concentrations in F006 than K006. The Agency received supportive comments on the transfer feasibility of F006 to K006.

(2) *Wastewaters.* EPA is promulgating treatment standards based on the chrome pigment effluent guidelines for

discharges from this industrial category regulated under the National Pollutant Discharge Elimination System (NPDES) (40 CFR 415.340). The final standards are taken directly from the concentrations as stated in the "Development Document for Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Inorganic Chemicals Manufacturing Point Source Category, June, 1982. These standards are based on chromium conversion and lime precipitation to remove metals.

For K005 and K007 wastes, the Agency is promulgating treatment standards for total cyanides. These treatment standards are based on the performance of alkaline chlorination for pigment wastes. The Agency received no comments disputing the technical feasibility of the transfer from Effluent Limitations Guidelines data to pigment wastewaters. Although the effluent limitations guidelines and standards contain both 30 day and one day numbers, the RCRA treatment standard specifies only the one day standards.

Land disposal restrictions and corresponding implementation and enforcement procedures have been based on either a grab or a composite standard. Consistent with other BDAT treatment standards, the Agency is therefore promulgating only the one day standards which were proposed. These standards will provide appropriate control of the waste prior to land disposal without the need for a 30 day monitoring.

BDAT TREATMENT STANDARDS FOR K002, K003, K004, K005, K006 (ANHYDROUS), K007 AND K008

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	0.094
Lead	0.37

BDAT TREATMENT STANDARDS FOR K005 AND K007

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	0.094
Lead	0.37
Cyanides (Total).....	Reserved.

BDAT TREATMENT STANDARDS FOR K006 (HYDRATED)

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	5.2

BDAT TREATMENT STANDARDS FOR K002, K003, K004, K006 (ANHYDROUS AND HYDRATED), AND K008

[Wastewaters]

Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Chromium (Total).....	2.9
Lead	3.4

BDAT TREATMENT STANDARDS FOR K005, AND K007

[Wastewaters]

Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Chromium (Total).....	2.9
Lead	3.4
Cyanides (Total).....	0.74

g. K011, K013 and K014

K011—Bottom stream from the wastewater stripper in the production of acrylonitrile.

K013—Bottom stream from acetonitrile column in the production of acrylonitrile.

K014—Bottoms from the acetonitrile purification column in the production of acrylonitrile.

In the Second Third Final Rule, the Agency promulgated treatment standards for the K011, K013, and K014 nonwastewaters (54 FR 26614, June 23, 1989). Treatment standards for the nonwastewaters were based on the performance of incineration. In addition, the Agency proposed treatment standards for K011, K013, and K014 wastewaters in the Second Third proposed rule on January 11, 1989 (54 FR 1056). Commenters on the proposed wastewater standards indicated that they were in the process of developing wet air oxidation data for these wastewaters.

Since the Agency concurred that wet air oxidation was an applicable technology for these wastes and since the other data available to the Agency for treatment of these wastewaters were

relatively incomplete, the Agency chose not to promulgate the proposed wastewater treatment standards at that time. After the close of the comment period, commenters submitted their performance data for treatment of K011, K013, and K014 wastewaters using wet air oxidation, which demonstrated substantial reduction of waste toxicity and mobility. As a result, the Agency is promulgating treatment standards for organics and total cyanides in K011, K013, and K014 wastewaters. Treatment standards are based on the performance of wet air oxidation for the organics and cyanides.

Many commenters had questions on the TOC cutoff level for K011, K013, and K014 wastewaters. These commenters suggested that because the TOC levels in wastewaters fluctuate, the Agency should develop a higher cutoff level. The Agency agrees that the TOC levels in wastewaters may fluctuate above the level proposed and is accordingly redefining the cutoff level for wastewaters. Therefore, the Agency is defining K011, K013, and K014 wastewaters (as generated) as containing less than 5 percent (%) Total Organic Content (TOC) and less than 1% Total Suspended Solids (TSS). The Agency believes that the 5% cutoff level is applicable based on the available waste characterization data for K011, K013, and K014 wastes. As generated, all of these wastes are liquid and contain primarily water, yet they sporadically contain over 1% TOC (but not more than 5%) and would have been classified as nonwastewaters based on the Agency's standard cut-off of 1% TOC.

In addition, the technology of choice for K011, K013, and K014 liquids with less than 5% TOC is wet air oxidation. Since wet air oxidation is typically designed to handle slightly higher than 5% TOC levels (10% TOC is cited in guidance as a typical maximum level for wet air oxidation, but wet air oxidation systems are usually designed for lower levels) the Agency determined that it is an appropriate technology for these wastes and that the TOC cut-off level for K011, K013, and K014 wastewaters should be adjusted accordingly.

In addition, the Agency has received comments indicating that the standard for acrylonitrile is too low for these wastes. Commenters requested that the Agency reevaluate the calculation of the treatment standard (i.e., the variability factor) for this constituent. The Agency does not agree with the commenters that the acrylonitrile standard is unachievable. Based on the analysis of the data, the concentration of

acrylonitrile in the treated waste was below the detection limit. The BDAT methodology states that when all of the treated data for one constituent are at the level of detection, then the Agency believes that the data are normally distributed. Therefore, the variability factor is 2.9. The Agency calculates a treatment standard by multiplying the variability factor times the mean of the treated wastes. Therefore, this analysis is within the BDAT methodology. Furthermore, the Agency received no additional treatment data during the comment period for the proposed rule, demonstrating that the standard for acrylonitrile (based on actual treatment performance data for these wastes) is too low.

BDAT TREATMENT STANDARDS FOR K011, K013, K014

[Wastewaters <5% TOC and <1% TSS]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetonitrile.....	38
Acrylamide.....	19
Acrylonitrile.....	0.06
Benzene.....	0.02
Cyanides (total).....	21

h. K015

K015—Still bottoms from the distillation of benzyl chloride.

The Agency is today promulgating final treatment standards for nonwastewater forms of K015 as proposed. The Agency is promulgating treatment standards for five organic and two metal constituents. Treatment standards for the organic constituents are based on a transfer of performance data from the incineration of K019 and K087 wastes.

The Agency is also promulgating concentration-based treatment standards for the metal constituents nickel and chromium based on the transfer of performance data from K048-K052 waste. The Agency received several comments regarding the nickel standard for K015. The commenters stated that the numerical standard for nickel was extremely low and urged the Agency to reconsider the proposed standard. The treatment standard for nickel was proposed based on a transfer from K048-K052 wastes which were also proposed as part of the November 22, 1989 notice. The Agency received as part of the K048-K052 proposal, additional data and information from commenters that altered the proposed

treatment standard for nickel. See section III.A.4.o. of today's preamble for a complete discussion of the comments. As a result of the change made to the K048-K052 treatment standard for nickel, the Agency has determined that a modification to the nickel treatment standard for K015 is appropriate and is therefore revising and promulgating the modified standard in today's rule. Further information on the development of treatment standards can be found in the Addendum to the Background Document for K015 Wastes in the RCRA docket.

BDAT TREATMENT STANDARDS FOR K015

[Nonwastewaters]

[Revised From No Land Disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Anthracene.....	3.4
Benzal chloride.....	6.2
Benzo (b/k) fluoranthene.....	3.4
Phenanthrene.....	3.4
Toluene.....	6.0

	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total).....	1.7
Nickel.....	0.2

i. K017 and K073

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.

K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.

Today's rule promulgates final treatment standards for K017 and K073 wastewaters and nonwastewaters. The Agency noted in the November 22, 1989 proposal (54 FR 48393) that treatment standards for K017 and K073 wastes were originally scheduled to be promulgated as part of the First Third rulemaking (i.e., they were to be promulgated by August 8, 1988). The Agency did not however promulgate standards for K017 or K073 by August 8, 1988, and as a result, land disposal of these wastes were subject to the "soft hammer" provisions of 40 CFR 268.8, until May 8, 1990.

Concentration-based treatment standards for nonwastewater forms of K017 are being promulgated based on

the transfer of performance data from incineration of nonwastewater forms of F024 (wastes from the production of chlorinated aliphatics such as distillation residues, heavy ends, tars, and reactor clean-out wastes) waste. Concentration-based treatment standards are also being promulgated today for nonwastewater forms of K073 based on the transfer of performance data from incineration of nonwastewater forms of K019 (heavy ends from the distillation of ethylene dichloride in ethylene dichloride production) waste. No comments were specifically received on the proposed regulation for K017 and K073 wastes, however, the Agency did receive one comment on the difficulties of analyzing for specific BDAT list constituents in incinerator ash. The reader is referred to section III.A.5.(a.)(5.)(b.) of today's preamble for a complete discussion of this comment. As a result of this comment, the Agency is revising the nonwastewater standards for the regulated constituents in K017 to reflect these analytical concerns.

In the November 22, 1989 notice, the Agency proposed concentration-based treatment standards for wastewater forms of K017 and K073 based on incinerator scrubber water (F024 and K019 scrubber water respectively). At this time, the Agency also proposed two sets of treatment standards for the majority of U and P wastewaters for which concentration-based standards could be established. One set of standards was based on incinerator scrubber water while the alternate set of standards was based on a transfer of treatment performance data for wastewaters containing these constituents from various data sources. The reader is referred to the discussion in section III.A.5.(a.)(1.) of today's preamble for additional information.

Commenters to the proposed rule for First Third, Second Third and Third Third wastes however, almost unanimously supported the option of promulgating wastewater treatment standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. Upon review of all available data and comments, the Agency agrees with this comment and is today promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for wastes that were proposed in the Third Third rule.

While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters,

the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying and promulgating the wastewater standards for both K017 and K073 wastewaters based on the performance of wastewater treatment. Information on the technical development of the constituent specific treatment standards for these wastes can be found in the K017 and K073 background documents. Detailed information on the development of the wastewater treatment standards by constituent can be found in the background document entitled, Final Best Demonstrated Available Technology (BDAT) Background Document for U and P Wastes and Multi-Source Leachate (F039) Volume A: Wastewater Forms of Organic U and P Wastes and Multi-Source Leachates (F039) For Which There Are Concentration-Based Treatment Standards.

BDAT TREATMENT STANDARDS FOR K017

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
1,2-Dichloropropane	18
1,2,3-Trichloropropane	28
Bis(2-chloroethyl) ether	7.2

BDAT TREATMENT STANDARDS FOR K017

(Wastewaters)

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
1,2-Dichloropropane	0.85
1,2,3-Trichloropropane	0.85
Bis(2-chloroethyl) ether	0.033

BDAT TREATMENT STANDARDS FOR K073

(Nonwastewaters)

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Carbon tetrachloride	6.2
Chloroform	6.2
Hexachloroethane	30
Tetrachloroethene	6.2
1,1,1-Trichloroethane	6.2

BDAT TREATMENT STANDARDS FOR K073

(Wastewaters)

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Carbon tetrachloride	0.057
Chloroform	0.046
Hexachloroethane	0.055
Tetrachloroethene	0.056
1,1,1-Trichloroethane	0.054

j. K021

K021—Aqueous spent antimony catalyst from fluoromethane production.

Final treatment standards are being promulgated today for nonwastewater forms of K021 wastes as proposed. The treatment standards for organics are based on the transfer of performance data from incineration of nonwastewater forms of K019 (heavy ends from the distillation of ethylene dichloride in ethylene dichloride production) waste. No comments were received on the proposed standards. Concentration-based treatment standards for antimony in nonwastewater forms of K021 are being promulgated today based on the transfer of performance data from the stabilization of ash from the incineration of nonwastewater forms of K048 (dissolved air flotation (DAF) float from the petroleum refining industry) and K051 (API separator sludge from the petroleum refining industry) wastes.

In the November 22, 1989, proposal (54 FR 48394), the Agency simultaneously proposed alternative concentration-based treatment standards for antimony nonwastewater based on the performance of vitrification of arsenic wastes (see section III.A.5.(a.) of the November 22, 1989, notice describing the development of this arsenic standard for D004 wastes) and antimony wastewaters based on the performance of lime precipitation, sedimentation and filtration (see the November 22, 1989, notice (54 FR 48393) describing the development of wastewater treatment standards for U and P wastes). At that time, the Agency solicited comment from the public on the appropriateness of these alternative transfers. However, because no comments or data were received for either set of standards for antimony, EPA assumes that generators and treaters of K021 wastes agree with EPA's initial assessment of the treatment of antimony based on the transfer of performance data from K048 and K051 wastes. Therefore, the Agency is promulgating the proposed

concentration-based treatment standards for antimony based on the transfer of performance data from these wastes. Details on this transfer and the other nonwastewater standards for K021 wastes can be found in the Background Document for K021 wastes in the RCRA docket.

In the November 22, 1989, notice, the Agency also proposed concentration-based treatment standards for wastewater forms of K021 based on incinerator scrubber water from K019 waste. The Agency also proposed two sets of wastewater treatment standards for the majority of U and P wastewaters for which concentration-based standards could be established. One set of standards was based on incinerator scrubber waste while the alternate set of standards was based on a transfer of treatment performance data from wastewaters containing these constituents from various data sources. The reader is referred to the discussion in section III.A.5.(a.)(1.) of today's preamble for additional information.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third Wastes (54 FR 46390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards.

Commenters to the proposed rules for the First Third, Second Third and Third Third wastes however, almost unanimously supported the option of promulgating wastewater treatment standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. Upon review of all available data and comments, the Agency agrees with the commenters, and is today promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for wastes that were proposed in the Third Third rule.

While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying and promulgating the wastewater standards for K021 wastewaters based on the performance of wastewater treatment. Detailed information on the development of the

wastewater treatment standards by constituent can be found in the background document entitled, Final Best Demonstrated Available Technology (BDAT) Background Document For U and P Wastes and Multi-Source Leachates (F039) Volume A: Wastewater Forms of Organic U and P Wastes and Multi-Source Leachates (F039) For Which There Are Concentration-Based Treatment Standards.

BDAT TREATMENT STANDARDS FOR K021

(Nonwastewaters)

[Revised from no land disposal]

	Maximum for any single grab sample, total composition (mg/kg)
Carbon tetrachloride.....	6.2
Chloroform.....	6.2
	Maximum for any single grab sample, TCLP (mg/l)
Antimony.....	0.23

BDAT TREATMENT STANDARDS FOR K021

(Wastewaters)

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Chloroform.....	0.046
Carbon tetrachloride.....	0.057
Antimony.....	0.60

k. K022, K025, K028, K035, and K083

K022—Distillation bottom tars from the production of phenol/acetone from cumene.

K025—Distillation bottoms from the production of nitrobenzene by the nitration of benzene.

K028—Stripping still tails from the production of methyl ethyl pyridines.

K035—Wastewater treatment sludges generated in the production of creosote.

K083—Distillation bottoms from aniline production.

EPA is promulgating treatment standards for K022 (wastewaters only), and all forms of K025, K028, K035, and K083. Treatment standards promulgated today for K025 and K083, revoke the "No Land Disposal Based on No Generation" treatment standards promulgated on August 8, 1988 and modified on May 2, 1989. (See 53 FR 31167 and 31174 (August 17, 1988) and 54 FR 18836 (May

2, 1989).) A technical description of these five wastes can be found in the Listing Background Documents for each waste.

(1) *Revisions to the Standards for Wastewaters.* EPA developed the proposed treatment standards based on the transfer of performance data from wastes believed to be as difficult to treat as K022, K025, K028, K035, and K083. The proposed treatment standards for both wastewater and nonwastewater forms of these five wastes, if applicable, were based on residues from incineration. Several commenters urged EPA to develop treatment standards for the organics regulated in wastewaters based on performance data resulting from wastewater treatment technologies. Specifically, commenters urged EPA to adopt the same performance data used by EPA in developing treatment standards for multi-source leachate. Other commenters urged the Agency to use performance data from the Office of Water.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards. Commenters to the proposed rule for First Third, Second Third and Third Third wastes almost unanimously supported the option of promulgating wastewater treatment standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. Upon review of all available data and comments, the Agency agrees with the commenters and is today promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for wastes that are proposed in the Third Third rule.

While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying the concentration-based treatment standards for K022, K035, and K083 wastewaters. However, EPA is withdrawing the proposed concentration-based treatment standards for the K025 and K028 wastewaters, EPA is instead

promulgating technology-based treatment standards.

(2) *Treatment Standards for K022 Wastewaters.* The concentration-based treatment standards promulgated today for K022 are based on performance data generated from one, or a combination of two or more of the following BDAT technologies: biological treatment, steam stripping, carbon adsorption, liquid extraction, and others. (See Section III.A.6.(3) of today's preamble for a discussion of these performance data for multi-source leachate.) Treatment standards promulgated for metals (chromium and nickel) in wastewater forms of K022 are based on chemical precipitation followed by vacuum filtration of wastewaters containing the metals of concern.

One commenter objected to EPA's rationale for regulating chromium and nickel in K022 wastewaters by relying on performance data from the treatment of listed hazardous wastes that only contained metals. The commenter pointed out that EPA should rely on performance data for metal-bearing wastewater that also contains organics. According to the commenter, this is because K022 wastewaters are likely to contain organics and the performance data from which the Agency was transferring standards lack organics. The commenter believes organics could interfere with the treatment of chromium and nickel. The commenter, however, failed to provide data or information that indicate that the proposed treatment standards for metals could not be achieved for K022 wastewaters. The Agency stands by its rationale for transferring performance data of metal bearing wastewaters to K022 wastewaters.

EPA believes these organics exist at low concentrations such that they would not interfere with the treatment of metals and that if they do exist at higher concentrations, they can easily be treated using chemical or wet air oxidation followed by carbon adsorption in order to reduce their potential interference with metals treatment. At the same time, these organics would then be able to comply with the K022 wastewater treatment standards for organics promulgated in today's rule. As an alternative, these wastewaters (i.e., if they were even higher in concentration) could also be incinerated in order to comply with the organics standards and then treated for metals. All three of these technologies have been demonstrated to treat similar wastes containing both metals and organics.

(3) *Treatment standards for K035 and K083.* The concentration-based treatment standards promulgated today for K035 and K083 wastewaters are based on performance data generated from one, or a combination of two or more of the following BDAT technologies: biological treatment, steam stripping, carbon adsorption, liquid extraction, and others. (See section III.A.6.(3) of today's preamble for a discussion of these performance data for multi-source leachate.) The treatment standard promulgated for nickel in wastewater forms of K083 is based on chemical precipitation followed by vacuum filtration.

EPA is promulgating treatment standards for organics in nonwastewater forms of K035 and K083, primarily as proposed. The treatment standards are based on the incineration of wastes believed to be as difficult to treat as K035 and K083. In addition, EPA does not believe that the constituents in K035 and K083 are likely to interfere with treatment to the extent of making the promulgated treatment standards unachievable. The treatment standard promulgated for nickel in nonwastewater forms of K083 is based on the stabilization of incineration ash. The Final BDAT Background Document for each one of these wastes provides detailed information on the development of these treatment standards.

Cyclohexanone is one of the constituents that was proposed for regulation in K083 waste. EPA has identified other constituents for regulation in K083 wastes that are as difficult to treat. At this time, EPA is withdrawing cyclohexanone from the list of regulated constituents in K083 nonwastewater. However, EPA is still promulgating treatment standards for cyclohexanone in K083 wastewaters. Available performance data does not indicate any difficulties in analyzing for cyclohexanone in K083 wastewaters.

(4) *Treatment Methods for K025 and K026.* For K025 and K026, EPA pointed out its preference for promulgating a method of treatment over a concentration based standard for these two wastes. This is because there is a lack of characterization data for these wastes which raises the uncertainty as to whether regulation of a very few known BDAT list constituents in these two wastes will provide regulation of other BDAT list constituents that could be in K025 and K026. The performance data from the treatment of wastes believed to be as difficult to treat as K025 and K026 support that wastewater and nonwastewater forms of these two

wastes can be treated to meet the promulgated BDAT requirements.

As a result, EPA is promulgating incineration for nonwastewater forms of K025 and K026, and as an alternative for the corresponding wastewater forms. In addition, EPA is also promulgating liquid-liquid extraction followed by steam stripping followed by carbon adsorption as the treatment standard for K025 wastewaters.

BDAT TREATMENT STANDARDS FOR K022

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetophenone.....	0.010
Phenol.....	0.039
Chromium (Total).....	0.35
Nickel.....	0.47
[Nonwastewaters]	
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Toluene.....	0.080
Diphenylamine.....	0.52
Diphenylnitrosamine.....	0.40

BDAT TREATMENT STANDARDS FOR K025

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetophenone.....	0.010
Phenol.....	0.039
Chromium (Total).....	0.35
Nickel.....	0.47
[Nonwastewaters]	
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Toluene.....	0.080
Diphenylamine.....	0.52
Diphenylnitrosamine.....	0.40

BDAT TREATMENT STANDARD FOR K025

[Nonwastewaters]	
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Toluene.....	0.080
Diphenylamine.....	0.52
Diphenylnitrosamine.....	0.40

BDAT TREATMENT STANDARDS FOR K026

[Wastewaters and Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetophenone.....	0.010
Phenol.....	0.039
Chromium (Total).....	0.35
Nickel.....	0.47

BDAT TREATMENT STANDARDS FOR K035

[Wastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Benz (a) anthracene.....	0.059
Chrysene.....	0.059
Fluoranthene.....	0.068
Naphthalene.....	0.059
Phenanthrene.....	0.059
Pyrene.....	0.087
o-Cresol.....	0.11
m,p-Cresols.....	0.77

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Phenol.....	0.039

The treatment standard for m,p-Cresols is expressed as the sum of the meta- and para-cresol isomers because of the difficulties in distinguishing the individual isomers analytically.

BDAT TREATMENT STANDARD FOR K035

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Acenaphthene.....	3.4
Anthracene.....	3.4
Benz (a) anthracene.....	3.4
Benzo (a) pyrene.....	3.4
Chrysene.....	3.4
Dibenz (a,h) anthracene.....	3.4
Fluoranthene.....	3.4
Fluorene.....	3.4
Indeno (1, 2, 3-cd) pyrene.....	3.4
Naphthalene.....	3.4
Phenanthrene.....	3.4
Pyrene.....	8.2

BDAT TREATMENT STANDARDS FOR K083

[Nonwastewaters]

[Revised from no land disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene.....	6.6
Aniline.....	14
Diphenylamine/diphenylnitrosamine.....	14
Nitrobenzene.....	14
Phenol.....	5.6
Cyclohexanone.....	30
	Maximum for any single grab sample, TCLP (mg/l)
Nickel.....	0.088

BDAT TREATMENT STANDARDS FOR K083

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Aniline.....	0.81
Phenol.....	0.039
Cyclohexanone.....	0.36
Nickel.....	0.47
	Maximum for any composite sample, total composition (mg/l)
Benzene.....	0.14
Diphenylamine.....	0.52
Diphenylnitrosamine.....	0.40
Nitrobenzene.....	0.068

I. K028, K029, K095 and K096 Wastes

- K028—Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.
 K029—Waste from the product steam stripper in the production of 1,1,1-trichloroethane.
 K095—Distillation bottoms from the production of 1,1,1-trichloroethane.
 K096—Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.

The Agency is promulgating final treatment standards for organics in K029, K095 and K096 wastewaters based on the transfer of treatment performance data from wastewaters containing the constituents of concern for K029, K095 and K096 wastes from various data sources including: (1) The Office of Water's Industrial Technology Division (ITD) and National Pollution Discharge

Elimination System (NPDES) data (including the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) data base); (2) the Hazardous Waste Engineering Research Laboratory (HWERL) database; (3) the Office of Solid Wastes' BDAT data (from previous land disposal restriction rules); and (4) additional wastewater treatment data from literature articles on wet air oxidation and powder activated carbon treatment (PACT).

In the November 22, 1989 notice, the Agency proposed treatment standards for organics in K029, K095, and K096 wastewaters based on the transfer of performance data from rotary kiln incineration of K019 (heavy ends from the distillation of ethylene dichloride in ethylene dichloride production) nonwastewaters. Although no comments were received on the proposed rule, the Agency has modified the proposed treatment standards to reflect actual treatment performance data for wastewaters.

In the November 22, 1989 notice, the Agency proposed two sets of wastewater treatment standards for the majority of U and P wastewaters for which concentration-based standards could be established. One set of standards was based on incinerator scrubber waters while the alternate set of standards was based on a transfer of treatment performance data for wastewaters containing these constituents from the above mentioned data sources. The reader is further referred to the discussion in section III.A.5.(a).(1) of today's preamble for additional information.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third Wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than incinerator scrubber water concentrations to develop wastewater treatment standards.

Commenters to the proposed rule for First Third, Second Third and Third Third wastes almost unanimously supported the options of promulgating wastewater treatment standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. Upon review of all available data and comments, the Agency agrees with the commenters and is today promulgating concentration-based treatment standards based on wastewater treatment data rather than

scrubber water for wastes that were proposed in the Third Third rule. While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying the wastewater treatment standards for K029, K095, and K096 wastes.

The Agency is also revoking the 'reserved' status for metals in K029, K095 and K096 wastewaters. Existing waste characterization data for nonwastewaters indicates that these three wastes are essentially all organic and would not be expected to contain any BDAT list metal constituents. No comments were received disputing the Agency's conclusion.

The Agency is also promulgating treatment standards for metal constituents in K028 nonwastewaters based on the transfer of TCLP data from stabilization of F024 (wastes from the production of chlorinated aliphatics such as distillation residues, heavy ends, tars, and reactor clean-out) wastes. As was stated in the November 22, 1989 proposed rule (54 FR 48395), the Agency transferred the metal standards for K028 nonwastewaters based on performance data from proposed standards for F024. Several comments however, were received on the metal standards for F024 and subsequently K028, stating that the metal standards were too low. See section III.A.4.c. for a discussion of these comments.

The Agency is however, promulgating as proposed the concentration-based treatment standards for metals in F024 wastes. Consequently, the Agency is also promulgating the treatment standards for metals in K028 nonwastewaters as proposed.

BDAT TREATMENT STANDARDS FOR K028

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	0.073
Lead.....	0.021
Nickel.....	0.088

These standards do not replace the standards for the organics in K028 nonwastewaters that were promulgated with the Second Third wastes.

BDAT TREATMENT STANDARDS FOR K029

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chloroform.....	0.046
1,2-Dichloroethane.....	0.21
1,1-Dichloroethylene.....	0.025
1,1,1-Trichloroethane.....	0.054
Vinyl chloride.....	0.27

BDAT TREATMENT STANDARDS FOR K095

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
1,1,1,2-Tetrachloroethane.....	0.057
1,1,2,2-Tetrachloroethane.....	0.057
Tetrachloroethene.....	0.056
1,1,2-Trichloroethane.....	0.054
Trichloroethene.....	0.054
Hexachloroethane.....	0.055
Pentachloroethane.....	0.055

BDAT TREATMENT STANDARDS FOR K096

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
1,1,1,2-Tetrachloroethane.....	0.057
1,1,2,2-Tetrachloroethane.....	0.057
Tetrachloroethene.....	0.056
1,1,2-Trichloroethane.....	0.054
Trichloroethene.....	0.054
1,3-Dichlorobenzene.....	0.036
Pentachloroethane.....	0.055
1,2,4-Trichlorobenzene.....	0.055

m. K032, K033, K034, K041, K097, and K098 Wastes.

K032—Wastewater treatment sludge from the production of chlordane.

K033—Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.

K034—Filter solids from filtration of hexachlorocyclopentadiene in the production of chlordane.

K041—Wastewater treatment sludge from the production of toxaphene.

K097—Vacuum stripper discharge from the chlordane chlorinator in the production of Chlordane.

K098—Untreated process wastewater from the production of toxaphene.

The Agency is today promulgating final treatment standards for wastewater and nonwastewater forms of K032, K033, K034, K041, K097 and K098 wastes. The nonwastewater treatment standards are based on performance data from an EPA incineration test burn that was conducted in June 1989. (The reader is referred to the November 22, 1989 proposed rule for additional information on the test burn (54 FR 48390).) No comments were received on the proposed standards for any of the specific constituents of K032, K033, K034, K041, K097 or K098 nonwastewaters. Therefore, EPA assumes that generators of these wastes agree with the Agency's assessment of the treatability of these wastes and their individual constituents. Details on the selection of regulated constituents and the transfer of performance data for these K wastes are provided in the background document for these halogenated pesticide wastes which can be found in the RCRA docket.

In section III.A.1.(h)(6.) of the proposed rule for Third Third wastes (54 FR 48390 (November 22, 1989)), the Agency specifically proposed two alternative sets of concentration-based standards for the majority of the U and P wastewaters for which concentration-based standards could be established. One set of standards was based on the concentration of constituents of concern as measured in incinerator scrubber water while the alternate set of standards was based on a transfer of treatment performance data for wastewaters from various data sources. These alternative standards were presented in section III.A.7. of the proposed Third Third rule (54 FR 48467) as treatment standards for wastewater forms of multi-source leachate, but were specifically identified as alternative standards for U and P wastewaters.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third Wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards. Commenters to the proposed rules for the First Third, Second Third and Third Third Wastes almost unanimously supported that EPA should promulgate wastewater standards based

on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. After reviewing all available data and comments, the Agency agrees with the commenters, and is promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for K032, K033, K034, K041, K097 and K098 wastewaters. While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for these wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process.

More detailed information on the technical development of the constituent specific treatment standards for wastewaters can be found in the background document entitled, BDAT Background Document for Wastewaters containing BDAT list Constituents.

BDAT TREATMENT STANDARDS FOR K032

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Hexachlorocyclopentadiene.....	2.4
Chlordane.....	0.26
Heptachlor.....	0.066
Heptachlor epoxide.....	0.066

BDAT TREATMENT STANDARDS FOR K032

[Wastewaters]

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Hexachlorocyclopentadiene.....	0.057
Chlordane.....	0.0033
Heptachlor.....	0.0012
Heptachlor epoxide.....	0.016

BDAT TREATMENT STANDARDS FOR K033

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Hexachlorocyclopentadiene.....	2.4

BDAT TREATMENT STANDARDS FOR K033

[Wastewaters]	
Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Hexachlorocyclopentadiene	0.057

BDAT TREATMENT STANDARDS FOR K034

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Hexachlorocyclopentadiene	2.4

BDAT TREATMENT STANDARDS FOR K034

[Wastewaters]	
Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Hexachlorocyclopentadiene	0.057

BDAT TREATMENT STANDARDS FOR K041

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Toxaphene	2.6

BDAT TREATMENT STANDARDS FOR K041

[Wastewaters]	
Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Toxaphene	0.0095

BDAT TREATMENT STANDARDS FOR K097

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Hexachlorocyclopentadiene	2.4
Chlordane	0.26
Heptachlor	0.066
Heptachlor epoxide	0.066

BDAT TREATMENT STANDARDS FOR K097

[Wastewaters]	
Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Hexachlorocyclopentadiene	0.057
Chlordane	0.0033
Heptachlor	0.0012
Heptachlor epoxide	0.016

BDAT TREATMENT STANDARDS FOR K098

[Nonwastewaters]	
Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Toxaphene	2.6

BDAT TREATMENT STANDARDS FOR K098

[Wastewaters]	
Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Toxaphene	0.0095

n. K036 and K037

K036—Still bottoms from toluene reclamation distillation in the production of disulfoton

K037—Wastewater treatment sludges from the production of disulfoton

Today's rule promulgates treatment standards for the wastewater forms of K037 and the nonwastewater forms of K036 as proposed. Detailed technical descriptions of the specific production processes generating these wastes can be found in the background document for the listing of these wastes.

The Agency promulgated a treatment standard of "No Land Disposal Based on No Generation" for K036

nonwastewaters in the First Third final rule on August 8, 1988 (53 FR 31174, August 17, 1988). EPA amended this standard on May 2, 1989, to apply to wastes generated from the process described in the listing description and disposed after August 17, 1988 (54 FR 18836). In the November 22, 1989 proposed rule for Third Third wastes, the Agency proposed a transfer of concentration-based standards from K037 nonwastewaters (based on the performance of incineration in the First Third final rule) to other forms of K036 nonwastewaters, such as K036 spill residues. The basis of this transfer is the similarity of these two wastes, and the fact that Disulfoton, the regulated constituent in K036, is a regulated constituent in K037 as well.

The Agency promulgated concentration-based treatment standards for K037 wastewaters based on incinerator scrubber water concentration levels in the First Third final rule. In the November 22, 1989 proposed rule for Third Third wastes, the Agency proposed to revise this standard to be consistent with the other organophosphorus pesticide wastewaters, for which concentration-based standards based on biological treatment were promulgated in the Second Third final rule on June 23, 1989.

The Agency stated that the performance achievable by incineration and the performance of biological treatment represent BDAT for nonwastewater and wastewater forms, respectively, of the organophosphorus pesticides. Because the Agency received no comments on this proposal, the Agency is today promulgating concentration-based treatment standards for K036 nonwastewaters and concentration-based treatment standards for K037 wastewaters as proposed. Therefore, the Agency is able to promulgate concentration-based treatment standards for: Disulfoton in K036 nonwastewaters, and Disulfoton and toluene in K037 nonwastewaters. Standards applicable to nonwastewaters are based on the performance achieved by rotary kiln incineration and the concentration of organophosphorus pesticide measured in the ash residuals. Standards applicable to wastewaters are based on the performance achieved by biological treatment and the concentration of organophosphorus pesticide measured in the resultant effluent wastewaters. Where the treatment standards are expressed as concentration-based

standards, other treatment technologies that can achieve these concentration-based treatment standards are not precluded from use by this rule. The regulated constituents and treatment standards for these wastes are presented in the tables at the end of this section.

The Agency points out that the promulgated concentration-based treatment standards for K037 wastewaters are based on the analysis of composite samples rather than grab samples. This sampling procedure is specified for compliance monitoring because the performance data on which these standards are based consisted of analysis of composite effluent samples.

BDAT TREATMENT STANDARDS FOR K036

[Nonwastewaters]

[Revised from no land disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Disulfoton.....	0.1

BDAT TREATMENT STANDARDS FOR K037

[Wastewaters]

[Revised based on biotreatment data]

Regulated constituent	Maximum for any single composite sample, total composition (mg/l)
Disulfoton.....	0.025
Toluene.....	0.080

o. K042, K085, and K105 Wastes.

K042—Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.

K085—Distillation of fractionation column bottoms from the production of chlorobenzenes.

K105—Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.

The Agency is today promulgating final treatment standards for the wastewater and nonwastewater forms of K042, K085 and K105. The treatment standards for nonwastewaters are based on performance data from an EPA incineration test burn that was conducted in June, 1989. (The reader is referred to the November 22, 1989 proposed rule for additional information

on this test burn (54 FR 483901).) The wastewater treatment standards have been modified from the proposed rule and are being promulgated today based on a transfer of performance data from wastewater treatment.

In section III.A.1.(h)(6) of the proposed rule for Third Third wastes (54 FR 48390 (November 22, 1989)), the Agency specifically proposed two alternative sets of concentration-based standards for the majority of the U and P wastewaters for which concentration-based standards could be established. One set of standards was based on the concentration of constituents of concern as measured in incinerator scrubber water while the alternate set of standards was based on a transfer of treatment performance data for wastewaters from various data sources. These alternative standards were presented in section III.A.7. of the proposed Third Third rule (54 FR 48467) as treatment standards for wastewater forms of multi-source leachate, but were specifically identified as alternative standards for U and P wastewaters.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26829) and reiterated in the proposed rule for Third Third Wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards. Commenters to the proposed rules for the First Third, Second Third and Third Third Wastes almost unanimously agreed that EPA should promulgate wastewater standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. After reviewing all available data and comments, the Agency agrees with the commenters, and is promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for K042, K085 and K105 wastewaters. More detailed information on the technical development of the constituent specific treatment standards for wastewaters can be found in the background document entitled, BDAT Background Document for Wastewaters containing BDAT list Constituents.

The Agency received several comments on the proposed standards for the PCB constituents in K085 waste. These standards were listed for seven of the common mixtures of PCBs known originally by the trade name of Aroclor (i.e., the proposed standards were listed

for Aroclor 1016, 1221, 1232, 1242, 1248, 1254, and 1260). One commenter stated that an unjustified treatment level for PCBs had been set and that the Agency did not give a rationale for the level selected. The commenter further urged the Agency to set a treatment standard at 50 ppm which is the regulated level under both TSCA and the RCRA California list provision. The Agency disagrees with the commenter. Under HSWA, EPA has been given authority to establish treatment standards at levels that minimize threats to human health and the environment. See S. Rept. No. 284, 98th Cong. 1st Sess. at 17, stating that California list levels—which include a 50 ppm PCB level—are only minimum starting points for establishing treatment standards. (See also 55 FR 6640, Feb. 26, 1990 explaining that current uncertainties as to waste toxicity and mobility warrant retention of the BDAT approach.)

EPA noted in the November 22, 1989 proposal (54 FR 48398), that untreated K085 wastes contain a wide range of PCB concentrations, however if K085 wastes exceed 50 ppm PCBs, they must be incinerated in a TSCA permitted facility (several of the commercial facilities that are permitted for RCRA wastes are also permitted for PCB-contaminated wastes under TSCA) as well as meeting the concentration-based treatment standards being promulgated today. EPA believes that this approach is consistent with the statutory mandate.

Another commenter stated that the proposed PCB concentration-based standard for K085 was inappropriately low because the presence of hexachlorobenzene or pentachlorobenzene at their K085 treatment standard concentration levels interferes with proper performance of SW-846 Method 8080's Electron Capture Detection instrumentation, and therefore PCB levels in K085 cannot be routinely quantified at the BDAT standard level. EPA believes, as stated in the preamble to the proposed rule (54 FR 48398) that incineration virtually destroys hexachlorobenzene and pentachlorobenzene, as well as PCBs, so their ash and scrubber water levels will be too low to cause interference. As stated in the section of this Preamble discussing how the Agency used detection limits to set standards, EPA deliberately set numerical treatment standards above detection limits by using multiple variability factors. Consequently numerical treatment standards for incineration based numbers represent the lowest numbers an analytical instrumentation system can reliably report rather than the

concentration of the constituent actually present in the ash. EPA reiterates that treatability variances are available on a case-by-case basis for generators who cannot meet these standards. In addition, if the waste has been incinerated and analytical methods utilized in good faith, and the standard still proves to be below the detection limit, EPA will consider this to constitute compliance with the treatment standard (see preamble section III.A.1.g).

BDAT TREATMENT STANDARDS FOR K042

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
1,2,4,5-Tetrachlorobenzene	4.4
o-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
Pentachlorobenzene	4.4
1,2,4-Trichlorobenzene	4.4

BDAT TREATMENT STANDARDS FOR K042

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
1,2,4,5-Tetrachlorobenzene	0.055
o-Dichlorobenzene	0.088
p-Dichlorobenzene	0.090
Pentachlorobenzene	0.055
1,2,4-Trichlorobenzene	0.055

BDAT TREATMENT STANDARDS FOR K085

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	4.4
Chlorobenzene	4.4
o-Dichlorobenzene	4.4
m-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
1,2,4-Trichlorobenzene	4.4
1,2,4,5-Tetrachlorobenzene	4.4
Pentachlorobenzene	4.4
Hexachlorobenzene	4.4
Aroclor 1016	0.92
Aroclor 1221	0.92
Aroclor 1232	0.92
Aroclor 1242	0.92
Aroclor 1248	0.92
Aroclor 1254	1.8
Aroclor 1260	1.8

BDAT TREATMENT STANDARDS FOR K085

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Benzene	0.14
Chlorobenzene	0.057
o-Dichlorobenzene	0.088
m-Dichlorobenzene	0.036
p-Dichlorobenzene	0.090
1,2,4-Trichlorobenzene	0.055
1,2,4,5-Tetrachlorobenzene	0.055
Pentachlorobenzene	0.055
Hexachlorobenzene	0.055
Aroclor 1016	0.013
Aroclor 1221	0.014
Aroclor 1232	0.013
Aroclor 1242	0.017
Aroclor 1248	0.013
Aroclor 1254	0.014
Aroclor 1260	0.014

BDAT TREATMENT STANDARDS FOR K105

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	4.4
Chlorobenzene	4.4
o-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
2,4,5-Tetrachlorophenol	4.4
2,4,6-Tetrachlorophenol	4.4
2-Chlorophenol	4.4
Phenol	4.4

BDAT TREATMENT STANDARDS FOR K105

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Benzene	0.14
Chlorobenzene	0.057
o-Dichlorobenzene	0.088
p-Dichlorobenzene	0.090
2,4,5-Trichlorophenol	0.18
2,4,6-Trichlorophenol	0.035
2-Chlorophenol	0.044
Phenol	0.039

p. K044, K045, K046, and K047

K044—Wastewater treatment sludges from the manufacturing and processing of explosives.

K045—Spent carbon from the treatment of wastewater containing explosives.

K046—Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.

K047—Pink/red water TNT operators.

Today's rule revokes the "No Land Disposal Based on Reactivity" treatment standard for K044, K045, and K047 wastes and promulgates as proposed a treatment standard of "Deactivation". The Agency is also promulgating a nonwastewater treatment standard for lead in the K046 Reactive Subcategory as proposed (also see 54 FR 26607-609, June 23, 1989), based on the transfer of performance data from the stabilization of K046 nonreactive wastes. This treatment standard is based on the performance of deactivation for the reactive wastewaters followed by alkaline precipitation, settling, and filtration to form a nonreactive K046 nonwastewater that is then stabilized for lead.

The Agency received several comments indicating that the BDAT for the K046 Reactive Subcategory should be deactivation followed by stabilization as opposed to just stabilization. The Agency agrees with the commenters and is therefore revising BDAT as deactivation followed by stabilization. In addition, many commenters had questions on the definition of deactivation. To clarify this point, the Agency is defining deactivation for K044, K045, K046 and K047 wastes to be the process of removing the characteristic of reactivity, by technologies such as incineration or chemical oxidation. See 40 CFR part 268 appendix VI for a list of technologies that used alone or in combination can achieve this standard.

For all K046 wastewaters, the treatment standard is based on the performance of alkaline precipitation, settling, and filtration. The Agency is transferring the performance of this treatment system from K062 wastes. The K062 wastewaters are just as difficult to treat as the K046 wastewaters, based on the concentration of lead in K062 (up to 212 ppm) which is the same or higher than that which has been found in K046 wastewaters (up to 200 ppm).

BDAT TREATMENT FOR K044, K045, K047

[Nonwastewaters and Wastewaters]

[Revised from no land disposal]

Deactivation (Deact) as a method of treatment*

*See CFR 268.42 Table I for a description of this method of treatment.

**BDAT TREATMENT STANDARDS FOR K048
REACTIVE AND NONREACTIVE SUBCATE-
GORIES**
(Wastewaters)

Regulated constituent	Maximum for any single composite sample, total composition (mg/l)
Lead	0.037

**BDAT TREATMENT STANDARDS FOR K046
REACTIVE SUBCATEGORY**
(Nonwastewaters)

Regulated constituent	Maximum for any single composite sample, TCLP (mg/l)
Lead	0.18

q. K048, K049, K050, K051, and K052

K048—Dissolved air floatation (DAF) float from the petroleum refining industry.

K049—Slop oil emulsion solids from the petroleum refining industry.

K050—Heat Exchanger bundle cleaning sludge from the petroleum refining industry.

K051—API separator sludge from the petroleum refining industry.

K052—Tank bottoms (lead) from the petroleum refining industry.

Wastes identified as K048, K049, K050, K051, and K052 are generated by facilities in the petroleum refining industry. Detailed technical descriptions of the specific processes generating these wastes can be found in the background document for the listing of these waste codes.

In today's rule, EPA is promulgating revised treatment standards for the organic and metal constituents in K048-K052 nonwastewaters and for cyanide in K048-K052 wastewaters. The specific regulated constituents and treatment standards for these wastes are listed in the tables at the end of this section. Treatment standards for organic and metal constituents in K048-K052 wastewaters and cyanide in K048-K052 nonwastewaters were promulgated on August 8, 1988 (53 FR 31159) and are not amended by this rulemaking.

The Agency has also decided to reschedule these wastes to the third-third and thus create a new prohibition effective date for them. The legal authority to take this action comes from

"EPA['s] * * * continuing authority to reschedule wastes from one third of the schedule to another." *Chemical Waste Management v. EPA*, 869 F.2d 1526 n.2 (D.C. Cir. 1989) (noting rescheduling of the prohibition for multisource leachate that had already taken effect). Notwithstanding this authority, the Agency is not undertaking this rescheduling casually. The determining factor in EPA's view, is that even though the wastes were prohibited in the first, third rule (and granted a two-year national capacity variance), petroleum industry members were in legitimate doubt as to what the ultimate treatment standards would be and, to some extent, what the technological basis for the standards would be.

In particular, the original standards promulgated by EPA were based on treatment of some of the less contaminated petroleum refining wastes. Subsequent efforts to reexamine and possibly amend the promulgated standards were delayed in part because of conflicting claims from the treatment industry regarding the equivalency of performance of three-stage and five-stage solvent extraction technology. The petroleum refining industry itself participated in research efforts regarding treatment tests on some of the more contaminated petroleum refining wastes and generated some useful data which was used in revising the promulgated standards.

The result of this involved process is that it could have been reasonably unclear to a petroleum refinery whether treatment standards could be achieved using solvent extraction technology one type of BDAT technology. Such a facility could have legitimately delayed its investment decision about what treatment technology to use to comply with the land disposal prohibitions. Given this situation, the Agency believes it is acting both reasonably and legally in exercising its authority to reschedule the wastes to the Third Third.

The Agency has also determined that there is inadequate treatment capacity for generated K048-K052 wastes. (See section III.B. below where the Agency is granting a national capacity variance for K048-K052 wastes). The revised standards for organic and metal constituents in K048-K052 nonwastewaters and for cyanide in K048-K052 wastewaters and the previously promulgated standards for organic and metal constituents in K048-K052 wastewaters and cyanide in K048-K052 nonwastewaters will become effective on November 8, 1990 at the completion of a six month national

capacity variance being issued for K048-K052 as part of the Third Third rule.

The treatment standard for cyanide in wastewater forms of K048-K052 is promulgated as proposed. Treatment standards for organic and metal constituents in K048-K052 nonwastewaters have been revised as described below.

During the public comment period, the Agency received additional treatment performance data for treatment of organic and metal constituents in K048-K052 nonwastewaters. Treatment performance data were received from four commenters, BP America, Exxon, Amoco, and API, for stabilization of metal constituents in K048-K052 nonwastewaters from five refineries. These data were obtained from stabilization treatment tests of solvent extraction raffinate, incinerator ash, and incinerator combustion gas scrubber water solids using a variety of binders.

The Agency received additional treatment performance data for CF Systems' solvent extraction system from four commenters: CF Systems, Exxon, Shell, and API. These data were obtained from solvent extraction treatment tests of organic constituents in K048-K052 nonwastewaters from ten refineries. Treatment performance data for RCC's B.E.S.T. solvent extraction system were also submitted from two commenters for treatment of organic constituents in K048-K052 nonwastewaters from three refineries. Treatment performance data for multicycle solvent extraction were submitted by one commenter for treatment of organic constituents in K048-K052 nonwastewaters from three refineries. Also, treatment performance data for BP America's filtration/solvent extraction/stabilization process were submitted by one commenter for treatment of organic constituents in K048-K052 nonwastewaters from one refinery. The Agency also has limited data submitted by Thermal Dynamics, Inc. for treatment of organic constituents in K048-K052 nonwastewaters using high temperature thermal distillation from one refinery. The basis for the amended treatment standards is summarized below.

(1) *BDAT Treatment Standards for Metal Constituents*. Today's rule amends the promulgated K048-K052 rulemaking (53 FR 31159) to delete the treatment standards for arsenic and selenium in nonwastewater forms of K048-K052. Today's rule also revises the treatment standard for nickel in nonwastewater forms of K048-K052.

The majority of the stabilization data submitted by industry could not be

considered in developing this promulgated rulemaking for the following reasons: (1) Data were not provided for a majority of the regulated constituents; (2) untreated waste data were not provided, and, therefore, no determination of substantial treatment could be made; (3) detection limits were not provided for undetected samples; and/or (4) treatment was not demonstrated for a majority of the regulated metal constituents.

Treatment performance data that were considered in developing promulgated treatment standards for metal constituents in K048-K052 nonwastewaters are discussed in detail in the amendment to the BDAT background document for these wastes located in the RCRA docket. Statistical comparison showed that data sets for stabilization of solvent extraction raffinate submitted by Exxon and BP America demonstrated better treatment for chromium than the data generated by EPA, as well as that submitted by Amoco for stabilization of incinerator ash. In addition, data submitted by industry indicated significantly higher levels of nickel in the untreated waste than in the waste stabilized by the Agency.

Several commenters stated that the data generated by EPA showed only marginal evidence of treatment by stabilization, and that an error was made in calculating the treatment standard for nickel in K048-K052 nonwastewaters. The Agency acknowledges the error made in the treatment standard calculation for nickel, and agrees with the commenters that marginal evidence of stabilization treatment is shown in the EPA generated data regarding arsenic and selenium. In addition, none of the industry data submitted show substantial treatment for these two constituents. Therefore, the Agency is deleting treatment standards for arsenic and selenium in K048-K052 nonwastewaters. Further, to ensure that the Agency is accounting for the maximum variability in metals concentrations in K048-K052 wastes, the Agency is using the data sets submitted by Exxon and BP America to revise the treatment standard for nickel. Finally, the treatment standard for chromium remains as promulgated in the First Third Rulemaking because the data submitted by Exxon and BP America, as well as by Amoco, indicate that the treatment standard is achievable for the complete range of K048-K052 wastes tested using stabilization treatment.

(2) *BDAT Treatment Standards for Organic Constituents.* Today's rule

revises the treatment standards for all sixteen regulated organic constituents in K048-K052 nonwastewaters. In revising these standards, the Agency considered the treatment performance data submitted by industry for the following technologies: CF Systems' three-pass solvent extraction, BP America's multicycle solvent extraction, RCC's solvent extraction, and TDI's high temperature thermal distillation.

The majority of the aforementioned data could not be considered in developing this promulgated rulemaking for the following reasons: (1) Data were not provided for a majority of the regulated organic constituents; (2) untreated waste data were not provided and, therefore, no determination of substantial treatment could be made; (3) a majority of the regulated organic constituents were not detected in the untreated waste; (4) detection limits for the treated waste were several orders of magnitude higher than those achieved in other treated waste data sets, indicating non-optimized laboratory procedures; (5) treatment was not demonstrated for a majority of the regulated organic constituents; and/or, (6) adequate QA/QC data were not provided.

The remaining data sets met the Agency's screening criteria and were used with Agency-generated data from Amoco's fluidized bed incineration and CF Systems' five-pass solvent extraction treatment tests to calculate promulgated treatment standards for organic constituents in K048-K052 nonwastewaters. These treatment performance data are discussed in detail in the amendment to the BDAT background document for these wastes located in the RCRA docket.

Several commenters stated that the data used by EPA to develop the treatment standards do not reflect the wide variability in refinery wastes, and suggested that the Agency use data submitted by the petroleum refining industry to develop a larger database for calculation of treatment standards. However, one commenter stated that the Agency's current use of a variability factor in treatment standard calculations is sufficient, and additional factors to account for waste feed variability would bias the data.

The Agency has addressed the commenters' concerns regarding waste variability in calculating the revised treatment standards for K048-K052 promulgated in today's rule. The data sets that met the Agency's screening criteria were reviewed to determine the most difficult to treat waste (typically containing the highest concentration value) for each regulated constituent.

The corresponding treated waste concentration was then multiplied by a variability factor of 2.8 (this variability factor is used by the Agency when attempting to account for variability with only one data point (see the BDAT Methodology Background Document located in the RCRA docket)) to determine the treatment standard for each constituent. A more detailed discussion of the calculation of revised treatment standards for the K048-K052 nonwastewater organics may be found in the amendment to the BDAT background document for these wastes located in the RCRA docket.

Several commenters stated that currently available solvent extraction processes, including the propane extraction system (CF Systems') tested by the Agency, cannot meet the proposed BDAT standards. One commenter stated that the propane extraction system tested by the Agency to develop the proposed treatment standards for organic constituents in K048-K052 nonwastewaters cannot be considered BDAT because it is a pilot-scale unit and, therefore, is not "demonstrated."

The Agency reminds the commenters that BDAT is technology-specific, not process-specific. BDAT for K048-K052 nonwastewater organics is solvent extraction and incineration, both of which are demonstrated treatment technologies for K048-K052 wastes, and data considered by the Agency from both technologies have been used to develop the promulgated treatment standards, thereby ensuring that the treatment standards would not preclude the use of either technology.

The Agency also points out that although the treatment standards were specifically calculated using data from CF Systems' solvent extraction unit, data submitted by RCC shows that their amine extraction technology would be able to meet the treatment standards for all regulated constituents except bis(2-ethylhexyl) phthalate. (High treated waste concentrations reported by RCC for bis(2-ethylhexyl) phthalate were apparently a result of laboratory contamination.) However, the RCC data were bench-scale and could not be considered further since pilot- and full-scale data were available to the Agency. BP America's solvent extraction data, which were used to promulgate treatment standards for K048-K052 nonwastewater organics in the first third rule, indicate that this technology can meet all but four of the revised treatment standards, those for ethylbenzene, bis(2-ethylhexyl) phthalate, as well as the new standards

for xylenes and naphthalene. Also, limited data available from TDI's high temperature thermal distillation unit show that it can meet all of the BDAT treatment standards and should be considered an equivalent BDAT technology to incineration and solvent extraction.

Several commenters stated that BDAT for refinery wastes should be based on both incineration and solvent extraction. As discussed above, treatment data available to the Agency from both technologies were used to develop the revised treatment standards. Therefore, both technologies can meet the revised promulgated standards. Although the solvent extraction data showed somewhat higher treated waste concentrations than the incineration data, the organic constituent removal efficiency for solvent extraction (98% on average) is close to that for available incineration data (99.7% on average). Additionally, solvent extraction provides the benefit of recovering as much as 365,000 barrels of oil per year (provided all of the K048-K052 waste generated per year is treated using solvent extraction technologies versus incineration technologies). This recovery benefit can also be realized using high temperature thermal distillation technologies.

The Agency notes, however, that in choosing to base treatment standards on solvent extraction as well as on incineration, it has chosen a technology that does not destroy or remove toxicants as well as incineration. EPA believes this is a permissible and rational choice to make given that solvent extraction is a recovery technology and the law voices a strong preference for use of such technologies. See, e.g., H.R. Rep. No. 198, 98th Cong. 1st Sess. 31. In addition, solvent extraction does perform substantial treatment on these wastes. Thus, the Agency believes its choice to be consistent with the language of section 3004(m) and also overall statutory goals of encouraging material reuse and waste minimization. See, e.g. RCRA section 1003(b).

Several commenters stated that the treatment standards for xylenes and naphthalene in K048-K052 nonwastewaters, reserved at the time of promulgation of the first third rule, should be based on data recently submitted by the petroleum refining industry or should be transferred from other regulated constituents with similar chemical structures. One commenter stated that the proposed treatment standards for ethylbenzene and phenanthrene in K048-K052

nonwastewaters should not be promulgated because they are below the practical quantitation limits (PQLs) for these constituents. Another commenter stated that none of the BDAT treatment standards should be set below PQLs.

The Agency points out that none of the K048-K052 nonwastewater organic treatment standards are being promulgated at levels below the PQLs for their respective constituents as listed in SW-846 for low level soil, the most similar matrix to incinerator ash and solvent extraction residues of the four matrices for which PQLs are given. In addition, the commenters should keep in mind that the PQLs in SW-846 were established to provide guidance for the analysis of waste samples by establishing minimum performance criteria for analytical laboratories. The PQLs listed in SW-846 do not necessarily represent the lowest limits of analytical performance achievable for any given waste. The PQLs the commenter refers to were obtained from analyzing a non-K048-K052 incinerator ash. The treatment standards for all regulated organic constituents in K048-K052 nonwastewaters are based on data submitted by industry, and the Agency believes that both solvent extraction and incineration technologies can reliably meet these standards on a routine basis.

The Agency wishes to clarify that it believes that combined treatment of the K043-K052 wastes is appropriate and does not constitute impermissible dilution of the more concentrated wastes. This is because these wastes are generated from similar processes, contain similar contaminants, and are amenable to the same treatment technologies. Although the K051 wastes appear to contain higher contaminant concentrations than the other petroleum wastes, the Agency does not consider combined treatment of the petroleum refining wastes to be impermissible dilution of the K051 wastes. In public comments to the proposed treatment standards for these wastes in the First Third rulemaking, which comments were referenced in comments to the proposal in this proceeding, the petroleum refining industry urged EPA to "consider the biological treatment and metal fixation that occurs in a land treatment facility, in tandem with other viable treatment methods as means of meeting the section 3004(m) treatment requirements." Comments of American Petroleum Institute (API), May 23, 1988, p. 44. Although land treatment is a type of land disposal (see section 3004(k)), the argument apparently is that in assessing the level of pre-disposal

treatment to impose pursuant to section 3004(m), the postdisposal treatment that occurs in the land treatment unit should also be considered.

EPA responded in the First Third rulemaking that the statute forecloses the result that API is seeking. Land treatment is a type of land disposal and the statute states that a waste must meet the section 3004(m) standards before it is land disposed. See, e.g., Response to Comment Background Document at Docket LDR-9 p. 1621 (August, 1988). EPA continues to believe that the statute is unambiguous on this point: All treatment necessary to meet the section 3004(m) standards must occur before the waste is land disposed. Put another way, the level of pretreatment required before land disposal is not influenced by any treatment that may occur after land disposal. See RCRA sections 3004 (d), (e), and (g) (land disposal can only occur in units receiving waste that "has complied with the pretreatment regulations promulgated under" section 3004(m), or in no-migration units); see also RCRA section 3004(m)(2) (hazardous waste may be disposed of "if such waste has been treated to the level or by a method specified in regulations promulgated under this subsection").

EPA continues to believe that these provisions are unambiguous. However, even if it were determined that the Agency has some discretion to interpret these provisions (see *Chevron U.S.A. Inc. v. NRDC*, 467 U.S. 837, 843 (1984) stating that "if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute"), then the Agency would reach the same result. In our view, the statute is directed to eliminating the "long-term uncertainties associated with land disposal" (see sections 3004 (d)(1)(A), (e)(1)(A) and (g)(5)) before land disposal occurs. Hazardous wastes also are to be "manag(ed) * * * in an appropriate manner in the first instance". Sections 3004 (d)(1)(B) (e)(1)(B), and (g) (5). The most readily available means of achieving these enumerated statutory goals, and the one directly commanded by Congress, is through imposition of the section 3004(m) pretreatment standards (i.e., standards that apply before land disposal). Any section 3004(m) standard that took into account possible treatment after land disposal had occurred would be relying on the "long-term uncertainties associated with land disposal" to achieve the object of section 3004(m): Substantial reductions in waste toxicity and mobility so that

threats to human health and the environment are minimized. This is not a reasonable way to construe the land disposal restriction provisions.

In addition, the reading urged by API would amount, as a practical matter, to an end run around the no migration test in sections 3004 (d), (e), and (g). The result advocated by API would result in partially treated wastes being disposed of in units that had not satisfied the no migration standard. This again is at odds with the natural reading of the statutory scheme which indicates only two alternatives for disposing of prohibited wastes: disposal in a no migration unit or disposal after satisfying the section 3004(m) standard. Again, this appears to EPA to be the very result that Congress legislated against.²

The approach API urges is also at odds with the BDAT approach the Agency has adopted to establish the section 3004(m) treatment standards. It would also be at odds with the approach EPA recently outlined that would cap BDAT treatment levels if those levels were ever below *de minimis* concentration levels of hazardous constituents established by EPA as a threshold for determining when threats from land disposal are minimized and wastes are no longer hazardous. See 55 FR 6640 (Feb. 26, 1990). The Agency thus believes it far more reasonable to go forward with its existing interpretation which does not undermine its approach to establishing treatment standards. (This approach was recently upheld as consistent with the statute in *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 355 (D.C. Cir. 1989).)

In short, EPA believes that it is reasonable to read the statute to require that all pretreatment of prohibited wastes occur before they are land disposed. Further, the Agency has determined in today's rule the extent of

treatment that satisfies the section >3004(m) standard for the K048-052 wastes. Thus, this level of treatment is required before the wastes can be land disposed (unless disposal is into a no-migration unit).

BDAT TREATMENT STANDARDS FOR K048, K049, K050, K051 AND K052

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (total).....	0.028

REVISED BDAT TREATMENT STANDARDS FOR K048

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene.....	14
Benzo(a)pyrene.....	12
Bis(2-ethylhexyl)phthalate.....	7.3
Chrysene.....	15
Di-n-butylphthalate.....	3.6
Ethylbenzene.....	14
Naphthalene.....	42
Phenanthrene.....	34
Phenol.....	3.6
Pyrene.....	36
Toluene.....	14
Xylenes (total).....	22

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	1.7
Nickel.....	0.20

REVISED BDAT TREATMENT STANDARDS FOR K049

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Anthracene.....	28
Benzene.....	14
Benzo(a)pyrene.....	12
Bis(2-ethylhexyl)phthalate.....	7.3
Chrysene.....	15
Ethylbenzene.....	14
Naphthalene.....	42
Phenanthrene.....	34
Phenol.....	3.6
Pyrene.....	36
Toluene.....	14
Xylenes (total).....	22

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	1.7
Nickel.....	0.20

REVISED BDAT TREATMENT STANDARDS FOR K050

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzo(a)pyrene.....	12
Phenol.....	3.6

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	1.7
Nickel.....	0.20

REVISED BDAT TREATMENT STANDARDS FOR K051

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Anthracene.....	28
Benzene.....	14
Benzo(a)anthracene.....	20
Benzo(a)pyrene.....	12
Bis(2-ethylhexyl)phthalate.....	7.3
Chrysene.....	15
Di-n-butylphthalate.....	3.6
Ethylbenzene.....	14
Naphthalene.....	42
Phenanthrene.....	34
Phenol.....	3.6
Pyrene.....	36
Toluene.....	14
Xylenes (total).....	22

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	1.7
Nickel.....	0.20

² In fact, the scheme being advocated appears to resemble the original House version of the land disposal restriction provisions, which authorized the Agency to evaluate different forms of land disposal under different standards in determining which wastes were prohibited, and did not contain a no-migration test or a mandatory pretreatment provision. See section 5(c) of H.R. 2867, as reported at H.R. Rep. No. 198, 98th Cong., 1st Sess. 4-5 (1983). This scheme was not enacted, but rather was replaced by the present statute.

EPA also finds API's position to be unreasonable because it ignores section 3005(j)(11) which specifically authorizes land disposal in surface impoundments of wastes not meeting the section 3004(m) pretreatment standards provided that certain conditions are met. EPA believes that this provision indicates that when Congress intended to allow the land disposal of wastes not yet satisfying the section 3004(m) standards into land disposal units not meeting the no migration test, it said so explicitly. There is no such provision applicable to disposal in land treatment units.

REVISED BDAT TREATMENT STANDARDS
FOR K052

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene.....	14
Benzo(a)pyrene.....	12
o-Cresol.....	6.2
p-Cresol.....	6.2
Ethylbenzene.....	14
Naphthalene.....	42
Phenanthrene.....	34
Phenol.....	3.6
Toluene.....	14
Xylenes (total).....	22

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (total).....	1.7
Nickel.....	0.20

r. K060

K060—Ammonia still lime sludge from coking operations.

In today's rule, the Agency is promulgating wastewater treatment standards for organic and cyanide constituents as proposed based on the performance of biological treatment followed by settling and clarification. These treatment standards are transferred from the Office of Water Development Document for Effluent Limitations Guidelines and Standards for the Iron and Steel Industry Manufacturing Point Source Category Coke Making Subcategory. In addition, the Agency is promulgating nonwastewater treatment standards for organic and cyanide constituents as proposed based on a transfer of the performance of incineration for K087 wastes, which are generated from the same industry as K060 wastes (coking industry) and have similar or higher concentrations of K060.

In the November 22, 1989, proposed rule, the Agency transferred the performance of alkaline chlorination for F007 through F009 wastewaters to the cyanide constituent of K060 wastewaters. The Agency believed that this was a technically feasible transfer because the F007 through F009 wastewaters were more difficult to treat as a result of the higher concentration of cyanides. Since that time, the Agency has reevaluated the performance of biological treatment for K060 wastewaters and believes that for this waste biological treatment can achieve similar treatment levels for low-concentration cyanides similar to those achieved by alkaline chlorination.

Therefore, the Agency is promulgating a numerical treatment standard for the cyanide constituent in K060 wastewaters based on the performance of biological treatment followed by settling and clarification.

The Agency received no comments on the applicability of the technical transfer of the performance of the technologies for these wastes. Therefore, the Agency is promulgating concentration-based treatment standards for this waste as proposed.

BDAT TREATMENT STANDARDS FOR K060

[Revised from no land disposal]

[Wastewaters]

Regulated constituent	Maximum for any 24-hour composite sample, total composition (mg/l)
Benzene.....	0.17
Benzo(a) pyrene.....	0.035
Naphthalene.....	0.028
Phenol.....	0.042
Cyanides (Total).....	1.9

BDAT TREATMENT STANDARDS FOR K060

[Revised from no land disposal]

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene.....	0.071
Benzo(a) pyrene.....	3.6
Naphthalene.....	3.4
Phenol.....	3.4
Cyanides (Total).....	1.2

s. K061

K061—Emission control dust/sludge from the primary production of steel in electric furnaces.

In today's rule, the Agency is promulgating wastewater treatment standards for cadmium, chromium, and nickel in K061 wastes as proposed. The treatment standards are based on the performance of chemical reduction, followed by precipitation with sulfides and lime, and sludge dewatering as was set for K062 wastes. For lead, the Agency is promulgating wastewater treatment standards based on data received from the foundry industry. The treatment standard is based on the performance of precipitation with magnesium hydroxide and filtration for wastewaters generated from a cupola furnace. The Agency believes that the performance of this treatment system

can achieve the promulgated treatment standards for the other metals (cadmium, chromium, and nickel) because of the metal hydroxide solubilities.

Many commenters also suggested that the Agency develop treatment standards for this waste based on a transfer of treatment data from the Effluent Guidelines Point Source Category of the Iron and Steel Manufactures. The Agency disagrees with the commenters and does not believe that Effluent Guidelines data represents a K061 wastewater. The data show low level of metals in the waste and there is no corresponding influent and effluent concentration levels for the metals. EPA therefore excluded this data in the development of the treatment standards.

Many commenters suggested that the transfer of the performance of treatment for K062 was not an appropriate transfer due to the chemical and physical differences between the two wastes, i.e., pH of wastewaters, influent lead concentrations, and settling differences between hydroxides (K062) and oxides (K061). The Agency disagrees with the commenters and believes that chemical and physical differences between the two wastes does not prevent treatment to the same concentration level. The Agency believes that changes to the treatment system such as the addition of other precipitating agents to alter the pH can aid in the performance of the treatment system thereby achieving the treatment standards.

In addition, the Agency received data from generators of K061 wastewaters. These data indicated that K061 wastewaters contained higher concentration of lead than are typically found in K062 wastewaters. Therefore, the Agency evaluated all of the available wastewater data from comment submissions and from the Effluent Guidelines database. Data submitted by the foundry industry indicated that lead concentrations can be substantially reduced by precipitation and filtration. The Agency believes that these treatment data better represent the typical concentration of lead found in K061. Therefore, the Agency is using these data to develop a numerical treatment standard for lead. The calculation of the treatment standard can be found in the Final Addendum Background document for K061 wastewaters.

EPA promulgated treatment standards for nonwastewater forms of K061 as part of the First Third final regulation on August 8, 1988. Two subcategories for nonwastewater forms of K061 were defined: the low zinc subcategory (less

than 15%) and the high zinc subcategory (greater than 15%). The treatment standard for the low zinc subcategory was based on the performance of stabilization. For the high zinc subcategory, the final standard was "No Land Disposal Based on High Temperature Metals Recovery as a Method of Treatment" technology (53 FR 31221). Due to a shortage in high temperature metals recovery capacity, the effective date of this treatment standard was delayed until August, 1990. An interim numerical standard based on performance of stabilization technology is in force until that time.

In the proposed rule, the Agency requested comments on the extension of the existing, interim treatment standard for another year. The Agency received comments indicating that industry is in the process of building recovery processes, thus alleviating the Agency's concern at proposal that an additional extension of the interim stabilization standard would reward dilatory conduct in developing optimal treatment. The Agency believes it appropriate to extend the interim standard as an alternative to high temperature recovery for one additional year.

The Agency also proposed to amend the existing treatment standard for high zinc K086 wastes to be resmelting in a high temperature metal recovery furnace. EPA has decided not to amend the existing standard. The standard itself is presently under review by a panel of the District of Columbia Circuit Court of Appeals (*API v. EPA*, No. 88-1606) and the Agency is concerned that the change in the treatment standard it proposed could confuse the matters at issue in that case without resolving them. The Agency therefore has decided not to change the description of the existing treatment standards for these wastes.

BDAT TREATMENT STANDARDS FOR K086

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium.....	1.61
Chromium.....	0.32
Lead.....	0.51
Nickel.....	0.44

t. K086

K086—Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from the cleaning of tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.

Today's rule revokes most of the treatment standards promulgated in the First Third final rule (53 FR 31168, August 17, 1988) for K086 (solvents-wash subcategory). Today's rule, however, keeps the previously promulgated treatment standards for metals regulated in K086.

In the proposed Third Third rule, EPA explained its determination not to subcategorize K086 (beyond subcategorization for wastewaters and nonwastewaters). This determination was based on the available characterization data of K086 and on the available treatment performance data for wastes believed as difficult to treat as K086. Commenters concurred and supported EPA's determination for regulating two forms of K086. The Agency is thus adopting this proposed approach in the final rule of K086 wastes.

The Agency proposed to revise most of the existing treatment standards for organic constituents regulated in the K086 solvent wash subcategory waste. (The existing treatment standards were promulgated in the First Third final rule (see 53 FR 31220, August 17, 1988)). Also, the Agency proposed to expand the list of regulated constituents in K086 to include acetone, di-n-butylphthalate, butylbenzylphthalate, diethylphthalate, dimethylphthalate, di-n-octylphthalate, and cyanide (total). This list of additional organics is adopted in today's rule. As noted in the Third Third proposed rule and the proposed BDAT Background Document Addendum for K086, the proposed revisions to the K086 treatment standards are consistent with the U and P treatment standards development protocol unless otherwise noticed. All the proposed treatment standards for K086 wastes were based on incineration.

Commenters fully supported the proposed revisions to the treatment standards for K086. They point out that the proposed standards for most of the constituents are more representative of K086 wastes. However, commenters also urged the Agency to develop the treatment standards for organics in K086 wastewaters based on performance data from wastewater treatment technologies rather than on incineration scrubber waters.

As stated in the Final Rule for Land Disposal Restrictions for Second Third Wastes (54 FR 26629) and reiterated in the proposed rule for Third Third Wastes (54 FR 48390), when the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards.

Commenters on the proposed First Third, Second Third, and Third Third rules almost unanimously supported that EPA should promulgate wastewater standards based on the performance of specific wastewater treatment rather than incinerator scrubber water constituent levels. After reviewing all available data and comments, the Agency agrees with this comment, and is promulgating concentration-based treatment standards based on wastewater treatment data rather than scrubber water for all wastes that were proposed in the rule for Third Third Wastes. While the Agency did not specifically identify the standards based on wastewater treatment data as alternatives for F and K wastewaters, the Agency believes that this is a logical outgrowth of the notice and comment process. As such, the Agency is today modifying the wastewater treatment standards for K086.

The treatment standards promulgated today for organics in wastewater forms of K086, are based on performance data generated from a combination of two or more of the following BDAT technologies: biological treatment, steam stripping, carbon adsorption, liquid extraction, and other. (See section III.A.6. of today's preamble for a discussion of these performance data.) These treatment standards are expressed as concentration-based standards; however technologies capable of reaching the standard are not excluded from being used.

Comments were received indicating detection limit discrepancies in nonwastewater forms that contain cyclohexanone and methanol. Based on the available data, EPA believes that cyclohexanone and methanol may not be amenable to quantification and a concentration based treatment standards may not be a viable regulatory option. (See section III.A.5.6.)

Cyclohexanone and methanol are two of several organic constituents that were proposed for regulation in K086 wastes. Due to complications in analysis for these two constituents in nonwastewater treatment residues, EPA is withdrawing cyclohexanone and

methanol from the list of regulated constituents for K086 nonwastewaters. EPA identified other organic constituents in K086 that are as difficult to treat as cyclohexanone and methanol and thus believe that by regulating these other organic constituents, cyclohexanone and methanol should also be treated. However, EPA is still promulgating revised treatment standards for cyclohexanone and methanol in wastewater forms of K086. Available data for cyclohexanone and methanol containing wastewater do not indicate any analytical problems similar to those in nonwastewaters containing cyclohexanone and methanol. Therefore, EPA determined it is not necessary to specify a method of treatment or an indicator or surrogate constituent for these two constituents in nonwastewater forms of K086.

EPA is reaffirming the treatment standards for chromium (total) and lead for all forms of K086 wastes, as explained below. Today's rule abolishes K086 waste subcategories (beyond wastewaters and nonwastewaters) and revokes almost all of the treatment standards promulgated on August 17, 1988 (53 FR 31167). However, EPA is retaining the wastewater and nonwastewater chromium and lead treatment standards that were established in the First Third final rule and making them applicable to all forms of K086. These standards are based on the wastewater treatment residues resulting from the hexavalent chromium reduction to trivalent chromium followed by chemical precipitation and filtration of a wastewater believed similar to K086 wastewaters.

The treatment standards for cyanide (total) are based on residues from the alkaline chlorination of wastewaters containing cyanide. Detailed information for the development of the treatment standards for all these regulated constituents can be found in the Final Addendum BDAT Background Documents for K086.

BDAT TREATMENT STANDARDS FOR K086

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetone	0.26
Acetophenone	0.010
n-Butyl alcohol	5.6
Cyclohexanone	0.36
1,2-Dichlorobenzene	0.088
Methyl isobutyl ketone	0.14
Methyl ethyl ketone	0.28
Cyanides (Total)	1.9

BDAT TREATMENT STANDARDS FOR K086—Continued

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chromium (Total)	0.32
Lead	0.037
Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Bis(2-ethylhexyl)phthalate	0.28
Butylbenzylphthalate	0.017
Diethyl phthalate	0.20
Dimethyl phthalate	0.047
Di-n-butyl phthalate	0.037
Di-n-octyl phthalate	0.017
Ethyl acetate	0.34
Ethyl benzene	0.057
Methanol	*5.6
Methylene chloride	0.089
Naphthalene	0.059
Nitrobenzene	0.068
Toluene	0.080
1,1,1-Trichloroethane	0.054
Trichloroethylene	0.054
Xylenes (Total)	0.32

*Standard for methanol is based on analysis of a composite sample using SW-846 Method 8000.

BDAT TREATMENT STANDARDS FOR K086

[Nonwastewaters]

Constituent	Maximum for any single grab sample, total composition (mg/kg)
Acetone	160
Acetophenone	9.7
Bis(2-ethylhexyl)phthalate	28
n-Butyl alcohol	2.6
Butylbenzylphthalate	7.9
1,2-Dichlorobenzene	6.2
Diethyl phthalate	28
Dimethyl phthalate	28
Di-n-butyl phthalate	28
Di-n-octyl phthalate	28
Ethyl acetate	33
Ethyl benzene	6.0
Methyl isobutyl ketone	33
Methyl ethyl ketone	36
Methylene chloride	33
Naphthalene	3.1
Nitrobenzene	14
Toluene	28
1,1,1-Trichloroethane	5.6
Trichloroethylene	5.6
Xylenes (Total)	28
Cyanide (Total)	1.5

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium	0.094
Lead	0.37

5. Development of Treatment Standards for U and P Wastewaters and Nonwastewaters Excluding Metal Salts and Organometallics

Today's rule promulgates treatment standards for wastewater and nonwastewater forms of U and P wastes (as defined in 40 CFR 261.33(e) and (f)) that are identical to treatment standards for multi-source leachate identified as F039 (see section III.A.6. for additional discussion of treatment standards for multi-source leachate). Thus, this section of the preamble presents a discussion of the development of these standards. Treatment standards for other U and P wastes that are listed specifically as metal salts or organometallics are discussed in previous sections of today's rule. (Note: Treatment standards for additional U and P wastes have already been promulgated in 53 FR 31174 (August 17, 1988) and 54 FR 26594 (June 23, 1989)).

This section of the preamble also includes a discussion of the promulgated treatment standards for U and P wastes that have been identified as potentially reactive, exist primarily as gases, or are cyanogens. The specific U and P waste codes covered by the following discussion are listed at the end of this section in the table of standards.

In the proposed rule, EPA grouped all of the U and P wastes into various treatability groups based on similarities in elemental composition (e.g., carbon, halogens and metals) and the presence of key functional groups (e.g., phenolics, esters, and amines) within the structure of the individual chemical. The Agency has also accounted for physical and chemical factors that are known to affect the selection of treatment alternatives and to affect the performance of the treatment, such as volatility and solubility, when developing these treatability groups. The use of the chemical (e.g., pesticides and pharmaceuticals) was also important in establishing these groups. Emphasizing the use of these chemicals allowed the Agency to identify issues specific to these groups of chemicals, to target potential sources of data, and to solicit comments and data from specific industries and public interest groups.

While the Agency presented the proposed treatment standards for U and P wastes according to these treatability groups, the promulgated treatment standards are presented in this section according to the physical form (i.e., wastewaters and nonwastewaters) and whether the treatment standards are concentration-based or technology-based. More information on the

development of specific treatment standards for these wastes can be found in the background document for U and P wastes. While the background documents for these wastes in the proposed rule were presented according to treatability groups, only one background document (in five volumes) for these wastes exists for the final rule and is presented similar to the following discussion.

a. Concentration-based Standards for Specific Organics

The regulated constituents for the U and P wastes for which the Agency is promulgating concentration-based standards generally are those specific constituents for which the U and P waste is listed (as specified in 40 CFR 261.33 (e) and (f)). However, for several U and P wastes additional constituents have been selected for regulation for various reasons. More detail on the selection of regulated constituents can be found in the proposed background documents. The regulated constituents for these wastes and the promulgated treatment standards are presented in the tables at the end of each section. See also treatment standards for F039 in section III.A.6. of today's rule.

(1) *Wastewaters*. As explained in preamble section III.A.1, the Agency is adopting in this notice the definition of wastewaters that was used to promulgate treatment standards in the First and Second Third final rules—that is, wastewaters are those wastes containing less than 1% TOC and less than 1% TSS. See also the general discussion of the wastewater definition in section III.A.1. of today's rule. More detailed information on the wastes covered by this section can be found in the Final BDAT Background Document for U and P Wastes and Multi-Source Leachates (F039), Volume A: Wastewater Forms of Organic U and P Wastes and Multi-Source Leachates (F039) For Which There Are Concentration-based Treatment Standards.

In the November 22, 1989 proposed rule for Third Third wastes, the Agency proposed two alternative sets of concentration-based standards for most of these wastewaters. One set of standards was based on the concentration of these constituents in incinerator scrubber water. These scrubber water numbers were proposed because the Agency was not certain that the alternate standards would be available in time for proposal. The alternate set of standards was based on a transfer of performance data from various sources including: (1) The Office of Water's Industrial Technology

Division (ITD) and National Pollution Discharge Elimination System (NPDES) data (specifically from the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) database); (2) the Hazardous Waste Engineering Research Laboratory (HWERL) database; (3) the Office of Solid Waste's BDAT data (from previous land disposal restrictions rules); and (4) additional wastewater treatment data from literature articles on wet air oxidation (WAO) and PACT. These alternative wastewater treatment standards were presented in section III.A.7. of the proposed Third Third rule as treatment standards for wastewater forms of multi-source leachate. When the Agency has appropriate wastewater treatment data from well-designed and well-operated wastewater treatment units, it prefers to use these data rather than scrubber water concentrations to develop wastewater treatment standards. (This does not, however, preclude the Agency from establishing treatment standards for other wastes based on constituent concentrations in incinerator scrubber waters.) Also, commenters unanimously requested that the U or P wastewater standards be based on the performance of biological treatment rather than incinerator scrubber water constituent levels. For these reasons, the Agency has chosen to finalize the treatment standards based on the proposed alternate standards with some revisions. None of today's final wastewater standards in this section are based on scrubber water concentrations.

As stated in the November 22, 1989 proposed rule, the Agency also conducted wastewater treatment tests for selected U and P chemicals using wet air oxidation, powdered activated carbon treatment (PACT), and carbon adsorption. In addition to these data, the Agency received performance data on the treatment of multi-source leachate wastewaters just prior to proposal. The results of these tests were not available in time to analyze for the proposal, but were placed in the administrative docket to the proposed rule and noticed for comment.

Most of the aforementioned data supported the achievability of EPA's preferred proposed treatment standards (the alternate set of standards). The Agency reviewed all of these data during the comment period to determine whether they could be considered best demonstrated available technology. In reviewing these data, the Agency also considered the influent concentration of the treated constituent, whether the treated stream was representative of that U and P wastewater, and how

achievable the detection limit is in similar or other matrices based on other data received. The Agency has revised some of the proposed wastewater standards in this final rule based on data received just prior to proposal.

Commenters requested that the U and P wastewater standards be based on the performance of biological treatment rather than wet air oxidation followed by PACT. Where biological treatment data were not available, the Agency promulgated standards as proposed based on Office of Water data, or in some cases, used wastewater data based on the performance of wet air oxidation followed by PACT or wastewater data generated by treaters of leachate.

Proposed standards were revised for a number of reasons: (1) Based on a review of recently received multi-source leachate wastewater data, (2) based on a review of the recently completed wet air oxidation/PACT study and (3) based on a review of the existing data used to generate the proposed standards and comments received on the proposed standards. More detail on these revisions can be found on a constituent basis in the background document for these wastewaters. Where proposed standards were inconsistently large because of poor data availability, the Agency reviewed alternate sources of data to develop standards that are more consistent with similar constituents but still considered achievable by treatment. The following discussion explains in more detail the rationale for these revisions to the proposed standards. The constituents for which standards were changed from the proposed standards as presented in section III.A.7. of the Third Third proposed rule as treatment standards for wastewater forms of multi-source leachate are listed in a table at the end of this section. This table includes multi-source leachate organic constituents as well as U and P organic wastewaters.

Constituents for which multi-source leachate data were used to develop standards are given the reference code (1). Revisions Based on Multi-Source Leachate Data, in the table at the end of this section. For the majority of constituents, the multi-source leachate data supported the achievability of the proposed standards. Some of the multi-source leachate data were not used, however, because they did not show substantial treatment. Where multi-source leachate data showed a proposed standard could not be met, and demonstrated substantial treatment using a technology that could be considered BDAT, those data were used

instead. Also, where a constituent had an exceedingly large standard because of lack of good data, multi-source leachate data were used to develop a more appropriate standard whenever possible.

Constituents for which WAO/PACT data were used to develop standards are given the reference code (2), Revisions Based on WAO/PACT Data, in the table at the end of this section. More information on these data can be found in the Onsite Engineering Report of Wet Air Oxidation and PACT System Treatability Study at Zimpro/Passavant, March 1990. The Agency found that WAO followed by PACT performed better than WAO alone. Influent concentrations were designed to be high enough to represent U and P wastewaters. These data demonstrated that a number of constituents could be substantially treated by wet air oxidation followed by PACT. Where these data showed substantial treatment, they were used to develop standards for constituents for which the Agency does not have good biological treatment data or multi-source leachate data demonstrating substantial treatment.

Constituents for which the Agency reexamined the data that were used for proposal are given the reference code (3), Revisions Based on Review of Existing Data, in the table at the end of this section. The data sources and transfer choices used for the proposed standards were reevaluated. These constituents include those for which changes were made as a result of comments on the proposed standards. The standards in this category were changed for a variety of reasons. The standards for 1,4-Dioxane and ethylene oxide, which were inconsistently larger than other constituents in their treatability group, were revised based on a transfer of treatment data from ethyl ether. The standards for methacrylonitrile and propanenitrile (ethyl cyanide), which were inconsistently larger than other constituents in their treatability group, were revised based on a transfer of treatment data for acrylonitrile. The standard for 1,1,2-Trichloro-1,2,2-trifluoroethane was revised based on a transfer of treatment data from hexachloroethane. The remaining constituents in this category have revised standards due to a change in the methodology for calculating variability factors and accuracy correction factors when HWERL or NPDES data were used to develop treatment standards. More information on these revisions can be

found in the background document for these wastewaters.

None of today's promulgated U and P wastewater standards are based on incinerator scrubber water. However, it should be noted that when the Agency promulgates concentration-based standards, the regulated community may use any method of treatment to achieve these standards, so long as it does not constitute land disposal or impermissible dilution.

Many of the new wastewater data include analysis of composite samples rather than grab samples. Thus, the Agency has developed many of the concentration-based treatment standards based on an analysis of composite samples rather than grab samples. Where data from analysis of composite samples were used, the Agency so indicates in the appropriate table of treatment standards at § 268.43. More information on the Agency's use of grab and composite standards can be found in the preamble section III.A.1.

The Chemical Manufacturing Association (CMA) calculated wastewater treatment standards for many constituents based on data contained in the OCPSF database using a modified BDAT Methodology, and submitted these suggested limits to the Agency for review. EPA did not use the CMA standards, but did consider the OCPSF data base, the analyses conducted by EPA's Industrial Technology Division, and the BDAT methodology. EPA's analysis differs from CMA's and sometimes produced higher and lower limits. For example, the standard suggested by CMA for chloroform in wastewaters is lower (i.e., more stringent) than that promulgated by the Agency specifically for chloroform in K009 and K010 wastewaters. In developing the BDAT standards, the Agency examined data beyond that contained in the OCPSF data base. Thus, our selection of BDAT sometimes involved the analysis of data beyond that included in CMA's suggested limits.

Finally, EPA is promulgating treatment methods as standards for several wastewater forms of U and P wastes for which the Agency had proposed concentration-based standards. After examining certain information received following the proposed rule, EPA adjusted treatment standards for many nonwastewater forms of U and P wastes and realized that several types of analytical problems associated with nonwastewaters applied to wastewaters as well. Section III.A.5.a.(2), immediately following, discusses these problems at length.

Consequently EPA is promulgating treatment methods as standards for wastewater forms of the following U and P wastes: P082, N-nitrosodimethylamine; U017, benzal chloride; U073, 3,3'-dichlorobenzidine; U074, cis-1,4-dichloro-2-butene; U091 3,3'-dimethoxybenzidine.

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P WASTEWATERS

Waste code	Regulated organic constituents	*Total composition (mg/l)
U002	Acetone	0.28
U003	Acetonitrile	0.17
U004	Acetophenone	0.013
U005	2-Acetylaminofluorene	0.059
U009	Acrylonitrile	0.24
U012	Aniline	0.81
U018	Benz(a)anthracene	0.059
U019	Benzene	0.14
U022	Bertzo(a)pyrene	0.061
U024	bis-(2-Chloroethoxy) methane	0.056
U025	bis-(2-Chloroethyl) ether	0.033
U027	bis-(2-Chloroisopropyl) ether	0.055
U029	Bromomethane	0.11
U030	4-Bromophenyl phenyl ether	0.055
U031	n-Butyl alcohol	5.6
U036	Chlordane	0.0033
U037	Chlorobenzene	0.057
U038	Chlorobenzilate	0.10
U039	p-Chloro-m-cresol	0.018
U043	Vinyl chloride	0.27
U044	Chloroform	0.043
U045	Chloromethane (methyl chloride)	0.19
U047	2-Chloronaphthalene	0.055
U048	2-Chlorophenol	0.044
U050	Chrysene	0.059
U051	Pentachlorophenol	0.089
U051	Phenanthrene	0.059
U051	Pyrene	0.067
U052	o-Cresol	0.11
U052	Cresol (m- and p-isomers)	0.77
U057	Cyclohexanone	0.36
U060	o,p'-DDD	0.023
U060	p,p'-DDD	0.023
U061	o,p'-DDE	0.031
U061	p,p'-DDE	0.031
U061	o,p'-DDT	0.0039
U061	p,p'-DDT	0.0039
U063	Dibenzo(a,h)anthracene	0.055
U066	1,2-Dibromo-3-chloropropane	0.11
U067	1,2-Dibromoethane	0.028
U068	Dibromomethane	0.11
U070	o-Dichlorobenzene	0.088
U071	m-Dichlorobenzene	0.038
U072	p-Dichlorobenzene	0.090
U075	Dichlorodifluoromethane	0.23
U076	1,1-Dichloroethane	0.059
U077	1,2-Dichloroethane	0.21
U078	1,1-Dichloroethylene	0.025
U079	trans-1,2-Dichloroethane	0.054
U080	Methylene chloride	0.089
U081	2,4-Dichlorophenol	0.044
U082	2,6-Dichlorophenol	0.044
U083	1,2-Dichloropropane	0.85
U084	cis-1,3-Dichloropropene	0.036
U084	trans-1,3-Dichloropropene	0.036

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P WASTEWATERS—Continued

Waste code	Regulated organic constituents	*Total composition (mg/l)
U093	P-Dimethylaminoazobenzene	0.13
U101	2,4-Dimethyl phenol	0.036
U105	2,4-Dinitrotoluene	0.32
U106	2,6-Dinitrotoluene	0.55
U108	1,4-Dioxane	0.12
U111	Di-n-propyl nitrosamine	0.40
U112	Ethyl acetate	0.34
U115	Ethylene oxide	0.12
U117	Ethyl ether	0.12
U118	Ethyl methacrylate	0.14
U120	Fluoranthene	0.068
U121	Trichloromono fluoromethane	0.020
U127	Hexachlorobenzene	0.055
U128	Hexachlorobutadiene	0.055
U129	alpha-BHC	0.00014
U129	beta-BHC	0.00014
U129	delta-BHC	0.023
U129	gamma-BHC	0.0017
U130	Hexachlorocyclopentadiene	0.057
U131	Hexachloroethane	0.055
U137	Indeno(1,2,3-c,d)pyrene	0.0055
U138	Iodomethane	0.19
U140	Isobutyl alcohol	5.6
U141	Isosafrole	0.081
U142	Kepone	0.0011
U152	Methacrylonitrile	0.24
U155	Methapyrene	0.081
U157	3-Methylchloanthrene	0.0055
U159	4,4-Methylene-bis-(2-chloroaniline)	0.50
U159	Methyl ethyl ketone	0.28
U161	Methyl isobutyl ketone	0.14
U162	Methyl methacrylate	0.14
U165	Naphthalene	0.059
U168	2-Naphthylamine	0.52
U169	Nitrobenzene	0.068
U170	4-Nitrophenol	0.12
U172	N-Nitroso-di-n-butylamine	0.40
U174	N-Nitrosodiethylamine	0.40
U179	N-Nitrosopiperidine	0.013
U180	N-Nitrosopyrrolidine	0.013
U181	5-Nitro-o-toluidine	0.32
U183	Pentachlorobenzene	0.055
U185	Pentachloronitrobenzene	0.055
U187	Phenacetin	0.061
U188	Phenol	0.039
U192	Pronamide	0.093
U196	Pyridine	0.014
U203	Safrole	0.081
U207	1,2,4,5-Tetrachlorobenzene	0.055
U208	1,1,1,2-Tetrachloroethane	0.057
U209	1,1,2,2-Tetrachloroethane	0.057
U210	Tetrachloroethene	0.056
U211	Carbon tetrachloride	0.057
U220	Toluene	0.080
U225	Tribromomethane (bromofom)	0.63
U226	1,1,1-Trichloroethane	0.054
U227	1,1,2-Trichloroethane	0.054
U228	Trichloroethene	0.054
U239	Xylene(s)	0.32
U240	2,4-Dichlorophenoxyacetic acid	0.72
U243	Hexachloropropene	0.035
U247	Methoxychlor	0.25
P004	Aldrin	0.021
P020	2-sec-Butyl-4,6-dinitrophenol	0.068
P022	Carbon disulfide	0.014

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P WASTEWATERS—Continued

Waste code	Regulated organic constituents	*Total composition (mg/l)
P024	p-Chloroaniline	0.46
P037	Dieldrin	0.017
P047	4,6-Dinitroresol	0.28
P048	2,4-Dinitrophenol	0.12
P050	Endosulfan I	0.023
P050	Endosulfan II	0.029
P050	Endosulfan sulfate	0.029
P051	Endrin	0.0028
P051	Endrin aldehyde	0.025
P059	Heptachlor	0.0012
P059	Heptachlor epoxide	0.016
P060	Isodrin	0.021
P077	p-Nitroaniline	0.028
P082	N-Nitrosodimethylamine	0.40
P101	Ethyl cyanide	0.24
P123	Toxaphene	0.0095

*These standards are a mixture of grab and composite samples. Each standard is identified as either grab or composite in the tables found at § 268.43.

BASIS OF REVISIONS TO U, P AND F039 WASTEWATER STANDARDS

Regulated organic constituents	Reference for revision
Acetone	1
Acetonitrile	3
Acrolein	3
Acetophenone	1
4-Aminobiphenyl	3
Aramite	1
Benzo(b)fluoranthene	3
Benzo(g,h,i)perylene	3
Bromodichloromethane	3
Bromomethane	3
4-Bromophenyl phenyl ether	3
n-Butyl alcohol	1
Butyl benzyl phthalate	3
2-sec-Butyl-4,6-dinitrophenol	2
Carbon tetrachloride	3
Carbon disulfide	1
p-Chloroaniline	2
Chlorobenzene	3
Chlorobenzilate	3
2-Chloro-1,3-butadiene	3
Chlorodibromomethane	3
bis-(2-Chloroethoxy) methane	1
bis-(2-Chloroethyl) ether	3
2-Chloroethyl vinyl ether	3
bis-(2-Chloroisopropyl) ether	3
p-Chloro-m-cresol	3
2-Chloronaphthalene	3
2-Chlorophenol	3
3-Chloropropene	3
O-Cresol	3
Cresol (m- and p- isomers)	3
Cyclohexanone	1
1,2-Dibromo-3-chloropropane	3
1,2-Dibromoethane	3
Dibromomethane	3
Dibenzo(a,h)anthracene	3
tris-(2,3-Dibromopropyl) phosphate	3
m-Dichlorobenzene	1
o-Dichlorobenzene	3
p-Dichlorobenzene	3
3,3'-Dichlorobenzidine	3
cis-1,4-Dichloro-2-butene	3
trans-1,4-Dichloro-2-butene	3
Dichlorodifluoromethane	3
2,4-Dichlorophenol	3
2,6-Dichlorophenol	3
1,2-Dichloropropene	3

BASIS OF REVISIONS TO U, P AND F039 WASTEWATER STANDARDS—Continued

Regulated organic constituents	Reference for revision
cis-1,3-Dichloropropene	3
trans-1,3-Dichloropropene	3
3,3'-Dimethoxybenzidine	3
p-Dimethylaminoazobenzene	3
1,4-Dinitrobenzene	3
2,4-Dinitrotoluene	3
2,6-Dinitrotoluene	3
Di-n-octyl phthalate	3
Diphenylamine	3
1,2-Diphenyl hydrazine	3
Diphenylnitrosamine	3
1,4-Dioxane	3
Disulfoton	1
Endrin aldehyde	3
Ethyl acetate	3
Ethyl benzene	3
Ethyl cyanide	3
Ethyl ether	3
Ethyl methacrylate	1
Ethylene oxide	3
Famphur	1
Hexachlorobenzene	3
Hexachlorobutadiene	3
Hexachloroethane	3
Hexachloropropene	3
Indeno(1,2,3-c,d)pyrene	3
Isobutyl alcohol	1
Isosafrole	2
Kepone	1
Methacrylonitrile	3
Methanol	1
Methapyrene	2
3-Methylchloanthrene	3
4,4-Methylene-bis-(2-chloroaniline)	3
Methyl ethyl ketone	1
Methyl isobutyl ketone	1
Methyl methacrylate	1
Methyl methanesulfonate	1
2-Naphthylamine	3
p-Nitroaniline	3
5-Nitro-o-toluidine	3
N-Nitrosodiethylamine	3
N-Nitrosodimethylamine	3
N-Nitroso-di-n-butylamine	3
N-Nitrosomethyl ethylamine	3
N-Nitrosomorpholine	3
N-Nitrosopyrrolidine	3
N-Nitrosopyrrolidine	3
Pentachlorobenzene	3
Pentachlorodibenzofurans	1
Pentachloronitrobenzene	3
Pentachlorophenol	3
Phenacetin	2
Phenol	1
Phorate	1
Pronamide	2
Pyridine	3
Safrole	2
1,2,4,5-Tetrachlorobenzene	3
Tetrachlorodibenzo-p-dioxins	1
1,1,1,2-Tetrachloroethane	3
1,1,2,2-Tetrachloroethane	3
2,3,4,6-Tetrachlorophenol	3
Tribromomethane (bromofom)	3
1,2,4-Trichlorobenzene	3
2,4,5-Trichlorophenol	3
2,4,6-Trichlorophenol	1
1,2,3-Trichloropropene	3
1,1,2-Trichloro-1,2,2-trifluoroethane	3
Xylene(s)	3

Note: This table includes constituents regulated under multi-source leachate that may not be U or P waste codes, or may be U or P wastes which are not being promulgated in today's rule (i.e., Famphur P097 was finalized in the 2nd 3rd Final Rule, January 11, 1989 and is included here only because it is a regulated constituent in multi-source leachate).

References for the basis of the revised standards are as follows:

- 1—Revisions are based on analysis of treatment data previously submitted for multi-source leachate
- 2—Revisions are based on analysis of treatment data from EPA's WAO/PACT study for selected U and P chemicals
- 3—Revisions are based on re-analysis of existing treatment data and comments

(2) *Nonwastewaters.* EPA is promulgating nonwastewater concentration-based standards for the majority of U and P wastes as proposed. All promulgated concentration-based standards reflect the performance of well-designed and well-operated incineration systems and were developed primarily using the results of fourteen incinerator test burns (not to be confused with test burns carried out as part of the RCRA permitting process) which EPA undertook for the development of treatment standards for specific F and K wastes plus selected U and P wastes. The Agency reexamined these data together with other data and comments submitted during the comment period. Based on this re-analysis, the Agency changed the proposed treatment standards for approximately seventy-five constituents. These changes are summarized in the tables at the end of this section.

These changes took the form of either different numerical values for concentration-based standards or promulgating incineration as a method of treatment for wastes for which EPA had proposed concentration-based standards. Where the values of the numerical standard changed, some promulgated standards are lower and some are higher than the proposed standards. In no case, did EPA promulgate a concentration-based standard for a waste code for which a method of treatment was proposed.

In the course of developing the proposed standards, the Agency had examined the logistics of generating incineration data, considering relative availability, expense, and ease for nonwastewater forms of all of these organic U and P waste codes. EPA decided to select a limited number of U and P waste code compounds (representing the various classifications inherent to the structure of these chemicals) for additional testing in two test burns prior to the proposed rule. These new data were used in conjunction with the data from the previous twelve test burns to develop the proposed treatment standards for the remaining untested wastes. The compounds that were tested were selected to represent the treatability of each group of waste codes, based on similarities in chemical structure i.e., presence of key functional groups,

elemental composition (including chlorine, sulfur, and nitrogen), number of carbon atoms, arrangement and number of aromatic and aliphatic rings, isomer and homologue series, and degree of chlorination.

The two burns were designed such that the physical forms, concentrations, and soil content of the feed would represent the range of U and P wastes as EPA anticipates they will be generated. The treatability test consisted of two 6-hour burns consisting of 11 liquids and 7 solids. Clean fill (i.e., dirt) was added to produce ash representing that resulting from incineration of a waste spilled on soil. Four sample sets of ash and scrubber water were analyzed for BDAT list constituents. (More information on the test burn can be found in the Onsite Engineering Report Treatment Technology Performance and Operation for John Zink Company, October, 1989).

Through these incineration tests, EPA demonstrated that incineration is BDAT for a wide variety of U and P organic compounds—halogenated, non-halogenated, volatiles, semivolatiles, and pesticides. EPA's evidence for this is that these compounds are present at significant levels in untreated wastes and then appear at or near detection levels in the ash residues from these tests. Thus, data from these incineration tests assumed a critical role in developing concentration-based and technology-based treatment standards for nonwastewaters.

Detection limits represent the lowest values of a contaminant that an analytical measurement procedure can reliably measure in a particular matrix (e.g., incinerator ash). Detection limits are especially significant in developing concentration-based standards based on incinerator performance because a well-designed and well-operated incineration system appears to reduce the concentrations of virtually all of the investigated organic compounds to detection limits. EPA treats the detection limit as the quantitative expression of the post-treatment concentration and therefore calculates concentration-based standards by assuming that the detection limit represents the lowest level to which incineration can lower a contaminant's concentration.

Several sources of data received after the proposed rule was published led EPA to make the changes between the proposed and final rules discussed in the rest of this section. One source was commenters' data, especially the "Interlaboratory Ash Study" discussed in the following section. Another source was an in-house study by EPA's Office

of Research and Development pointing out recently discovered major problems in quantifying analytes for which EPA had proposed concentration-based standards. Additionally, EPA reevaluated its own calculations and modified several sets of standards to ensure a consistent methodology.

Comments about the proposed concentration-based standards fell into two groups: comments about treatment standards for individual waste codes and one substantial comment from a group of waste treatment industry representatives dealing primarily with the issue of detection limits in incinerator ash. This comment provided EPA with a significant amount of ash characterization data. Although some aspects of this data were flawed, EPA considered this study carefully when evaluating the standards before promulgation; the Response to Comments Background Document presents EPA's critique of this study's strengths and weaknesses. Subsection (1) of the following discussion of comments presents a detailed discussion of how EPA evaluated this commenter's ash data. Subsection (2) describes all of the changes between the proposed and final standards, and subsection (3) discusses the other significant comments received on the proposed concentration-based standards and analytical issues.

(a) *Use of the Interlaboratory Ash Study.* One commenter, representing the waste treatment industry, submitted a study undertaken by several laboratories associated with commercial incineration facilities to verify whether industry labs can reliably quantify the regulated constituents at the level of both the proposed and previously promulgated concentration-based standards in incinerator ash. The study's secondary purpose was to identify those regulated constituents for which concentration-based standards may be altogether inappropriate (i.e., inferring that standards expressed as methods are more appropriate). The commenter analyzed many RCRA-regulated constituents, virtually all the organics on the BDAT list, in samples of incinerator ash at levels near the concentration-based standards. These data included six detection limits reported by each of six laboratories representing the average of seven replicate detection limit determinations made on a single sample of ash from a commercial incineration facility.

These data also included six sets of seven spike recoveries reported by the six laboratories—42 recoveries in all for each analyte. (Recoveries represent the

fraction of a known quantity of the compound in question added to a sample and then measured (i.e., recovered) in subsequent analysis.)

EPA evaluated the commenter's detection limit and recovery data for each regulated organic constituent by first comparing these detection levels to those obtained by EPA during its various test burns. For most of these, the commenter's detection levels fell within an order of magnitude of EPA's detection levels. As a result, EPA did not raise concentration-based standards for those analytes where the commenter's detection limits fell very close to those EPA achieved.

Consequently, EPA made several sets of changes between the proposed and final standards following analysis of this commenter's data. These changes primarily occurred when EPA reevaluated cases where the commenter reported higher detection limits than EPA used to calculate standards. Although EPA had generally used the highest of the set of up to fourteen incinerator ash concentrations as the basis of the Third Third proposed standards for many compounds, some exceptions were made in the case of apparent outliers and where EPA believed a particular raw waste matrix best represented the waste in question.

Most of the changes in the numerical values between proposal and promulgation arose from an EPA reevaluation of the use of recovery factors in calculating concentration-based standards. EPA had calculated the proposed concentration-based standards for halogenated aliphatics, aromatics and polynuclear aromatics using an average recovery factor of several compounds. However, concentration-based standards for the rest of these wastes were calculated using a recovery factor from a single compound, not the average of several compounds. To ensure consistency among all concentration-based standards, EPA chose to recalculate standards for halogenated aliphatics, aromatics and polynuclear aromatics using a single compound recovery factor. The following compounds were affected:

1. Halogenated aliphatics: U044, chloroform; U076, 1,1-dichloroethane; U077, 1,2-dichloroethane; U078, 1,1-dichloroethylene; U079, trans-1,2-dichloroethylene; U080, methylene chloride; U083, 1,2-dichloropropane; U084, cis-1,3-dichloropropane; U084, trans-1,3-dichloropropane; U131, hexachloroethane; U208, 1,1,1,2-tetrachloroethane; U209, 1,1,2,2-tetrachloroethane; U210, tetrachloroethylene; U211, carbon

tetrachloride; U226, 1,1,1-trichloroethane; U227, 1,1,2-trichloroethane; and U243, hexachloropropene. The proposed standard for U228, trichloroethylene had been calculated using single-compound recoveries and therefore did not need to be recalculated.

2. Aromatics: U239, total xylenes. The proposed standards for U019, benzene and U220, toluene; U239, had been calculated using single-compound recoveries and therefore did not need to be recalculated.

3. Polynuclear aromatics: U005, 2-acetylaminofluorene; U018, benzo(a)anthracene; U022, benzo(a)pyrene; U050, chrysene; U063, dibenzo(a,h)anthracene; U120, fluoranthene; U137, indeno(1,2,3-c,d)pyrene; U157, 2-methylchloranthrene; U165, naphthalene; U051, naphthalene, pentachlorophenol, phenanthrene, pyrene and total xylenes. The proposed standard for U051, toluene had been calculated using single-compound recoveries and therefore did not need to be recalculated.

A second set of changes to numerical values resulted from EPA's decision not to base concentration-based standards for U and P nonwastewaters on data from three of the fourteen test burns and to recalculate the concentration-based standards with data from the other test burns involving matrices more similar to U and P matrices. These burns incinerated K011, K013 and K014, acrylonitrile-cyanide wastes; K024, phthalic anhydride wastes and K037 disulfoton (an organophosphate pesticide) wastes. EPA's reason for excluding these burns from the database for U and P nonwastewater is that each of these waste matrices has a relatively unique composition in terms of including very few chemical compounds. By contrast, the test burns EPA chose for the promulgated standards, namely those incinerating creosote wastes (K001), ethylene dichloride wastes (K019), and veterinary pharmaceutical wastes (K102), all involved matrices which are both difficult to treat and difficult to analyze. The Background Document for Organic U and P wastes and Multisource Leachate, Volume C, discusses the difference among these waste matrices in more detail. Nonwastewater standards affected by this decision are:

1. Halogenated pesticides and chlorobenzenes: P060, Isodrin; and U142, Kepone.

2. Miscellaneous halogenated organics: U045, chloromethane; U158, 4,4'-methylenebis (2-chloroaniline) and U075, dichlorodifluoromethane.

3. Oxygenated organics: U159, methyl ethyl ketone; U002, acetone; U108, 1,4-dioxane; U112, ethyl acetate; and U117, ethyl ether.

4. Organonitrogens: U009, acrylonitrile; U172, N-nitroso-di-n-butylamine; U179, N-nitrosopiperidine; U180, N-nitropyrrolidine; U151, 5-nitro-o-toluidine.

5. Pharmaceutical wastes: U155, methapyrilene.

EPA is promulgating a higher concentration-based standard for U043, vinyl chloride because the commenter's reported detection limits lie well above the detection limits which EPA used to develop concentration-based standards. The promulgated standard for vinyl chloride reflects the choice of a different and higher detection limit from the ethylene chloride (K019) waste matrix.

EPA reevaluated its choice of recovery values for P047, 4,6-dinitro-o-cresol; P048, 2,4-dinitrophenol; U004, acetophenone; and U170, 4-nitrophenol to ensure consistency with the methodology. Therefore the numerical values have changed between proposal and promulgation for these four compounds.

(b) Changes from Concentration-Based Standards to Methods of Treatment as Standards. The rest of the changes consisted of promulgating standards expressed as methods of treatment for U and P wastes for which the Agency had proposed concentration-based standards. For P003, acrolein; U003, acetonitrile; U073, 3,3'-dichlorobenzidine; U038, chlorobenzilate; U168, 2-naphthylamine; U093, p-dimethylaminoazobenzene; and U057, cyclohexanone, the data submitted by a commenter representing the hazardous waste treatment industry reported such drastic detection limit discrepancies or extreme recoveries that EPA believes these analytes belong in the category of those not amenable to quantification. EPA notes that the proposed wastewater standard for P003, acrolein, had been a concentration-based standard while the nonwastewater standard was a method of treatment; promulgated standards for both forms of P003, acrolein, are methods of treatment.

For 2-chloro-1,3 butadiene, a constituent of F039 leachate not regulated as a U or P waste, the commenter reported zero recoveries for several sets of replicates and extremely variable recoveries for another. Based on EPA's own experience in quantifying 2-chloro-1,3 butadiene, the Agency is promulgating a treatment method for 2-chloro-1,3 butadiene rather than a

concentration-based standard as proposed.

For U017, benzal chloride, the Agency solicited comments on data with adequate QA/QC verifying that incineration reduces benzal chloride to detection levels. One commenter suggested that the Agency regulate benzyl alcohol and benzaldehyde, hydrolysis products of benzal chloride, as benzal chloride surrogates. The commenter stated that EPA used surrogates in regulating phthalates in the Second Third rule. However, the Agency believes that this situation is different because there is no way to correlate and codify how well the concentrations of benzyl alcohol and benzaldehyde in a waste matrix reflect the concentration of benzal chloride, especially in a waste already containing substituted benzenes. Although the commenter did provide EPA with certain limited analytical data demonstrating quantification of benzal chloride with SW-846 method 8015 in a waste stream from a remediation project, the commenter did not characterize the matrix or the treatment process well enough for EPA to set numerical treatment standards for U017. Therefore, since EPA received no specific information demonstrating successful measurement of benzal chloride, EPA is promulgating incineration as a technology-based standard for benzal chloride as U017.

It should be noted that EPA is promulgating, as proposed, the concentration-based standard for benzal chloride as a constituent of K015 nonwastewaters. EPA believes benzal chloride can be quantified in K015 nonwastewaters more easily than in U017 nonwastewaters for the following reasons: EPA's data show that K015 untreated nonwastewaters contain so much benzal chloride (at least 90%) that instability in water does not hinder benzal chloride identification and also that incineration has successfully treated K015 nonwastewaters. However, the composition of any U and P wastes is, by the definition of these wastes, extremely variable, and the benzal chloride composition may very well fall below the level of reliable quantification.

EPA also changed several standards in response to information in a recently released EPA Office of Research and Development (ORD) study, EPA/600/S4-89/010, "USEPA Method Study 36: SW-846 Methods 8270/3510 GC/MS Method for Semivolatile Organics: Capillary Column Technique; Separatory Funnel Liquid-Liquid Extraction". This study evaluates the analytical methods most

commonly used to quantify semivolatile analytes, a category of organic chemical including more than half of the compounds regulated in this rule. Although this study was carried out in support of the RCRA ground water monitoring regulations and consequently looked only at aqueous matrices rather than at the incinerator ash matrices used to develop these nonwastewater concentration-based standards, the study documents such serious analytical problems with several Third Thirds analytes that EPA has chosen to promulgate incineration as a treatment standard rather than the proposed concentration-based standards. These analytes are: U197, p-benzoquinone; U132, hexachlorophene; U168, 1,4-naphthoquinone; U167, 1-naphthylamine; P082, N-nitrosodimethylamine; U184, pentachloroethane; and U201, resorcinol plus the leachate components aramite, benzenethiol, phthalic anhydride, dibenzo(a,e)pyrene, tris (2,3-dibromophosphate) and dibenzo(a,i)pyrene.

This study determined how reliably these analytes can be quantified in aqueous matrices by examining the recoveries obtained and the precision achieved over the course of multiple analyses by several laboratories. Statistical analysis indicated that the recovery data for the analytes listed above were so unrealistically high or low that EPA has declined to recommend the use of SW-846 methods 3510/8270 for quantifying these analytes in ground-water monitoring at RCRA-permitted facilities.

In promulgating the Third Third final rule, EPA chose to incorporate this recommendation about the severity of the problems associated with SW-846 methods 3510/8270 and therefore move these analytes into the category of those compounds to be regulated with technology-based standards. The reason for this decision is that the study documents significant problems with GC/MS (gas chromatography/mass spectrometry) which is the technique used almost exclusively to quantify organic compounds in all environmental samples and is the basis not only of SW-846 8270, but for most other SW-846 methods for organic analytes) which are common to most methods used to quantify these compounds.

EPA makes one exception, however, in the case of P020 (Dinoseb), to its decision to promulgate methods as standards for those analytes recommended for deletion from methods 3510 plus 8270 in this ORD study. Since EPA has specific analytical data on the incineration of Dinoseb and since the

data was of sufficient QA/QC, EPA is promulgating the concentration-based Dinoseb standards as proposed.

In reviewing its own data, EPA also determined that inadequate documentation exists demonstrating the successful quantification of U074, cis- and trans-1,4-dichloro-2-butene. Considering this together with the problems in quantifying these compounds as a pair because their widely different boiling points complicate their behavior in the GC/MS apparatus, EPA is promulgating incineration as a method rather than the proposed concentration-based standard.

These decisions affect leachate standards as follows:

1. All nonwastewater leachate numbers will change as the concentration-based standard for that U or P waste constituent changes.
2. Compounds identified in the study as problem analytes by Method 36 will be dropped from the list of wastewater and nonwastewater leachate components, with the exception of P082, N-nitrosodimethylamine, for which the Agency has data indicating that it can be successfully quantified in wastewaters. Consequently EPA is promulgating a concentration-based standard for P082 wastewaters while promulgating methods of treatment as standards for P082 nonwastewaters.
3. Compounds, namely benzal chloride and 1,4-dichloro-2-butene, for which EPA decided to promulgate methods as standards rather than concentration-based standards as proposed will be dropped from the list of leachate components.
4. Compounds dropped because the commenter's incinerator ash study identified problems with quantifying them in ash due to questionable detection limits and recovery values will be dropped from the list of leachate nonwastewater components but will remain on the list of leachate wastewater components because the analytical problems identified by the commenter's study apply only to the incinerator ash matrix and not to aqueous matrices from other treatment processes.

(c) Changes and Treatability Groups. EPA received several other comments about the proposed concentration-based standards for nonwastewaters. The proposed rule described how EPA developed each concentration-based standard for each waste in a treatability group. Each treatability group section discussed how the chemistry of waste codes compared to a compound incinerated in one of EPA's fourteen test burns. In addition, the proposal solicited

comments on issues specific to that treatability group as a whole (i.e., comments on SO_x controls for the Organosulfur Wastes), or pertinent to individual members of that treatability group (i.e., information on possible methods for benzal chloride analysis in the Miscellaneous Halogenated Organic Wastes section).

Treatability-group oriented information describing how each concentration-based standard for each U and P waste is presented in the Background Document for Organic U and P wastes and Multisource Leachate, Volume C. The following discussion addresses waste-specific comments, but the preamble's primary explanation of those promulgated standards which differ from the proposed standards. Furthermore, those F and K wastes which were grouped with similar U and P wastes are discussed elsewhere in this preamble, in the section identified by the F and K wastes.

The following paragraphs review those treatability-group oriented issues which generated significant comments, especially those for which EPA explicitly solicited comments in the proposed rule. These paragraphs summarize the comments and EPA's response in order to provide the regulated community with a coherent picture of the issues evaluated in developing the promulgated standards rather than to be an exhaustive summary of each decision made for each U and P waste regulated in this group. Such comprehensive summaries appear in the Background Document for Organic U and P wastes and Multisource Leachate, Volumes B and C; these present in detail how EPA developed the proposed standards and then modified them for promulgation in response to information subsequently.

(A) Brominated Organics. In the proposed rule, EPA solicited comment on several process design and air emissions control issues unique to bromine incineration. Issues of particular interest were operating conditions needed to ensure adequate bromine oxidation and the need for air pollution control devices. EPA particularly wanted information indicating whether treatment standards promulgated in this rule should mandate a maximum bromine concentration in the feed to the incinerator and the use of air emissions control devices. The Agency also solicited comment on the appropriateness of biodegradation as BDAT for P017, bromoacetone.

EPA received no substantive comments on the proposed bromine standards. Specifically, commenters did

not provide the process design or emissions control information EPA solicited in light of bromine's unique corrosive properties.

Therefore, EPA is promulgating the nonwastewater standards as proposed in the absence of specific comments. EPA continues to believe that combustion of these wastes could pose risks from air emissions at particular facilities. The Agency, however, is unable to resolve these concerns at this time. Since any problem is likely to be site-specific, EPA believes, given our current limitations, that the best way to evaluate and control potential problems with objectionable air emissions from burning brominated wastes is a permit-by-permit approach through the use of the omnibus permit authority in section 3005(c)(3).

(B) Aromatics and Other Hydrocarbons. The only comments received dealt with fuel substitution as an alternate treatment method for those wastes in this group which are not amenable to quantification.

(C) Oxygenated Organics. In the proposed rule, the Agency solicited comments on three sets of issues involving analytical methods: (1) Difficulties the regulated community may have experienced analyzing U031, n-butanol; U112, ethyl acetate; and U117, ethyl ether using methods the Agency only recently authorized; (2) analytical data characterizing attempts to quantify P003, acrolein, since the Agency questioned the acrolein data generated in the fourteen EPA test burns; and (3) data characterizing attempts to quantify methanol in waste matrices, particularly with SW-346 methods. (See 54 FR 48413, November 22, 1989.)

The Agency received no substantive information in response to these requests. Although one commenter submitted analytical data showing that the commenter's system had treated U154, in the commenter's waste stream to low levels, this data could not support a numerical standard for methanol because the commenter's data did not describe the treatment system or the influent waste stream in enough detail to assure the Agency that this system could successfully treat the wide variety of U154 wastes the regulated community must manage. More importantly, the commenter's data did not address the analytical difficulties encountered in quantifying methanol.

Another commenter challenged the Agency's decision to set a treatment method as a standard for U154 rather than to transfer the Solvents Rule methanol number, promulgated in November 1986, to U154. EPA believes that the analytical difficulties associated

with quantifying methanol in U and P matrices are significantly more severe than those associated with quantifying methanol in a TCLP extract, as is the basis of the F001-F005 Solvents Rule methanol standards. Therefore, EPA chose incineration and oxidation as methods for methanol in U and P wastes to ensure methanol destruction. Parenthetically, EPA notes that 53 FR 31164 (August 17, 1988) explains how EPA developed the Solvents Rule F001-F005 standards.

(D) Organo-Nitrogen Compounds. In designating incineration as Best Demonstrated Available Technology for organonitrogen wastes, EPA considered defining "BDAT incineration" for organonitrogens as including process controls to minimize NO_x emissions.

The proposed rule solicited comment on several air-emission-related technical problems and regulatory issues anticipated to complicate the incineration of organonitrogen wastes (see 54 FR 48417, November 22, 1989). The issues all arise from the corrosive behavior of oxidized nitrogen compounds. EPA specifically solicited comments on three aspects of incinerating organonitrogen wastes: (1) Information on incinerator feed stream concentrations of nitrogen demonstrated to have been successfully incinerated; (2) information on incinerator design and operation—especially air pollution control devices—believed to meet the requirements of the Clean Air Act under Sections 108, 110 and 111 and under the Prevention of Significant Deterioration program's New Source Review; and (3) comments on whether to invoke the omnibus permitting requirements of RCRA (final sentence of section 3005) for units burning these wastes, or alternatively, to prohibit burning these wastes in combustion units without appropriate air pollution controls.

Several commenters urged the Agency to leave responsibility for air quality at hazardous waste treatment facilities to the RCRA permitting process under 40 CFR parts 264 and 270 and consequently not to include air emission controls in the land disposal restriction regulations as part of the definition of the treatment system. EPA received limited data characterizing NO_x generation at several RCRA-permitting test burns incinerating several organonitrogen wastes plus a narrative description of emissions control systems at one of these incinerators. These data showed low NO_x emissions. However, this information was not detailed enough in terms of specifying process design and operation parameter values for the Agency to use in defining BDAT as

incineration plus specified emissions controls for all facilities disposing of organonitrogen wastes.

The RCRA permitting procedure requires Regional or State approval of the entire incinerator system, including process feed as well as air emission control units. Additionally, NO_x emissions are specifically limited under the Clean Air Act stationary source permit requirements. Since both these permits are issued on an individual facility basis, allowing individualized process controls, and since EPA lacks adequate data to dictate realistic NO_x control system design, EPA agrees with the commenters and chooses not to mandate air emission controls for organonitrogen incineration systems. A permit-by-permit determination under the RCRA omnibus authority may be the most appropriate mechanism for providing air emission controls for facilities burning these wastes. (These points by and large apply to proper controls on burning brominated and sulfur-rich wastes as well, and were discussed earlier in this section.) EPA intends to provide guidance to permit writers with respect to facilities burning these wastes.

(E) Organosulfur Wastes. The Agency is promulgating treatment methods as standards for all eighteen organosulfur waste codes as proposed: incineration for organosulfur nonwastewaters, and incineration alone or wet air/chemical oxidation followed by carbon adsorption for organosulfur wastewaters.

Just as for NO_x emission with the Organonitrogens category, EPA considered defining "BDAT incineration" for organosulfur as including process controls to minimize SO_x emissions. The proposed rule solicited comment on several potential technical problems and regulatory issues anticipated to complicate the incineration of organosulfur wastes (see 54 FR 48417, November 22, 1989). The issues all arise from the corrosive behavior of oxidized sulfur compounds, some of which are regulated under the

Clean Air Act as well as the noxious odors of many of these organic sulfur compounds. EPA specifically solicited comments on three aspects of incinerating organosulfur wastes: (1) Information on incinerator feed stream concentrations of sulfur demonstrated to have been successfully incinerated; (2) information on incinerator design and operation—especially air pollution control devices—believed to meet the requirements of the Clean Air Act under Section 108, 110 and 111 and under the Prevention of Significant Deterioration program's New Source Review, and (3) comments on whether to invoke the omnibus permitting requirements of RCRA (final sentence of section 3005) for units burning these wastes, or alternatively, to prohibit burning these wastes in combustion units without appropriate air pollution controls.

As was the case with questions raised in the proposed rule about incineration of organonitrogen wastes and NO_x emissions, several commenters urged the Agency to leave responsibility for air quality at hazardous waste treatment facilities to the RCRA permitting process under 40 CFR parts 264 and 270 and consequently not to include air emission controls in the land disposal restriction regulations as part of the definition of the treatment system. EPA received no data whatsoever characterizing SO_x emissions or emission control systems.

The RCRA permitting procedure required Regional or State approval of the entire incinerator system, including process feed as well as air emission control units. Additionally SO_x emissions are specifically limited by Clean Air Act stationary source permit requirements. Since both these permits are issued on an individual facility basis, allowing individualized process controls, and since EPA lacks adequate data to dictate realistic SO_x control system design in this rule, EPA agrees with these commenters and chooses not to mandate air emission controls for organosulfur incineration systems. At this time, EPA believes that permit-by-permit determinations under the RCRA

omnibus authority are most appropriate for units that may burn these wastes. EPA intends to provide guidance to permit writers with respect to facilities burning these wastes.

EPA proposes treatment technologies as standards for all eighteen of the organosulfur wastes, partly because of the difficulties in analyzing these wastes. One commenter submitted a package of data characterizing both chemical oxidation treatment, namely chlorine dioxide, as well as an analytical method for organosulfur wastes. However, EPA cannot develop numerical treatment standards based on this data because the method does not quantify the individual U and P organosulfur compounds nor does it differentiate regulated from unregulated organosulfur compounds; the commenter's analytical method gives a "total organic sulfur" number which EPA cannot use to develop standards because it gives no indication how much comes from U and P organosulfur wastes in a mixture and how much of this "total organic sulfur" number comes from nontoxic and unregulated organosulfur compounds in the waste stream. Furthermore, the commenter's suggested method, chemical oxidation, is already the treatment method mandated as a standard for organosulfur wastewaters.

(F) Miscellaneous Organic Halogenated Wastes. As it did for Organonitrogen Wastes and Organosulfur Wastes, EPA requested comments on the need for controlling sulfur dioxide emissions in the course of incinerating P026, P118, U020 and U062. As discussed in the section on organosulfur wastes, EPA received no substantive comments on emission controls used in incinerating organosulfur compounds. Although EPA is not building specifying emission control systems into its definition of BDAT for these wastes, EPA intends that the issues of air emissions will be dealt with on a permit-by-permit basis through the section 3005(c)(3) omnibus permits authority.

CHANGES IN CONCENTRATION-BASED STANDARDS FOR U, P, AND F039 NONWASTEWATERS

Code	Constituent	Revised (mg/kg)	Proposed (mg/kg)
P047	4,6-Dinitro-o-cresol	160	140
P048	2,4-Dinitrophenol	160	140
P060	Isodrin	0.068	0.010
U002	Acetone	160	0.14
U004	Acetophenone	9.7	9.6
U005	2-Acetylamino fluorene	140	13
U009	Acrylonitrile	84	0.28
U018	Benz (a) anthracene	8.2	3.6
U022	Benzo (a) pyrene	8.2	3.6
U043	Vinyl chloride	33	0.035

CHANGES IN CONCENTRATION-BASED STANDARDS FOR U, P, AND F039 NONWASTEWATERS—Continued

Code	Constituent	Revised (mg/kg)	Proposed (mg/kg)
U044	Chloroform	5.5	6.2
U045	Chloromethane	33	5.6
U050	Chrysene	8.2	3.6
U051	Naphthalene	3.1	1.5
U051	Pentachlorophenol	7.4	7.4
U051	Phenanthrene	3.1	1.5
U051	Pyrene	8.2	1.5
U051	Xylenes (total)	28	33
U063	Dibenz (a,h) anthracene	8.2	13
U075	Dichlorodifluoromethane	7.2	10
U076	1,1-Dichloroethane	7.2	6.2
U077	1,2-Dichloroethane	7.2	6.2
U078	1,1-Dichloroethylene	33	6.2
U079	trans-1,2-Dichloroethylene	33	6.2
U080	Methylene chloride	33	31
U083	1,2-Dichloropropane	18	15
U084	cis-1,3-Dichloropropene	18	15
U084	trans-1,3-Dichloropropene	18	15
U108	1,4-Dioxane	170	280
U112	Ethyl acetate	33	5.6
U117	Ethyl ether	180	140
U120	Fluoranthene	8.2	3.6
U131	Hexachloroethane	23	30
U137	Indeno (1,2,3-c,d)pyrene	8.2	3.6
U142	Kapone	0.13	0.043
U155	Metapyrine	1.5	0.33
U157	3-Methylcholanthrene	15	33
U158	4,4'-Methylenecis (2-chloroaniline)	35	29
U159	Methyl ethyl ketone	36	200
U165	Napthalene	3.1	5.9
U170	4-Nitrophenol	29	65
U172	N-Nitroso-di-n-butylamine	17	54
U179	N-Nitroso-piperidine	35	220
U180	N-Nitroso-pyrrolidine	35	220
U181	5-Nitro-o-toluidine	26	53
U208	1,1,1,2-Tetrachloroethane	42	6.2
U209	1,1,2,2-Tetrachloroethane	42	6.2
U210	Tetrachloroethylene	5.6	6.2
U211	Carbon tetrachloride	5.6	6.2
U226	1,1,1-Trichloroethane	5.6	6.2
U227	1,1,2-Trichloroethane	5.6	6.2
U239	Xylenes (total)	28	33
U243	Hexachloropropene	23	37
F039	Disulfoton	6.2	0.1
F039	Famphur	15	0.1
F039	Methyl parathion	4.6	0.1
F039	Parathion	4.6	0.1
F039	Phorate	4.6	0.1
F039	Acenaphthene	4.0	9.1
F039	Anthracene	4.0	7.7
F039	Benzo (ghi) perylene	1.5	1.8
F039	Bromodichloromethane	15	16
F039	Butyl benzyl phthalate	7.9	15
F039	Chlorodibromomethane	15	16
F039	Fluorene	4.0	7.7
F039	Sivex (2,4,5-TP)	7.9	2.1
F039	2,4,5-T	7.9	2.1
F039	Cyanides (total)	1.8	1.5
F039	Arsenic	5.6	
F039	Barium	52	100
F039	Chromium	5.2	5.0
F039	Mercury	0.025	0.2
F039	Selenium	5.7	5.6

Note: The constituents regulated in U or P waste codes are also regulated in F039 nonwastewaters.

CHANGES FROM CONCENTRATION-BASED STANDARDS TO TECHNOLOGY-BASED STANDARDS FOR U AND P NON-WASTEWATERS

Constituent	Revised for codes:
Acetonitrile	U003
Acrocin	P003

CHANGES FROM CONCENTRATION-BASED STANDARDS TO TECHNOLOGY-BASED STANDARDS FOR U AND P NON-WASTEWATERS—Continued

Constituent	Revised for codes:
Benzal chloride	U017
1,4-Dichloro-2-butene (cis and trans)	U074

CHANGES FROM CONCENTRATION-BASED STANDARDS TO TECHNOLOGY-BASED STANDARDS FOR U AND P NON-WASTEWATERS—Continued

Constituent	Revised for codes:
p-Benzquinone	U197
Chlorobenzilate	U038

CHANGES FROM CONCENTRATION-BASED STANDARDS TO TECHNOLOGY-BASED STANDARDS FOR U AND P NON-WASTEWATERS—Continued

Constituent	Revised for codes:
Cyclohexanone.....	U057
3,3'-Dichlorobenzidine.....	U073
p-Dimethylaminoazobenzene.....	U093
Hexachlorophene.....	U132
1,4-Naphthoquinone.....	U166
1-Naphthylamine.....	U167
2-Naphthylamine.....	U168
N-Nitrosodimethylamine.....	U052
Pentachloroethane.....	U184
Resorcinol.....	U231

Constituents for which concentration-based standards have been dropped for F039 nonwastewaters

Acetonitrile.....	
Acrolein.....	
Acrylamide.....	
2-Chloro-1,3-butadiene.....	
1,4-Dichloro-2-butene.....	
Aramite.....	
Benzenethiol.....	
p-Benzoquinone.....	
Benzal chloride.....	
Chlorobenzilate.....	
Cyclohexanone.....	
Dibenzo (a,e) pyrene.....	
Dibenzo (a,i) pyrene.....	
3,3'-Dichlorobenzidine.....	
p-Dimethylaminoazobenzene.....	
Hexachlorophene.....	
1,4-Naphthoquinone.....	
1-Naphthylamine.....	
2-Naphthylamine.....	
N-Nitrosodimethylamine.....	
Pentachloroethane.....	
Phthalic anhydride.....	
Resorcinol.....	
4-Aminobiphenyl.....	
Diphenylamine.....	
Diphenylnitrosamine.....	
Methanol.....	
Cyanides (amenable).....	
Thallium.....	
Tris-(2,3-dibromopropyl phosphate).....	

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P NON-WASTEWATERS

Waste code	Regulated organic constituents	Total composition (mg/kg)
U002.....	Acetone.....	160
U004.....	Acetophenone.....	9.7
U005.....	2-Acetylaminofluorene.....	140
U009.....	Acrylonitrile.....	84
U012.....	Aniline.....	14
U018.....	Benz(a)anthracene.....	8.2
U019.....	Benzene.....	36
U022.....	Benzo(a)pyrene.....	8.2
U024.....	bis-(2-Chloroethoxy) methane.....	7.2
U025.....	bis-(2-Chloroethyl) ether.....	7.2
U027.....	bis-(2-Chloroisopropyl) ether.....	7.2
U029.....	Bromomethane.....	15

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P NON-WASTEWATERS—Continued

Waste code	Regulated organic constituents	Total composition (mg/kg)
U030.....	4-Sromophenyl phenyl ether.....	15
U031.....	n-Butyl alcohol.....	2.6
U036.....	Chlordane, alpha and beta.....	0.13
U037.....	Chlorobenzene.....	5.7
U039.....	p-Chloro-m-cresol.....	14
U043.....	Vinyl chloride.....	33
U044.....	Chloroform.....	5.5
U045.....	Chloromethane (methyl chloride).....	33
U047.....	2-Chloronaphthalene.....	5.6
U048.....	2-Chlorophenol.....	5.7
U050.....	Chrysene.....	8.2
U051.....	Lead (measured in mg/l in TCLP extract).....	0.51
U051.....	Naphthalene.....	3.1
U051.....	Pentachlorophenol.....	7.4
U051.....	Phenanthrene.....	3.1
U051.....	Pyrene.....	8.2
U051.....	Toluene.....	28
U051.....	Xylenes.....	28
U052.....	o-Cresol.....	5.6
U052.....	Cresol (m- and p-isomers).....	3.2
U060.....	o,p'-DDD.....	0.087
U060.....	p,p'-DDD.....	0.087
U061.....	o,p'-DDD.....	0.087
U061.....	p,p'-DDD.....	0.087
U061.....	o,p'-DDE.....	0.087
U061.....	p,p'-DDE.....	0.087
U061.....	o,p'-DDT.....	0.087
U061.....	p,p'-DDT.....	0.087
U063.....	Dibenzo(a,h)anthracene.....	8.2
U066.....	1,2-Dibromo-3-chloropropane.....	15
U067.....	1,2-Dibromoethane.....	15
U068.....	Dibromomethane.....	15
U070.....	o-Dichlorobenzene.....	6.2
U071.....	m-Dichlorobenzene.....	6.2
U072.....	p-Dichlorobenzene.....	6.2
U075.....	Dichlorodifluoromethane.....	7.2
U076.....	1,1-Dichloroethane.....	7.2
U077.....	1,2-Dichloroethane.....	7.2
U078.....	1,1-Dichloroethylene.....	33
U079.....	trans-1,2-Dichloroethene.....	33
U080.....	Methylene chloride.....	33
U081.....	2,4-Dichlorophenol.....	14
U082.....	2,6-Dichlorophenol.....	14
U083.....	1,2-Dichloropropane.....	18
U084.....	cis-1,3-Dichloropropene.....	18
U084.....	trans-1,3-Dichloropropene.....	18
U101.....	2,4-Dimethyl phenol.....	14
U105.....	2,4-Dinitrotoluene.....	140
U106.....	2,6-Dinitrotoluene.....	28
U108.....	1,4-Dioxane.....	170
U111.....	Di-n-propylnitrosamine.....	14
U112.....	Ethyl acetate.....	33
U117.....	Ethyl ether.....	160
U118.....	Ethyl methacrylate.....	160
U120.....	Fluoranthene.....	8.2
U121.....	Trichloromono-fluoromethane.....	33
U127.....	Hexachlorobenzene.....	37
U128.....	Hexachlorobutadiene.....	28
U129.....	alpha-BHC.....	0.066
U129.....	beta-BHC.....	0.066
U129.....	delta-BHC.....	0.066
U129.....	gamma-BHC.....	0.066
U130.....	Hexachlorocyclopentadiene.....	4.8
U131.....	Hexachloroethane.....	28

CONCENTRATION-BASED BDAT TREATMENT STANDARDS FOR U AND P NON-WASTEWATERS—Continued

Waste code	Regulated organic constituents	Total composition (mg/kg)
U137.....	Indeno(1,2,3-c,d)pyrene.....	8.2
U138.....	Iodomethane.....	65
U140.....	Isobutyl alcohol.....	170
U141.....	Isosafrole.....	2.6
U142.....	Kepon.....	0.13
U152.....	Methacrylonitrile.....	84
U155.....	Methacrylene.....	1.5
U157.....	3-Methylchloanthrene.....	15
U158.....	4,4'-Methylene-bis-(2-chloroaniline).....	35
U159.....	Methyl ethyl ketone.....	35
U161.....	Methyl isobutyl ketone.....	33
U162.....	Methyl methacrylate.....	160
U165.....	Naphthalene.....	3.1
U169.....	Nitrobenzene.....	14
U170.....	4-Nitrophenol.....	29
U172.....	N-Nitroso-di-n-butylamine.....	17
U174.....	N-Nitrosodiethylamine.....	28
U179.....	N-Nitrosopiperidine.....	35
U180.....	N-Nitrosopyrrolidine.....	35
U181.....	5-Nitro-o-toluidine.....	28
U183.....	Pentachlorobenzene.....	37
U185.....	Pentachloronitrobenzene.....	4.8
U187.....	Phenacetin.....	16
U188.....	Phenol.....	6.2
U192.....	Pronamide.....	1.5
U196.....	Pyridine.....	16
U203.....	Safrole.....	22
U207.....	1,2,4,5-Tetrachlorobenzene.....	19
U208.....	1,1,1,2-Tetrachloroethane.....	42
U209.....	1,1,2,2-Tetrachloroethane.....	42
U210.....	Tetrachloroethene.....	5.6
U211.....	Carbon tetrachloride.....	5.6
U220.....	Toluene.....	28
U225.....	Tribromomethane (bromofom).....	15
U226.....	1,1,1-Trichloroethane.....	5.6
U227.....	1,1,2-Trichloroethane.....	5.6
U228.....	Trichloroethene.....	5.6
U239.....	Xylene(s).....	28
U240.....	2,4-Dichlorophenoxyacetic acid.....	10
U243.....	Hexachloropropene.....	28
U247.....	Methoxychlor.....	0.18
P004.....	Aldrin.....	0.066
P020.....	2-sec-Butyl-4,6-dinitrophenol.....	2.5
P024.....	p-Chloroaniline.....	16
P037.....	Dieldrin.....	0.13
P047.....	4,6-Dinitro-o-cresol.....	160
P048.....	2,4-Dinitrophenol.....	160
P050.....	Endosulfan I.....	0.066
P050.....	Endosulfan II.....	0.13
P050.....	Endosulfan sulfate.....	0.13
P051.....	Endrin.....	0.13
P051.....	Endrin aldehyde.....	0.13
P059.....	Heptachlor.....	0.066
P059.....	Heptachlor epoxide.....	0.066
P060.....	Isodrin.....	0.066
P077.....	p-Nitroaniline.....	28
P101.....	Ethyl cyanide.....	360
P123.....	Toxaphene.....	1.3

b. Technology-based Standards for Specific Organics

As explained in section III.A.1.(h)(2) of the proposed rule (54 FR 48387), the Agency has determined that for many U and P wastes, as well as for some F and K wastes, several complications arise in terms of how reliably the primary hazardous constituents can be quantified. These complications formed the basis of the Agency's decision to promulgate technology-based BDAT treatment standards (i.e., a method (or methods) of treatment) rather than concentration-based constituent specific standards for these wastes.

The proposed rule set methods of treatment as standards for a significant fraction of Third Third U and P wastes. In the course of evaluating information received since the publication of the proposed rule, information coming both from comments about the proposed rule and from internal EPA studies and reviews, EPA is promulgating methods of treatment as the final treatment standard for U and P wastes for which EPA has proposed concentration-based standards. The reasons for this set of changes are discussed in section III.A.5.(a). Since the standards had originally been proposed as concentration-based standards, the section on nonwastewaters with concentration-based standards is the appropriate place to discuss these.

In developing treatment standards for the proposed rule, EPA found that for any particular hazardous constituent, there are four categories of quantification complications: (1) There are no methods, such as one in SW-348, that are currently verified for the quantification of the constituent of interest in treatment residuals; (2) calibration reagents (i.e., standard solutions of known purity for validating compliance with QA/QC procedures) of that chemical are not currently available on the commercial market; (3) the chemical is unstable in water and immediately hydrolyses into a different entity (i.e., it reacts with water); and (4) the U or P waste is not specifically listed as a single chemical entity (e.g. PC30 is listed as "soluble cyanide salts, not otherwise specified"). Chemical specific complications were presented in the appropriate section of the proposed rule preamble that discussed the specific treatability group where the U or P chemical has been classified.

The information EPA received after the proposed rule did not invalidate this scheme for classifying analytical problems, but it did add compounds into the categories of "problem analytes" listed above which EPA had previously

considered amenable to quantification. The main reason is that incinerator ash is a more problematic matrix for quantification of organic analytes than EPA had realized; elemental carbon and silicon in ash absorb organic constituents and bind them onto the ash particle so that their true concentration cannot be determined by instrumental analyses.

The Agency is promulgating certain methods of treatment as the treatment standard for many U and P wastewaters and nonwastewaters. Generally, for U and P nonwastewaters, this process is relatively easy because incineration processes are relatively indiscriminate in the destruction of organics due to the high temperatures, efficient mixing, and consistent residence times available from a well-designed and well-operated incinerator. However, in the case of wastewater treatment technologies, there are more chemical specific factors to consider such as: water solubility, instability, molecular size, volatility, elemental composition, and polarity of the specific chemical that is to be treated. Other waste characteristics will also effect the efficiency of treatment such as: total organic carbon, oil and greases, total dissolved solids, total suspended solids, pH, and alkalinity/acidity.

(1) *Nonwastewaters.* The Agency is promulgating the proposed technology-based standards, namely, incineration as a method of treatment, for the organic U and P wastes determined to be unquantifiable as proposed. Additionally, for those unquantifiable U and P wastes containing only carbon, hydrogen or oxygen, EPA is promulgating fuel substitution as an alternative to incineration. In the previous section of the preamble, the Agency identified additional U and P wastes for which the proposed concentration-based standards have been changed to technology-based standards (i.e., incineration). The technology has not changed, but the number of wastes to be regulated with incineration, or fuel substitution where appropriate as a method has increased.

The Agency received numerous comments requesting that the methods proposed as the treatment standard include fuel substitution as a method of treatment. Commenters noted that many organic U and P wastes in the "not amenable to quantification category", such as cumene, have significant energy recovery value and are thus blended for fuel substitution. One commenter further stated that without this change in the standard, these wastes would require incineration at a much greater expense.

The commenter urged the Agency to allow fuel substitution for several particularly flammable waste streams which had been mixed with other wastes and comprised less than ten percent of the resulting mixture. The ten percent cutoff was intended to prevent the generation of acid combustion products.

The Agency agrees to allow fuel substitution as a treatment method for wastes not amenable to quantification which contain only carbon, hydrogen or oxygen in their molecular structure. In terms of the treatability groups identified in the proposed rule, this means fuel substitution is promulgated here as an alternative method for these groups: all "Aromatics and Other Hydrocarbons", all "Polynuclear Aromatics", all "Oxygenated Hydrocarbons and Heterocyclics" and those "Pharmaceutical" and "Phenolic" compounds which do not contain molecular constituents other than carbon, hydrogen or oxygen.

The Agency notes that this final rule sets fuel substitution as an alternative method for a larger set of wastes than did the proposed rule; fuel substitution was proposed as an alternative to incineration for "Oxygenated Hydrocarbons and Heterocyclics" alone. Additionally, several wastes in these treatability groups have been added to the category of wastes not amenable to quantification since the proposed rule and thus fuel substitution and incineration is being promulgated as a standard for these wastes for which the Agency had proposed concentration-based standards. These wastes are: U057, cyclohexanone; U168, 1,4-naphthoquinone; U197, p-benzoquinone; and U201, resorcinol.

In other words, EPA bans fuel substitution as an alternative to incineration for all unquantifiable U and P wastes which contain halogens, sulfur or nitrogen. Eliminating these wastes removes the potential for unregulated SO_x, NO_x or halogen emissions from boilers or other thermal combustion facilities not yet regulated as types of treatment units under 40 CFR 264. EPA believes that wastes without halogens, sulfur or nitrogen can be treated by fuel substitution as well as by incineration because the aromatic and aliphatic (both saturated and unsaturated) components of these wastes are typically used as fuel because of their high heating value; and the oxygenated and phenolic components are already partially oxidized.

To summarize the promulgated rule for nonwastewater forms of U and P wastes not amenable to quantification:

EPA is promulgating "Incineration (INCIN) as the Method of Treatment" for those organic U and P wastes containing nitrogen, phosphorous, sulfur, chlorine, bromine or fluorine in their molecular structure and "Incineration (INCIN) or Fuel Substitution (FSUBS) as a Method of Treatment" for those organic U and P wastes containing only carbon, hydrogen and oxygen in their molecular structure. See 40 CFR 268.42 Table 1 for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

Incineration as a method of treatment for nonwastewater forms of:

P002—1-Acetyl 2-thiourea
P007—Muscimol (5-Aminoethyl 3-isoxazolol)
P008—4-Aminopyridine
P014—Benzene thiol (Thiophenol)
P016—Bis-chloromethyl ether
P017—Bromoacetone
P018—Brucine
P022—Carbon disulfide
P023—Chloroacetaldehyde
P026—1-(o-Chlorophenyl) thiourea
P027—3-Chloropropionitrile
P028—Benzyl chloride
P034—2-cyclohexyl-4,6-dinitrophenol
P042—Epinephrine
P045—Thiofanox
P046—alpha, alpha-Dimethylphenethylamine
P047—4,6-dinitrocresol salts
P049—2,4-Dithiobiuret
P054—Aziridine
P057—2-Fluoroacetamide
P058—Fluoroacetic acid, sodium salt
P064—Isocyanic acid, ethyl ester
P066—Methomyl
P067—2-Methylaziridine
P069—Methylthionitrile
P070—Aldicarb
P072—1-Naphthyl-2-thiourea (Bantu)
P075—Nicotine and salts
P082—N-Nitrosodimethylamine
P084—N-Nitrosomethylvinylamine
P093—N-Phenylthiourea
P095—Phosgene
P108—Strychnine and salts
P116—Thiosemicarbazide
P118—Trichloromethanethiol
U003—Acetonitrile
U006—Acetyl Chloride
U007—Acrylamide
U010—Mitomycin C
U011—Amitrole
U014—Auramine
U015—Azaserine
U017—Benzal chloride
U020—Benzenesulfonyl Chloride
U021—Benzidine
U026—Chloronaphazine
U033—Carbonyl fluoride
U034—Trichloroacetaldehyde
U035—Chlorambucil
U038—Chlorobenzilate
U041—n-Chloro-2,3-epoxypropane
U042—2-Chloroethyl vinyl ether
U046—Chloromethyl methyl ether

Incineration as a method of treatment for nonwastewater forms of:

U049—4-chloro-o-toluidine hydrochloride
U059—Daunomycin
U062—Diallate
U073—3,3'-Dichlorobenzidine
U074—(cis)-1,4-Dichloro-2-butene
U074—(trans)-1,4-Dichloro-2-butene
U091—3,3-Dimethoxybenzidine
U092—Dimethylamine
U093—p-Methylaminoazobenzene
U095—3,3'-Dimethylbenzidine
U097—Dimethylcarbonyl chloride
U110—Dipropylamine
U114—Ethylene bis-dithiocarbamic acid
U116—Ethylene thiourea
U119—Ethyl methane sulfonate
U132—Hexachlorocyclopentadiene
U143—Lasiocarpine
U148—Maleic Hydrazide
U149—Malononitrile
U150—Melphalan
U153—Methanethiol
U156—Methyl chlorocarbonate
U163—N-Methyl N-nitro N-nitroguanidine
U164—Methylthiouracil
U167—1-Naphthylamine
U168—2-Naphthylamine
U171—2-Nitropropane
U173—N-Nitroso-di-n-ethanolamine
U176—N-Nitroso-N-ethylurea
U177—N-Nitroso-N-methylurea
U178—N-Nitroso-N-methylurethane
U184—Pentachloroethane
U191—2-Picoline
U193—1,3-Propylene sulfone
U194—n-Propylamine
U200—Reserpine
U202—Saccharin and salts
U206—Streptozotocin
U218—Thioacetamide
U219—Thiourea
U222—o-Toluidine hydrochloride
U234—sym-Tninitrobenzene
U236—Trypan Blue
U237—Uracil mustard
U238—Ethyl carbamate
U240—salts and esters of 2,4-D
U244—Thiram

Incineration or fuel substitution as methods of treatment for nonwastewater forms of:

P001—Warfarin (>0.3%)
P003—Acrolein
P005—Allyl alcohol
P088—Endothall
P102—Propargyl alcohol
U001—Acetaldehyde
U008—Acrylic acid
U016—Benz (c) acridine
U053—Crotonaldehyde
U055—Cumene (isopropyl benzene)
U056—Cyclohexane
U057—Cyclohexanone
U064—1,2,7,8-Dibenzopyrene
U085—1,2,3,4-Diepoxybutane
U089—Diethyl stilbestrol
U090—Dihydrosafrole
U094—7,12-Dimethyl benz (a) anthracene
U113—Ethyl acrylate
U122—Formaldehyde
U123—Formic acid

Incineration or fuel substitution as methods of treatment for nonwastewater forms of:

U124—Furan
U125—Furfural
U126—Glycidaldehyde
U147—Maleic anhydride
U154—Methanol
U166—1,4-Naphthoquinone
U182—Paraaldehyde
U186—1,3-Pentadiene
U197—p-Benzquinone
U201—Resorcinol
U213—Tetrahydrofuran
U248—Warfarin (<0.3%)

(2) *Wastewaters.* EPA has typically proposed two alternative methods of treatment as the treatment standard for these U and P wastewater treatability groups. In all cases, the Agency believes that incineration, while not always practical for wastewaters, will provide an efficient destruction of these organic U and P constituents in wastewaters. While the Agency does not want to identify incineration as the primary BDAT treatment technology for these wastewaters, it also does not want to preclude its use. In addition, the Agency does not want to process needless variances for a technology that is recognized to be effective. Therefore, in all cases, "Incineration as a Method of Treatment" is promulgated as one of the alternative treatment standards for wastewater forms of these organic U and P wastes.

However, other oxidation-based treatment technologies are more appropriate than incineration for aqueous waste streams and EPA is promulgating several treatment systems based on oxidation followed by carbon absorption as methods for these wastewaters. The wastewater treatment technology that most closely resembles incineration is wet air oxidation. It is specifically designed to destroy organics in wastewaters and efficiently oxidizes organics in aqueous media by operating at relatively high temperatures and high pressures. Furthermore, wet air oxidation is typically performed on wastewaters that contain relatively high concentrations of organics (i.e., those that are at or near the 1% TOC cut-off for wastewaters). For wastewaters that contain significantly lower concentrations of organics, chemical oxidation typically provides the necessary destruction of organics to levels that can then be adsorbed onto activated carbon (as a mandatory

polishing step). Electrolytic oxidation is also included under chemical oxidation because the process actually performs a form of chemical oxidation induced by electricity and because the Agency has data indicating its effectiveness in destroying cyanides and other organic species with complex bonds.

Since these technologies are known to provide effective treatment for constituents that can be analyzed, the Agency is therefore promulgating oxidation methods followed by carbon adsorption as alternative treatment technologies for most of the organic U and P constituents that requires specified methods of treatment.

None of these technologies have been specifically identified as better than the others due to the current lack of data for those constituents that are difficult to analyze, or for any other surrogate/indicator parameters. However, the Agency is currently investigating the potential use of surrogates/indicators that could be used in future rulemakings to ensure complete destruction and to determine which technology performs best for these U and P constituents in wastewaters.

For quite a few of the organic and some inorganic U and P wastes that require specified methods of treatment, concentration-based treatment standards have not been promulgated because the compounds are relatively unstable in water. This instability implies that they should easily be destroyed with any chemical oxidant (and most probably at ambient temperature and air pressure).

Commenters requested that EPA allow biological treatment for all U and P wastewaters not regulated by numerical standards. EPA rejects the use of biological treatment for any of the U and P wastes which cannot be analytically quantified. Because influent concentrations of these compounds cannot be measured, the treatment unit operators cannot control the levels of these compounds reaching the working organisms in the biological treatment unit, or document that the wastes are effectively biodegraded. The risk of sending unmeasurable quantities of these wastes to a biological treatment unit includes the possibility of shock loads that would disable the plant's working organisms, and allowing these wastes to exit untreated in the effluent until the biological treatment system could be restored to working order.

Even the presence of an activated carbon unit downstream from the biological treatment unit, an option EPA had proposed, might not prevent high concentrations of the shock load components from passing through the

entire treatment system with essentially no treatment. A shock load high enough in organic components could push the activated carbon unit to breakthrough, sending the shock load components untreated to land disposal.

Consequently, EPA is precluding the use of biological treatment as a sole mechanism to achieve compliance with BDAT. Biotreatment that is performed in units prior to the use of a BDAT technology or in otherwise exempted units is not precluded from use by these regulations.

Commenters suggested that EPA drop the requirement that activated carbon follow chemical/wet air oxidation or biological treatment. EPA believes that the promulgated treatment standard option of oxidation, electrolytic, chemical or wet-air, followed by activated carbon is superior to the commenters' suggestions because oxidation is more rugged than biotreatment; less easily disabled by a refractory influent stream and more easily restored to working order than a biological treatment unit. As discussed in the proposed rule, wet-air oxidation is most appropriate for those wastewaters near the wastewater cutoff level (i.e. 1% TOC), while chemical oxidation effectively treats those wastes with lower percentages of TOC. EPA's decision to require activated carbon following the oxidation step ensures a backup system to compensate for the uncertainty about final effluent concentrations of these U and P wastes inherent in any process treating unquantifiable wastes. Most importantly, however, since spent activated carbon from treating these wastewaters becomes a nonwastewater form of these wastes (54 FR 48384), and thus must be incinerated according to the promulgated nonwastewater standard, requiring activated carbon treatment ensures that both wastewater and nonwastewater forms of these wastes go to incineration, a method demonstrated to successfully treat a wide variety of organic wastes.

EPA's response to commenters stating that requiring both oxidation and carbon absorption for these U and P wastewaters puts an arbitrary and heavy burden on those generators who had been using biological treatment alone or other simple methods of pre-disposal treatment is that the volume of these wastes generated is small enough that arranging for the promulgated treatment process does not pose an undue burden. Furthermore, some of these wastes are sufficiently refractory that the oxidation-carbon adsorption sequence is necessary to ensure consistent and complete treatment.

In the proposed rule, EPA also solicited data demonstrating the feasibility of regulating TOC or COD (chemical oxygen demand) as a surrogate for these U and P wastewaters. By setting a concentration-based limit on the TOC or COD level of a waste to be land-disposed, EPA would necessarily limit the concentration of organic toxic materials in that waste. Commenters objected to this proposed practice as unrealistic. No information was submitted demonstrating that TOC or COD could be reliable surrogates for these unquantifiable organic compounds. Consequently, EPA is not promulgating the use of TOC or COD as surrogates.

One commenter objected to the method-based standard requiring activated carbon following biological treatment; the commenter reported that his plant routinely sent pharmaceutical wastes to the facility's in-plant industrial waste treatment plant and stated that the activated-carbon requirement was superfluous. EPA has removed the biological-treatment option for wastewater forms of wastes not amenable to quantification and explains this decision, including the requirement that the spent activated carbon be incinerated, in the section III.a.5.a.(3).

For wastewater forms of organic U and P wastes not amenable to quantification: EPA is promulgating "Incineration (INCIN) as the Method of Treatment" or, alternatively, "Chemical oxidation (CHOXD) or wet-air oxidation (WETOX) followed by carbon adsorption (CARBN)." See 40 CFR 268.42 Table 1 for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

(Wet air oxidation or chemical oxidation), followed by carbon adsorption; or incineration as methods of treatment for wastewater forms of:

- P001—Warfarin (>0.3%)
- P002—1-Acetyl 2-thiourea
- P003—Acrolein
- P005—Allyl alcohol
- P007—Muscimol (5-Aminoethyl 3-isoxazolol)
- P008—4-Aminopyridine
- P014—Benzene thiol (Thiophenol)
- P016—Bis-chloromethyl ether
- P017—Bromoacetone
- P018—Brucine

(Wet air oxidation or chemical oxidation), followed by carbon adsorption; or incineration as methods of treatment for wastewater forms of:

P023—Chloroacetaldehyde
 P026—1-(o-Chlorophenyl) thiourea
 P027—3-Chloropropionitrile
 P028—Benzyl chloride
 P034—2-cyclohexyl-4,6-dinitrophenol
 PC42—Epinephrine
 P045—Thiofanox
 P046—alpha, alpha-Dimethylphenethylamine
 P047—4,6-dinitroresol salts
 P049—2,4-Dithioburet
 P054—Aziridine
 P057—2-Fluoroacetamide
 P058—Fluoroacetic acid, sodium salt
 P064—Isocyanic acid, ethyl ester
 P066—Methomyl
 P067—2-Methylaziridine
 P069—Methylactonitrile
 P070—Aldicarb
 P072—1-Naphthyl-2-thiourea (Santol)
 P075—Nicotine and salts
 PC84—N-Nitrosomethylvinylamine
 P088—Endothal
 P093—N-Phenylthiourea
 P095—Phosgene
 P102—Propargyl alcohol
 P108—Strychnine and salts
 P116—Thiosemicarbazide
 P118—Trichloromethanethiol
 U001—Acetaldehyde
 U006—Acetyl Chloride
 U007—Acrylamide
 U008—Acrylic acid
 U010—Mitomycin C
 U011—Amitrole
 U014—Auramine
 U015—Azaserine
 U016—Benz(c)acridine
 U017—Benzal chloride
 U020—Benzenesulfonyl chloride
 U021—Benzidine
 U026—Chlorosaphazine
 U033—Carbonyl fluoride
 U034—Trichloroacetaldehyde
 U035—Chlorambucil
 U041—n-Chloro-2,3-epoxypropane
 U042—2-Chloroethyl vinyl ether
 U046—Chloromethyl methyl ether
 U049—4-Chloro-o-toluidine hydrochloride
 U053—Crotonaldehyde
 U055—Cumene (isopropyl benzene)
 U058—Cyclohexane
 U059—Daunomycin
 U062—Diallate
 U064—1,2,7,8-Dibenzopyrene
 U073—3,3'-Dichlorobenzidine
 U074—1,4-Dichloro-2-butene
 U085—1,2,3,4-Drepoxybutane
 U089—Diethyl stilbestrol
 U090—Dihydrosafrole
 U091—3,3-Dimethoxybenzidine
 U092—Dimethylamine
 U094—7,12-Dimethyl benz(a)anthracene
 U095—3,3'-Dimethylbenzidine
 U097—Dimethylcarbamyl chloride
 U110—Dipropylamine
 U113—Ethyl acrylate
 U114—Ethylene bis-dithiocarbamic acid
 U116—Ethylene thiourea

(Wet air oxidation or chemical oxidation), followed by carbon adsorption; or incineration as methods of treatment for wastewater forms of:

U119—Ethyl methane sulfonate
 U122—Formaldehyde
 U123—Formic acid
 U124—Furan
 U125—Furfural
 U126—Glycidialdehyde
 U132—Hexachlorophenene
 U143—Lasiocarpine
 U147—Maleic anhydride
 U148—Maleic Hydrazide
 U149—Malononitrile
 U150—Melfalan
 U153—Methane thiol
 U154—Methanol
 U156—Methyl chlorocarbonate
 U163—N-Methyl N-nitro N-nitroguanidine
 U164—Methylthiouracil
 U166—1,4-Nepthoquinone
 U167—1-Naphthylamine
 U171—2-Nitropropane
 U173—N-Nitroso-di-n-ethanolamine
 U176—N-Nitroso-N-ethylurea
 U177—N-Nitroso-N-methylurea
 U178—N-Nitroso-N-methylurethane
 U182—Paraldehyde
 U184—Pentachloroethane
 U186—1,3-Pentadiene
 U184—Pentachloroethane
 U191—2-Picoline
 U193—1,3-Propane sulfone
 U194—n-Propylamine
 U197—p-Benzoquinone
 U200—Reserpine
 U201—Resorcinol
 U202—Saccharin and salts
 U206—Streptozotocin
 U213—Tetrahydrofuran
 U218—Thioacetamide
 U219—Thiourea
 U222—o-Toluidine hydrochloride
 U234—sym-Tri-nitrobenzene
 U236—Trypan Blue
 U237—Uracil mustard
 U238—Ethyl carbamate
 U240—salts and esters of 2,4-D
 U244—Thiram
 U248—Warfarin (<3%)

c. U and P Wastes That are Potentially Reactive

These wastes were grouped together because they are either highly reactive or explosive, or they are polymers that tend to be highly reactive. These wastes pose a significant risk during handling due to their reactivity; this is reflected in the fact that there are no standard SW-846 methods for analyzing reactivity. Because of the difficulties in handling and analyzing these wastes, the Agency is promulgating treatment standards expressed as required methods of treatment (thus eliminating the need to analyze treatment residues).

The Agency investigated several options for developing treatment standards for these wastes, including incineration, chemical oxidation and chemical reduction. Most of these wastes are currently managed by incineration. Other wastes included in this group can be recovered or recycled.

For the purpose of BDAT determinations, the Agency has identified four subcategories according to similarities in treatment, chemical composition, and structure. These groups are: (1) Incinerable Reactive Organics and Hydrazine Derivatives; (2) Incinerable Inorganics; (3) Fluorine Compounds; and, (4) Recoverable Metallics. The discussion of the treatment standards applicable to each subcategory are as follows.

(1) Incinerable Reactive Organics and Hydrazine Derivatives.

P009—Ammonium picrate
 P081—Nitroglycerin
 P112—Tetranitromethane
 U023—Benzotrichloride
 U096—a, a-Dimethyl benzyl hydroperoxide
 U103—Dimethyl sulfate
 U160—Methyl ethyl ketone peroxide
 P068—Methyl hydrazine
 P105—Sodium azide
 U088—N, N-Diethylhydrazine
 U098—1, 1-Dimethylhydrazine
 U099—1, 2-Dimethylhydrazine
 U109—1, 2-Diphenylhydrazine
 U133—Hydrazine

EPA has grouped these wastes into a treatability group together because they contain no metal constituents and have high inherent fuel values. Consequently, because of the similar characteristics, these wastes can be treated with the same technologies.

The Agency does not believe, however, that concentration-based treatment standards can be established for these wastes at this time. The major problems in establishing concentration-based standards for these wastes are: (1) EPA does not currently have an analytical method for measuring many of these wastes in treatment residues; and (2) where the Agency does have methods, there are no data available on the treatment of these chemicals. In cases when there is no verified analytical method for a particular waste, EPA tries to find an appropriate measurable surrogate or indicator compound; however, no constituent has been identified in these wastes that could be used as a surrogate or indicator compound. (See section III.A.1.h.(2) for a detailed discussion of analytical problems.)

One of the specific problems encountered in analysis of P068, P105, P112, U023, U098, U099, and U103 is that these wastes break down quickly in water (hydrolyze) and that the analysis of wastewater forms of these wastes is very difficult as well as often hazardous due to the intensity of the reaction. See further discussion on the impact of instability in water on the development of treatment standards in section

III.A.1.h.(2).(c) of today's notice. In addition, the Agency lacks data on what effects the hydrolysis products would have on the environment. Besides, verified analytical methods do not currently exist for the quantification of these hydrolysis products in treatment residues.

Another analytical problem is created because P081 wastes are only quantifiable by HPLC methods (Note: EPA rejects HPLC methods for waste treatment residual matrices for reasons discussed in section III.A.1.h.(2).(a).) In addition, there are no verified SW-846 analytical methods for measuring P009 and U133 in treatment residues.

These analytical problems preclude setting concentration-based treatment standards; consequently, the Agency proposed "Thermal Destruction" (e.g., incineration) as a required method of treatment for the nonwastewater forms of these U and P wastes (54 FR 43427). The Agency, however, reconsidered the treatment technologies applicable for treatment of wastes in this treatability group as a result of information in the comments.

EPA continues to believe that incineration is an applicable technology because data indicate that most of these wastes are currently incinerated by commercial, as well as military facilities. Additionally, since most these wastes have high Btu values, EPA also believes that these wastes (e.g., hydrazine is used in rocket fuel) are excellent candidates for fuel substitution. Nevertheless, the Agency has also determined that these wastes can be chemically deactivated using chemical oxidation and chemical reduction technologies.

Based on all the available information, the Agency is promulgating "Incineration (INCIN), Fuel Substitution (FSUBS), Chemical Oxidation (CHOXD), or Chemical Reduction (CHRED) as Methods of Treatment" for P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133 and U160 nonwastewaters. See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

The Agency proposed "Incineration or Carbon Adsorption" as required methods of treatment for the wastewater forms of this treatability group. During the comment period, EPA received information about the treatment capabilities of other technologies and reevaluated the

technologies applicable for treatment of wastewaters in this treatability group.

EPA still believes that incineration is applicable because it will destroy the constituents present in the wastewaters. Carbon adsorption is also applicable because wastewater forms of these wastes can easily be adsorbed due to the branched and ionic nature of their structures. (It should be noted that after adsorption (and before disposal) the contaminated carbon must be treated in compliance with the treatment standard for nonwastewaters.) However, data has also been provided that indicate that some of these wastewaters (i.e., P068) can be treated by ozone/ultraviolet light oxidation; hence, the Agency believes that chemical oxidation and chemical reduction to be applicable technologies for destruction of the constituents in these waste streams. EPA also has information indicating that biodegradation is capable of destroying the compounds in wastewater forms of this treatability group.

The Agency believes all the above mentioned applicable technologies are demonstrated and available hence, "best". Therefore, EPA is promulgating "Incineration (INCIN), Chemical Oxidation (CHOXD), Chemical Reduction (CHRED), Carbon Adsorption (CARBN), or Biodegradation (BIODG) as Methods of Treatment" for P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133 and U160 wastewaters. See section 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

Although there is an SW-846 method for U109, the Agency is not establishing a numerical standard for this waste since it is very similar to P068, U086, U098, U099, and U133 (all are hydrazine compounds) and it is the Agency's belief that the promulgated methods will provide effective treatment for this waste.

The Agency is unaware of any alternative treatment or recycling technologies that have been examined specifically for these U and P wastes and solicited data and comments on such technologies but received no response on this issue. In any case, the treatment standard does not preclude recycling (provided the recycling is not a use constituting disposal; see § 261.33, first sentence).

BDAT TREATMENT STANDARDS FOR P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, AND U160

(Nonwastewaters)

Incineration (INCIN), fuel substitution (FSUBS), chemical oxidation (CHOXD), or chemical reduction (CHRED) as methods of treatment *

* See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

BDAT TREATMENT STANDARDS FOR P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, AND U160

(Wastewaters)

Incineration (INCIN), chemical oxidation (CHOXD), chemical reduction (CHRED), carbon adsorption (CARBN), or biodegradation (BIODG) as methods of treatment *

* See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

(2) Incinerable Inorganics.

P006—Aluminum phosphide
P096—Phosphine
P122—Zinc phosphide (>10%)
U135—Hydrogen sulfide
U189—Phosphorus sulfide
U249—Zinc phosphide (<10%)

These wastes were grouped together because they consist of compounds containing only inorganics such as sulfur, nitrogen, phosphorous, and metals. Additionally, these compounds are either extremely toxic gases or can generate toxic gases under aqueous conditions. Treatment technologies for these wastes should include equipment to prevent releases of the toxic gases into the environment.

The Agency does not believe that numerical treatment standards can be established for these wastes at this time. The major problem in establishing concentration-based standards for these wastes is that EPA does not currently have an analytical method for measuring these wastes in treatment residues. For example, one of the specific problems encountered in analysis of P006 wastes is that they break down quickly in water (hydrolyze), making the analysis of wastewater forms of these wastes very difficult. In cases when there is no analytical method for a particular waste, EPA tries to find an appropriate measurable surrogate or indicator

compound; however, no constituent has been identified in these wastes that could be used as a surrogate or indicator compound for nonwastewaters. See section III.A.1.h.(2) for a detailed discussion of analytical problems.

Data available at the time of proposal indicated that these wastes were being incinerated by some commercial treatment facilities. Therefore, the Agency proposed a treatment standard of "Thermal Destruction" for the nonwastewater forms of these wastes. EPA has reevaluated the applicable technologies for wastes in this treatability group as a result of information submitted in the comments.

One commenter specifically requested that chemical oxidation be a method of treatment for phosphine gas (P096) and hydrogen sulfide gas (U135). This commenter said that both gases are flammable and toxic to inhalation and can be treated by controlled reaction with aqueous solutions of potassium permanganate. The commenter stated that this treatment allows the margin of safety that venting into an incinerator does not since both gases, when heated, emit highly toxic oxides, either sulfur or POX. The Agency agrees with the commenter that chemical oxidation and chemical reduction technologies are applicable for treatment of wastes in this treatability group.

The Agency continues to believe that incineration can be used to effectively and safely treat these wastes. However, because most of these wastes will contain high concentrations of sulfur and phosphorous when discarded as off-spec products, they will require as part of the treatment the use of air pollution control equipment capable of controlling the emissions of phosphorous and sulfur to acceptable levels (see the discussion of this issue as it relates to organo-nitrogens and organo-sulfur U and P wastes in section III.A.3.g.). EPA does not believe that fuel substitution is applicable for wastes in this treatability group because of the hazards associated with the toxic gases that can be generated.

Based on the information presented above, the Agency is promulgating "Incineration (INCIN), Chemical Oxidation (CHOXD), or Chemical Reduction (CHRED) as Methods of Treatment" for P006, P069, P122, U135, U189, and U249 nonwastewaters. See section 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

For wastewater forms of P006, P096, P122, U135, U189, and U249, the Agency

proposed a standard of "Chemical Oxidation Followed by Precipitation as Insoluble Salts". EPA has reconsidered the "insoluble salts" requirement and believes that because most of these P and U wastes are generated in small quantities it places a large burden on treatment facilities treating these wastes by incineration or chemical treatment to require use of chemicals that will precipitate a small portion of their total waste volume to insoluble salts when other chemicals may be more desirable for their specific treatment needs. EPA also believes that the individual facility discharge limits will control releases into the environment of any soluble compounds generated as a result of treating these compounds.

EPA has also reconsidered the technologies proposed as BDAT as a result of information submitted in the comments. One commenter submitted information indicating that incineration is the best treatment for these wastewaters. The Agency does not believe that treatment using technologies that usually require aeration steps such as biodegradation technologies are applicable because of the toxicity of the gases that could be formed during treatment. Additionally, carbon adsorption is not considered applicable technology for inorganic compounds that do not have branched molecular structures. The Agency believes that thermal and chemical destruction technologies such as incineration, chemical oxidation and chemical reduction provide safer and more effective treatment than either biodegradation or carbon adsorption.

The Agency is promulgating a standard of "Incineration (INCIN), Chemical Oxidation (CHOXD), or Chemical Reduction (CHRED) as Methods of Treatment" for P006, P096, P122, U135, U189, U249 wastewaters. See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

The Agency is currently unaware of any alternative treatment or recycling technologies that have been examined specifically for these wastes and solicited data and comments on these, but received no response on this issue. The final rule, in any case, does not preclude recycling (provided the recycling does not involve burning as fuel or is not a use constituting disposal: see § 261.33, first sentence).

BDAT TREATMENT STANDARDS FOR P006, P096, P122, U135, U189, AND U249

[Nonwastewaters and wastewaters]

Incineration (INCIN), chemical oxidation (CHOXD), or chemical reduction (CHRED) as a method of treatment *

* See section 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

(3) Fluorine Compounds.

P056—Fluorine

U134—Hydrofluoric Acid

These wastes were grouped together because of their physical form and because they contain fluorine. Both of these chemicals may be generated as gases (although U134 is often generated as an aqueous acid). Both of these chemicals are also highly reactive and highly corrosive.

The Agency proposed a treatment standard of "Solubilization in Water Followed by Precipitation as Calcium Fluoride" as a method for the nonwastewater form of these wastes, based on the chemical properties of aqueous fluoride ions and the insolubility of calcium fluoride. The Agency also proposed recovery as an alternative specified method. The Agency requested comments and data on these options.

EPA has reconsidered the "insoluble salts" requirement and believes that generally P056 and U134 wastes are generated in such small quantities that it places a large burden on treatment facilities treating these wastes by chemical treatment to require use of chemicals that will precipitate a small portion of their total waste volume to insoluble salts when other chemicals may be more desirable for their specific treatment needs. EPA also believes that the individual facility discharge limits for fluoride will control releases into the environment of any soluble compounds generated as a result of treating these compounds. Therefore, the Agency is not finalizing the insoluble salt requirement.

EPA is promulgating "Adsorption (ADGAS) followed by Neutralization (NEUTR) as a Method of Treatment" for P056 nonwastewaters and "Neutralization (NEUTR) or Adsorption (ADGAS) followed by Neutralization (NEUTR) as Methods of Treatment" for U134 nonwastewaters since this waste can exist as an acidic solution or a gas. See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter

technology code in the parentheses. EPA believes "adsorption" instead of "solubilization" better describes the process of releasing a gas into a liquid media and that "neutralization" of the resulting acidic waste allows the regulated community greater flexibility than "precipitation as calcium fluoride". The Agency made this decision as a result of information indicating that most facilities are currently treating gaseous forms of P056 and U134 by reacting the gases with alkaline solution and that it is common practice to neutralize waste hydrofluoric acid (U134).

One commenter said these fluorine compounds are mixed with other wastes requiring incineration and that they can be safely incinerated and that incineration should be an allowed technology. The Agency is not precluding incineration as long as the acid off-gases are scrubbed with alkaline reagents to achieve the treatment standard of "Adsorption (ADGAS) followed by Neutralization (NEUTR)". In this case, the water will act as the adsorbent and the alkaline reagents will neutralize the acidity.

The Agency has collected data for the wastewater forms of these wastes (see BDAT Background Document for Wastewaters Containing BDAT List Constituents in the RCRA Docket). Based on these data, the Agency proposed a concentration-based treatment standard of 35 mg/l fluoride for P056 and U134 wastewaters. This standard is based on the treatment performance of lime precipitation followed by filtration. The Agency received no comments concerning the wastewater standard and is thus, promulgating this standard as proposed.

BDAT TREATMENT STANDARDS FOR P056

[Nonwastewaters]

Adsorption (ADGAS) followed by neutralization (NEUTR) as a method of treatment *

BDAT TREATMENT STANDARDS FOR U134

[Nonwastewaters]

Neutralization (NEUTR) or adsorption (ADGAS) followed by neutralization (NEUTR) as methods of treatment *

BDAT TREATMENT STANDARDS FOR P056 AND U134

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Fluoride	35

* See § 269.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.

(4) Recoverable Metallics.

P015—Beryllium dust
P073—Nickel carbonyl
P087—Osmium tetroxide

The Agency has identified the wastes in this group as metal wastes that have a high potential for recovery. Because there are so little data on these wastes, characterization is very difficult. All the wastes in this group contain metallic elements (i.e., beryllium, osmium, and nickel) that can be recovered due to their high economic value. Information available to the Agency indicates that recovery of these metallic elements from these wastes is feasible and is currently practiced.

The Agency proposed a standard of "Recovery as a Method of Treatment" for both nonwastewater and wastewater forms of these wastes. At the time of proposal, the Agency was not aware of any treatment alternatives applicable to these wastes and solicited comments and information to help identify alternative treatment.

Several commenters stated that it is inappropriate to establish recovery as the only acceptable treatment method for nickel carbonyl (P073). One commenter generates very small quantities of P073 (typically less than two pounds per year) and said that due to the highly reactive nature of the chemical, long-term storage in order to obtain quantities sufficient to justify recovery either on-site or off-site would present a significant safety hazard. This commenter currently disposes of P073 by oxidation, either thermally in an incinerator, or chemically in a laboratory scale treatment facility followed by stabilization and feels that this is the only safe, economical and environmentally sound treatment method for small quantities of nickel carbonyl.

The Agency agrees that it may not always be practical to recover small

quantities of nickel and that oxidation of wastewaters followed by stabilization of nonwastewaters will provide an effective treatment for nickel carbonyl (P073). Since EPA has performance data for chemical treatment of nickel in wastewaters believed to be similar to P073 wastewaters and stabilization data for nickel in nonwastewaters believed to be similar to P073 nonwastewaters, the Agency has decided to develop concentration-based standards for P073 nonwastewaters and wastewaters. EPA is promulgating a concentration-based standard of 0.32 mg/l nickel for P073 nonwastewaters and a concentration-based standard of 0.44 mg/l nickel for P073 wastewaters. This standard will allow generators the flexibility to use any appropriate method of treatment to achieve the numerical standards.

Another commenter stated that it is inappropriate to establish a treatment standard based only on recovery as a method of treatment for beryllium dust (P015) and osmium tetroxide (P087) and suggested that EPA develop quantitative or alternate technology standards. However, the Agency received neither performance data nor information regarding alternate treatment methods for these compounds during the comment period and has no performance data in the BDAT data base to develop concentration-based treatment standards. On the other hand, the Agency did receive a comment from a producer of beryllium and beryllium-containing products which said that although only very small quantities of P015 are generated at any one time, recovery is a viable and preferred treatment method in light of the high economic value of the recovered beryllium. Additionally, the Agency is aware that it is current practice to recover osmium from P087 using bench-scale technologies because of the high economic value of the recovered osmium. Consequently, the Agency believes that recovery is BDAT for P015 and P087 nonwastewaters and wastewaters and is promulgating "Recovery (RMETL or RTHRM) as a Method of Treatment" for all forms of P015 and P087. As noted through the preamble, Congress expressed a strong preference in the land disposal ban legislative history for recovery as opposed to treatment followed by disposal. See, e.g., H.R. Rep. No. 193 at 31. The standard for these wastes is consistent with the Congressional preference.

BDAT TREATMENT STANDARDS FOR P015,
AND P087Recovery (RMETL or RTHRM) as a method of
treatment** See § 268.42 Table 1 in today's rule for a de-
tailed description of the technology standard referred
to by the five letter technology code in the parenthe-
ses.BDAT TREATMENT STANDARDS FOR P073
[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP Leachate (mg/l)
Nickel	0.32

BDAT TREATMENT STANDARDS FOR P073
[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Nickel	0.44

d. Gases

P076—Nitric oxide
P078—Nitrogen dioxide
U115—Ethylene oxide

These wastes are typically found as gaseous materials when existing at high concentrations. The Agency is promulgating thermal or chemical treatment as a method of treatment for these wastes in contrast to the proposed standard of recovery as a method of treatment. The Agency acknowledges that these wastes are unlikely to exist in any forms amenable to land disposal but is promulgating these standards in the interest of completeness.

In the proposed rule, the Agency solicited information on whether these wastes are actually being land disposed, how such land disposal takes place, whether anyone intends to land dispose of these wastes in the future and any treatability data that may lead to appropriate numerical land-disposal standards for these wastes.

In soliciting comments on appropriate land-disposal standards for wastes in the gaseous form, EPA wanted information about the physical forms other than empty containers these gases take when discarded. 40 CFR 261.7(a)(1)(i) and 40 CFR 261.7(a)(2) state

that "a container that has held hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric [pressure]" and "any hazardous waste remaining in an empty container * * * is not subject to regulation under * * * part 268."

Since cylinders depressurized to atmospheric pressure are explicitly defined as non-hazardous waste (assuming the cylinder itself is not hazardous when disposed), the two physical forms in which these three wastes will most likely pose land-disposal problems are damaged cylinders unacceptable for recycling or reuse and rinsewater used to clean such cylinders. Commenters reported that damaged cylinders pose significant risk of explosion and thus are very dangerous to store and handle; furthermore most cylinder-handling firms refuse to take damaged cylinders. Therefore, commenters report they have been expeditiously treating their damaged cylinders on-site on their own initiative and these commenters strongly urged EPA to set as the treatment standard the chemical and thermal treatment currently being used. EPA agrees. Such activities will require permits under subpart X (Miscellaneous Units) of 40 CFR part 264.

One commenter submitted information about an oxidation process that had been used to treat wastewaters high in ethylene oxide. Although the commenter did not provide rigorous enough documentation of his treatment process design and operation and about his analytical procedures for EPA to use his data to calculate concentration-based standards for ethylene oxide, his data nevertheless support EPA's claim that oxidation processes are BDAT for ethylene oxide wastewaters and nonwastewaters.

U115 (ethylene oxide) can be oxidized to carbon dioxide and water so EPA can specify chemical or thermal oxidation for U115 nonwastewaters and incineration or chemical oxidation plus carbon absorption or biological treatment plus carbon absorption for U115 wastewaters.

However, in choosing appropriate treatment methods for the other two gases, EPA confronts the fact that oxidation is inappropriate for P076 (nitric oxide, NO) and P078 (nitrogen dioxide, NO₂) because the resulting oxidation product is the undesirable NO_x equilibrium mixture. Consequently, EPA is promulgating as treatment standards for P076 and P078 a method suggested by one of the commenters: venting into a reducing solution. EPA

leaves the means of venting to the treatment facility and requires only that the effluent gas or washwater, ultimately be sent through a reducing solution to transform NO and NO₂ to N₂ and O₂.

EPA is promulgating "Venting Into a Reducing Medium as the Method of Treatment (ADGAS)" for P076 and P078, nonwastewaters and wastewaters; "Thermal or Chemical Oxidation (INCIN, CHOXD) as a Method of Treatment" for nonwastewater forms of U115 and "Incineration (INCIN) of Chemical (CHOXD) or Wet-Air Oxidation (WETOX) Followed by Carbon Adsorption (CARBN) as Methods of Treatment" for U115 wastewaters.

BDAT TREATMENT STANDARDS FOR P076
AND P078

[Wastewaters and Nonwastewaters]

Venting into a reducing medium (ADGAS) as a
method of treatmentBDAT TREATMENT STANDARDS FOR U115
[Nonwastewaters]Thermal or chemical oxidation (INCIN, CHOXD) as a
method of treatmentBDAT TREATMENT STANDARDS FOR U115
[Wastewaters]Incineration (INCIN) or chemical (CHOXD) or wet air
oxidation (WETOX) followed by carbon absorption
(CARBN) as a method of treatment

e. U and P Cyanogenes

P031—Cyanogen
P033—Cyanogen chloride
U248—Cyanogen bromide

Today's rule promulgates "Chemical Oxidation (CHOXD) (such as alkaline chlorination), Wet Air Oxidation (WETOX), or Incineration (INCIN) as a Method of Treatment" for amenable and total cyanides for P031, P033, and U248. For these wastes, the Agency is promulgating technology-based standards rather than concentration-based standards because of the high toxicity of these wastes. The Agency received no comments on the use of the above methods of treatment for these wastes.

BDAT TREATMENT STANDARDS FOR P031,
P033, U246

(Nonwastewaters and wastewaters)

Chemical oxidation (CHOXD), wet air oxidation
(WETOX), or incineration (INCIN) as a method of
treatment¹

¹ See § 269.42, Table 1 in today's rule for a detailed description of the technology standard referred by the five letter technology code in the parentheses.

6. Development of Treatment Standards
for Multi-Source Leachate

a. Background

In the preamble to the proposed rule (54 FR 48461-48469), EPA summarized its efforts to develop a regime for managing, under the land disposal restrictions program, leachate derived from the disposal of hazardous wastes, and treatment residues derived from treating such leachate. Reiterating briefly, EPA reconsidered the approach it adopted in the First Third final rule for such leachate (53 FR 31146-31150) due to concerns about available treatment capacity and (to a lesser extent) treatability. As a result, on March 7, 1989, EPA changed certain rules pertaining to the modification of permits (54 FR 9596). This was followed on May 2, 1989 by a final rule that rescheduled the prohibition date for most multi-source leachate to that of the Third Third (54 FR 19836). Throughout these changes, however, EPA adhered (and continues to adhere) to the principle that leachate derived from a listed hazardous waste is a hazardous waste, no matter when the listed waste was initially disposed. If such listed waste is a listed solvent, dioxin, or RCRA section 3004(g) waste, the leachate is itself prohibited from land disposal no later than May 8, 1990. These principles have been upheld by the Court of Appeals for the District of Columbia Circuit in *Chemical Waste Management v. EPA*, 869 F.2d 1528, 1536, 1538-37 (D.C. Cir. 1989).

b. Final Approach for Regulating Multi-Source Leachate

In developing treatment standards for multi-source leachate and residues from treating such leachate (referred to collectively as "multi-source leachate" throughout this preamble), EPA solicited comment on two options: whether to apply to the multi-source leachate the treatment standards for the wastes from which the leachate is derived, or whether to designate such multi-source leachate as a separate treatability group with a separate treatment standard. EPA

has decided to adopt the second approach, which had almost unanimous support in the public comments. In today's final rule, therefore, the Agency is establishing a separate treatability group for multi-source leachate and is giving it the Hazardous Waste No. F039. The Agency is also adopting one set of wastewater and nonwastewater treatment standards consisting of approximately 200 constituents. (As explained in section (4) below, however, the permit writer has the discretion to narrow the number of constituents that must be regularly analyzed and to determine the frequency of testing.) The following sections discuss in greater detail the Agency's final approach for regulating multi-source leachate.

(1) *Definition of Multi-source Leachate.* Leachate is defined in 40 CFR 260.10 as any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste. Leachate that is derived from the treatment, storage, or disposal of listed hazardous wastes is classified as a hazardous waste by virtue of the "derived-from" rule in 40 CFR 261.3(c)(2). Multi-source leachate is leachate that is derived from the treatment, storage or disposal of more than one listed hazardous waste (54 FR 8284; February 27, 1989).

The Agency solicited comment on whether multi-source leachate should be defined as being derived from more than one treatability group instead of from more than one listed hazardous waste. A number of commenters favored the idea of a definition based on more than one treatability group, stating that if the leachate was derived from only a few similar wastes, it would be burdensome to analyze for constituents that would not be present in the originating listed waste. Other commenters, however, stated that such a definition would be unnecessary and confusing to implement. EPA agrees with those commenters that a definition based upon treatability groups would be difficult to implement in this final rule. There is not sufficient time to develop all potential treatability groups, nor to provide public notice necessary to implement the treatability group concept within the time constraints of this final rule. The Agency believes, moreover, that compliance with the multi-source leachate standards need not be overly burdensome due to the flexibility allowed the permit writer (in the facility's waste analysis plan) to determine constituents to monitor and to decide testing frequency (see section (4) below). The Agency, therefore, is defining multi-source leachate as

leachate that is derived from more than one listed waste.

There is one definitional clarification to be made pertaining to leachate derived from more than one listed dioxin-containing waste. The Agency requested comments specifically on whether to consider leachate derived exclusively from F020-F023 and F026-F028 dioxin-containing wastes to be single-source leachate. The majority of commenters supported such a classification, therefore, the Agency is adopting this classification in today's rule. These wastes are acute hazardous dioxin wastes (with the exception of F028) subject to special management standards and (as practical matter) special and appropriate public and regulatory scrutiny. The leachate derived from only these hazardous wastes most often will have the same attributes as the underlying wastes (see 54 FR 45482), and thus would require the same scrutiny and should be subject to the same management standards. Therefore, leachate derived exclusively from F020-F023 and F026-F028, and no other listed hazardous wastes, is single-source leachate that is classified as, and must meet the treatment standards for, the underlying waste codes, F020-F023 and F026-F028. Further discussion of this classification is found in section d. below.

(2) *Single Waste Code for Multi-source Leachate.* EPA has decided to establish a separate treatability group for multi-source leachate, and to designate such leachate by its own waste code. Hazardous Waste No. F039.² It should be noted, therefore, that when today's rule is effective, a generator does not have the option to continue classifying their multi-source leachate (under the waste code carry-through) as all the listed wastes from which it is derived; multi-source leachate must be classified as F039.

Although there were some commenters who urged the Agency to retain the waste code carry-through approach for multi-source leachate, the Agency is persuaded that if multi-source leachate is to be considered a distinct treatability group (a virtual consensus in the comments), then multi-source leachate should have a separate waste code and separate treatment standards. Not only does this appear to be the only logical result of creating a separate

² As was explained in the proposed rule, this does not mean that such waste is newly identified or listed for purposes of RCRA hammers, or other RCRA purposes such as eligibility for interim status. Rather, the Agency is making a bookkeeping change in the way it designates a type of waste that already is listed and identified.

treatability group, but the rules will be easier to implement and enforce if there is a single treatment standard for multi-source leachate rather than the large number of potential treatment standards (depending on the number of wastes from which the leachate is derived), the result of using the alternative waste code carry-through approach. In addition, it would be harder and more confusing to evaluate situations where multi-source leachate also exhibits a hazardous waste characteristic under the waste code carry-through approach (see 54 FR 48464). A further advantage of establishing a separate waste code and separate treatment standards is that it assures treatment of all hazardous constituents that may be present in the multi-source leachate, a result less certain under the waste code carry-through approach. Thus, EPA sees the treatment standards adopted today as somewhat more protective than those that would apply under a waste code carry-through approach.

The Agency is promulgating a treatment standard for multi-source leachate that includes concentration-based standards for virtually the entire list of BDAT constituents. Because multi-source leachate derives potentially from any and all of the listed hazardous waste, the treatment standard must account for this possibility, and must consequently include all of the potential constituents that may be present. (See § 268.41(a) where the Agency adopted the same approach for F001-F005 as well as treatment standards promulgated in this rule for K086 wastes.)

The Agency is not saying that all multi-source leachate contains all of the BDAT list constituents; obviously, some leachates do not. The Agency recognizes that it is unnecessary and wasteful to monitor constituents that are not present. Working out which constituents to monitor is a site-specific determination, however. The Agency is today promulgating an implementation scheme to account for such site-specific determinations. This implementation scheme is similar to that used by EPA's Effluent Guidelines program, which requires an initial analysis that may include all toxic organics, followed by subsequent analyses for only those pollutants which would reasonably be expected to be present. This implementation scheme is discussed in greater detail in section (4) below.

(3) *Separate Waste Code for Multi-Source Leachate.* As was already mentioned, EPA is listing multi-source leachate by a separate waste code, Hazardous Waste No. F039.

Commenters supported this decision on the grounds that multi-source leachate is a distinct type of waste different from the underlying wastes from which it is derived. In addition, they asserted that they will face fewer administrative obstacles, particularly with respect to permit modifications, if multi-source leachate and its treatment residues have a separate waste code. This raises certain issues relating to state authorization and CERCLA reportable quantities that are discussed below.

EPA requested and received comment on whether designating multi-source leachate by a single waste code should be considered a HSWA regulation immediately effective in authorized States. A number of commenters stated that the rule should be considered to be adopted pursuant to HSWA, and thus be effective immediately in all states (RCRA section 3006(g)). EPA agrees with these comments, and has concluded that the designation of multi-source leachate is a HSWA regulation, in that it effectuates the requirements of RCRA section 3004(m) to set treatment standards for prohibited wastes. As was discussed at 54 FR 9606 (March 7, 1989), Class One through Three permit modification procedures are appropriate and will be used by EPA to implement such HSWA requirements in authorized and unauthorized States. Since EPA will be modifying the RCRA permit in order to implement these HSWA requirements, a state may not need to take any action to recognize the effectiveness of the modification.

The Agency has determined that listing multi-source leachate as a separate waste code is indeed more strict than applying the waste-code carry through principal because: (1) Designating multi-source leachate as a separate waste code requires the monitoring and treatment of more BDAT constituents than would be required under the waste-code carry through approach to regulating multi-source leachate; and, (2) standards for dioxins and furans in multi-source leachate wastewaters are more strict than those that have applied under the waste-code carry through approach.

All hazardous wastes listed pursuant to RCRA section 3001, as well as any solid waste that meets one or more of the characteristics of a RCRA hazardous waste (as defined at 40 CFR 261.21-261.24), are hazardous substances as defined at Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. The CERCLA hazardous substances are listed at 40 CFR 302.4 along with their

Reportable Quantities (RQs). CERCLA section 103(a) requires that persons in charge of vessels or facilities from which a hazardous substance has been released in a quantity that is equal to or greater than its RQ immediately notify the National Response Center at (800) 424-8802 or at (202) 426-2675. In addition, section 304 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires the owner or operator of a facility to report the release of a CERCLA hazardous substance or an extremely hazardous substance to the appropriate State Emergency Response Commission (SERC) or Local Emergency Planning Committee (LEPC) when the amount released equals or exceeds the RQ for the substance or one pound where no RQ has been set.

Under section 102(b) of CERCLA, all hazardous wastes newly designated under RCRA will have a statutorily imposed RQ of one pound unless and until adjusted by regulation under CERCLA. In order to coordinate the RCRA and CERCLA rule-makings with respect to new waste listings, the Agency today is making final regulatory amendments under CERCLA authority in connection with the listing of EPA Hazardous Waste No. F039. The Agency will designate EPA Hazardous Waste No. F039 as a hazardous substance under Section 102(b) of CERCLA and establish the RQ for EPA Hazardous Waste No. F039 at one pound.

The RQ for this waste stream is based on the RQs of the hazardous constituents of concern identified under RCRA for the waste stream (50 FR 13456, April 4, 1985). Thus, if a newly listed hazardous waste has only one constituent of concern, the waste will have an RQ that is the same as the RQ for the constituent. If, as in this case, the hazardous waste has more than one constituent of concern, the lowest RQ assigned to any of the constituents will be the RQ for the hazardous waste. RQs are set at 1; 10; 100; 1000; and 5000 pounds. EPA Hazardous waste No. F039 contains several constituents that have RQs of one pound (e.g., mercury, dieldrin, vinyl chloride, etc.); therefore, the RQ of this waste is also one pound. The list of hazardous constituents for this waste may be found at 40 CFR 268.43(a), Table CCW. The definition of multi-source leachate, F039, may be found at 40 CFR 261.31.

(4) *Permit modifications and implementation procedures.* It would appear that listing multi-source leachate by a separate waste code necessitates amending many RCRA permits that do not already include a narrative

description for multi-source leachate and multi-source leachate treatment residues. EPA has also concluded that this designation as a single waste code may require some modification to existing permits in order to treat, store, or dispose of the new waste code, and that such modifications are appropriately achieved through the procedures in 40 CFR 270.42(g).⁴ These procedures require the submission of a Class 1 modification by the date on which the waste becomes subject to the new requirements (August 8, 1990). The regulations further specify a subsequent submission of a Class 2 or 3 permit modification request, if appropriate. EPA believes that a Class 1 submission is all that is required when a permit is simply being changed by substituting the F039 waste code for the multiple waste codes that are carried through with the leachate. (If a facility wants to make additional operation changes or introduce the leachate into units not previously permitted to manage the waste, then the appropriate modification procedures would apply before the activity can commence.)

As described more fully in section III.G. of this preamble, it will take some time for permit writers to incorporate specific land disposal restriction procedures into waste analysis plans (WAPs) at all facilities. For facilities that already have a permit, a permit modification will be required to incorporate new procedures in the WAP. Some commenters suggested that any changes to the WAP should be treated as a Class 1 modification. Using the existing permit modification regulations in 40 CFR 270.42, one could question whether it is most appropriate to apply the Class 1 procedures (intended for WAP changes to conform with Agency guidance or regulations, as specified in item B(2)(a) of appendix I), or whether the Class 2 process should be used (see item B(2)(b)). Presented with this question, and responding to commenters who desired an expeditious way to address the appropriate F039 waste analysis procedures, the Agency is today establishing a new Class 1 permit modification (with prior approval) for this purpose. (See item B(1)(b) in appendix I to 40 CFR 270.42.) EPA believes that this classification strikes the proper balance between a streamlined mechanism for upgrading

the WAP for F039, while maintaining Agency oversight and approval of the proposal change. All persons on the facility mailing list will also be provided with notice that the facility has requested a change to its WAP (see 40 CFR 270.42(a)).

A few commenters suggested that the initial list of constituents to be analyzed should not be the entire BDAT list, but rather, it should be a list of all the constituents associated with all the hazardous wastes that has been disposed of in the land disposal unit. Commenters suggested this approach is particularly appropriate for non-commercial facilities that have stable and well-defined waste streams that are land disposed. Indeed, such an approach is basically a case of a generator developing waste characterization information based on his knowledge of how the waste—in this case, leachate—was generated. The Agency believes this is a generally valid approach, and may be considered on a site-specific basis. As discussed in more detail in preamble section III.G., however, in most cases there is still a need for corroborative testing.

The Agency believes that in order to assure compliance with the land disposal restrictions, the following procedures should be followed by treatment, storage, and disposal facilities. First, obtain an initial analysis of all regulated constituents in F039. Based on the results of this analysis, and any other information that should be considered, develop a list of constituents to be analyzed on a regular frequency. This testing scheme should be supplemented with perhaps less frequent, broader analyses to make sure that changes in the composition of the leachate are detected.

This approach is suggested pending an opportunity for the Agency to prescribe the appropriate constituents for analysis and testing frequency for the facility. It is therefore recommended that interim status facilities incorporate such an approach into the WAPs that they maintain pursuant to 40 CFR 265.13.

For both permitted and interim status facilities, the Agency retains its authority (particularly where a revised WAP has not been Agency-approved) to determine that, based on an inspection or other information, the testing frequencies and/or protocols are inadequate at a particular facility. In such cases, EPA (or an authorized State) may take a number of actions, including, but not limited to, modifying a facility's permit or pursuing an enforcement action.

(5) *Treatment standards for multi-source leachate.* The F039 treatment standard being promulgated today is based on the data used in the development of the proposed standards, as well as on treatability data received just prior to publication of the proposed rule (see 54 FR 84363, referencing these data). Today's promulgated treatment standard regulates the entire BDAT list of constituents. More information on how the standards for each constituent were developed can be found in the Final BDAT Background Document for Organic U and P Wastes and Multi-Source Leachates (F039), available in the RCRA docket.

As was discussed earlier in section (1), some commenters suggested that multi-source leachate constituent standards should be based on treatability groups, so as not to trigger analysis of the whole BDAT list if the leachate was derived from only a few similar wastes. Other commenters suggested that multi-source leachate standards should be facility-specific. The Agency believes there is some merit to the concept of treatability groups for multi-source leachate, and acknowledges the need for site-specific considerations in implementing the treatment standard. However, the Agency believes that one set of wastewater and nonwastewater standards based on the BDAT list, implemented as stated above (with determination of constituents and frequency of monitoring left to the judgement of the permit writer) is a reasonable and appropriate way to regulate multi-source leachate.

Under the BDAT methodology for determining treatment standards, when the Agency does not have data for a constituent, data may be transferred from a structurally similar compound that is harder to treat and likely to be treated by the same technology. Such transfers use as a starting point constituents within the same treatability group. Frequently within a particular treatability group, constituents that can not be adequately analyzed (and for which methods of treatment are established as the treatment standard) are included in addition to those constituents for which numerical treatment standards are set. The constituent from which data are transferred to the other constituents in the treatability group is the surrogate for any constituents in that treatability group that cannot be analyzed. It is EPA's conclusion in the case of multi-source leachate, however, that establishing numerical treatment standards for each BDAT list

⁴ EPA reiterates that the designation of the new waste code for multi-source leachate does not mean that such waste is newly identified or listed under RCRA. Rather, because some permits may restrict management to specified waste codes or types of wastes, it is appropriate to treat such modifications as if they were newly listed waste, as the waste code has been newly changed.

constituent obviates the need to specify methods of treatment for any constituent. In other words, the constituents on the BDAT list serve as surrogates for those constituents that may be present in the multi-source leachate that cannot be adequately analyzed. Several comments were received that agreed with this decision.

Most of the multi-source leachate nonwastewater treatment standards are based on a direct transfer of U and P nonwastewater treatment standards. The remaining organic and metal constituent treatment standards for multi-source leachate are based on treatment performance data transferred from D, F, and K wastes. For the most part, these treatment standards were confirmed as being achievable by performance data on the treatment of multi-source leachate that were received just prior to proposal (that were placed in the record for the proposed rule). These data were analyzed by EPA during the comment period, and were available for public comment and reply comment. The majority of these data show no difficulty in achieving the proposed multi-source leachate nonwastewater standards, most of which were based on incineration as BDAT.

There were other data for a small number of constituents, however, that showed difficulty in meeting the proposed standards. For example, the Agency received data just prior to proposal on the treatment of nonwastewater forms of multi-source leachate by sludge drying of a treatment residue from biological treatment. Many of these data supported the proposed standards; however, detection limits reported for some constituents in nonwastewater leachate indicated that treatment standards based on detection limit data from an incinerator ash matrix may not be routinely achievable. Therefore, data from analysis of the leachate matrix were used to calculate today's revised nonwastewater constituent treatment standards for disulfoton, famphur, parathion, phorate and methyl parathion.

Most of the wastewater constituent treatment standards were transferred from treatment data developed for various other EPA regulatory programs, and are based on data from numerous sources. (These data apply to the development of treatment standards for other wastewaters besides multi-source leachate. Further discussion of these data is presented in preamble section III.A.5.) Additional data were reviewed during the comment period, including data from a recently completed EPA

study of wastewater treatment by wet air oxidation followed by PACT or activated carbon, as well as additional performance data from the treatment of multi-source leachate wastewaters which were received just prior to publication of the proposed rule. (These data were placed in the record for the proposed rule for public comment.)

Commenters stated that wastewater standards should not be based on wet air oxidation followed by PACT nor on scrubber water constituent concentrations. The commenters recommended that the Agency base the wastewater constituent standards on biological treatment performance data. The Agency agrees with the commenters that treatment standards normally should be based on wastewater treatment data rather than constituent concentrations in incinerator scrubber water. Therefore whenever the biological treatment performance data demonstrated substantial treatment and met BDAT QA/QC requirements, they were used to set today's revised wastewater constituent treatment standards.

Generally, data on wet air oxidation followed by PACT supported the proposed wastewater constituent treatment standards. In addition, most of the treatment data on multi-source leachate wastewaters show no problems achieving the proposed standards. Whenever multi-source leachate treatment data showed difficulty meeting the proposed standard, while at the same time showed substantial treatment of a constituent by a demonstrated, available technology, these data were used in developing today's revised numerical standards. (Details on the development or transfer of these wastewater standards per constituent can be found in the Final BDAT Background Document for Organic U and P Wastes and Multi-Source Leachates (F039), available in the RCRA docket.)

c. Multi-Source Leachate That Exhibits a Characteristic of Hazardous Waste

EPA is not promulgating separate standards for multi-source leachate that exhibits a characteristic of hazardous wastes. By proposing standards for all of the BDAT list constituents, all of the constituents and properties that define any particular characteristic will be addressed. This is consistent with the Agency's resolution of situations where prohibited listed wastes also exhibit a characteristic: the specific treatment standard for the listed waste controls because it is more specific, and in the case of the standard for multi-source leachate, addresses the constituent that

causes the waste to exhibit the characteristic. Should multi-source leachate or its treatment residues exhibit a characteristic at the point of disposal, however, it must be treated to meet the treatment standard for that characteristic. Finally, if multi-source leachate simply exhibits a characteristic of hazardous waste without being derived from a listed waste, it is subject to the treatment standard for that characteristic.

d. Multi-Source Leachate Containing Dioxins and Furans

EPA proposed that the waste code carry-through principle should not apply to multi-source leachate derived, in part, from the disposal of listed dioxin-containing wastes. Consequently, the dioxin land disposal prohibition in RCRA section 3004(e) would not apply to such multi-source leachate (albeit the leachate remains within the ambit, at least, of the statutory hard hammer in RCRA section 3004(g)), and application of the management standards for acute hazardous wastes would not apply to multi-source leachate. Rather, EPA proposed to establish treatment standards for dioxins and furans as part of the standards for multi-source leachate (see 54 FR 48464-48465). This proposed approach was based primarily on analytical data demonstrating either non-detectable or very low levels of these constituents are present in the leachate (using analytical methods capable of analyzing orders of magnitude below the standard limit of detection of 1 ppb). *Id.*

All of the comments agreed with the Agency that multi-source leachate should not be classified under a listed dioxin waste code or prohibition. EPA is adopting this position in the final rule for the reasons stated in the proposal. In addition, the Agency notes that by classifying leachate that is derived from the listed dioxin waste codes, and no other hazardous waste, as single source leachate, the Agency is retaining the dioxin classification for the type of leachate most likely to be sufficiently contaminated with dioxins and furans to warrant the special status and scrutiny required for these wastes.

The final issue presented at proposal was whether the treatment standards for multi-source leachate should include a treatment standard for dioxins and furans, or whether a surrogate constituent could indicate treatment of these constituents. The Agency examined all available multi-source leachate data and was unable to develop an adequate surrogate for dioxin (the Agency's efforts are

documented fully in the Response to BDAT-Related Comments Background Document). The Agency, therefore, is promulgating treatment standards for dioxins and furans in both the wastewater and nonwastewater forms of multi-source leachate.

e. Status of Multi-source Leachate that is Mixed with Other Prohibited Wastes

EPA reiterates that if another prohibited waste is mixed with multi-source leachate, that waste must still meet the treatment standard applicable to that waste. Thus, once the treatment standards for multi-source leachate become effective, if the treatment standard for any constituent in the prohibited waste is stricter than the standard for that constituent in multi-source leachate, then the entire mixture would have to meet that stricter standard (see § 268.41(b)). (Conversely, if the standard for multi-source leachate is stricter than for the non-leachate prohibited waste, the mixture would have to meet the standard for multi-source leachate.) *Id.* EPA is not reopening this 1986 regulation for review, but is restating that rule here in order to make sure that the regulated community realizes that §§ 268.41(b) and 268.43(b) apply.

A number of commenters stated that they would like to combine leachate from various parts of their plant in order to facilitate treatment. As stated in the preamble to the proposed rule (54 FR 48462), single-source leachate (i.e., leachate derived from only one waste code such as might be expected from a monofill) cannot be combined to create multi-source leachate, and single-source leachate from separate facilities cannot be combined to create multi-source leachate (this is analogous to the principle that one ordinarily cannot dilute to create a new treatability group). The Agency agrees, however, that it is permissible to combine various multi-source leachate streams at one facility in order to facilitate treatment (so long as the treatment does not constitute land disposal).

It should be noted that at least for the short term, the status of mixtures of multi-source leachate and First Third prohibited wastes is controlled by a stay order entered by a panel of the District of Columbia Circuit Court of Appeals. The order states that "as to anything contaminated both by leachate and by other first-third prohibited wastes, the other wastes must, to the extent technically feasible, be treated to the applicable treatment standards. Prohibited wastes intentionally mixed with leachate for the purpose of avoiding applicable treatment standards

remain subject to all of the First Third standards." Order of April 24, 1989 in *Chemical Waste Management v. EPA*, No. 88-1581.

As explained at 54 FR 26602 (June 23, 1989), EPA views any mixing of prohibited First Third wastes with leachate that occurs after the date of the stay order to be intentional mixing for the purpose of avoiding a First Third rule treatment standard. Certainly, any such mixing that occurs now—over 18 months after adopting the First Third rule—could be avoided and should not insulate the First Third waste from meeting the treatment standards. EPA in fact intends to move jointly with the petitioners in the case to lift this portion of the stay order. Until the order is lifted, however, EPA reiterates that any First Third prohibited waste mixed with multi-source leachate after the date of the stay order remains subject to the First Third treatment standards.

A final issue relating to mixtures is the status of groundwater that is contaminated with multi-source leachate. As EPA stated at proposal, such groundwater/multi-source leachate mixture is a hazardous waste so long as the multi-source leachate is contained in the groundwater (54 FR 48462). (See *Chemical Waste Management v. EPA*, 869 F.2d at 1539-40, upholding the contained-in principle as a reasonable construction of the mixture and derived-from rules.) Thus, so long as the multi-source leachate is contained in the multi-source leachate/groundwater mixture, the mixture ordinarily would be prohibited from land disposal until treated to meet the treatment standards applicable to multi-source leachate. (During the period of a national capacity variance, the multi-source leachate/groundwater mixture would have to be managed in surface impoundments that satisfy the minimum technology standards if the mixture is managed in an impoundment (see § 268.5(h)(2)).)

BDAT TREATMENT STANDARDS FOR MULTI-SOURCE LEACHATE

(Nonwastewaters)

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Acetone	160
Acenaphthalene	3.4
Acenaphthene	4.0
Acetophenone	9.7
2-Acetylaminofluorene	140
Acrylonitrile	84
Aldrin	0.066
Aniline	14
Anthracene	4.0

BDAT TREATMENT STANDARDS FOR MULTI-SOURCE LEACHATE—Continued

(Nonwastewaters)

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Aroclor 1016	0.92
Aroclor 1221	0.92
Aroclor 1232	0.92
Aroclor 1242	0.92
Aroclor 1248	0.92
Aroclor 1254	1.8
Aroclor 1260	1.8
alpha-BHC	0.066
beta-BHC	0.066
delta-BHC	0.066
gamma-BHC	0.066
Benzene	36
Benzo (a) anthracene	8.2
Benzo (b) fluoranthene	3.4
Benzo (k) fluoranthene	3.4
Benzo (g, h, i) perylene	1.5
Benzo (a) pyrene	8.2
Bromodichloromethane	15
Bromoform	15
Bromomethane (methyl bromide)	15
4-Bromophenyl phenyl ether	15
n-Butanol	2.6
Butyl benzyl phthalate	7.9
2-sec-Butyl-4,6-dinitrophenol	2.5
Carbon tetrachloride	5.6
Chlordane	0.13
p-Chloroaniline	16
Chlorobenzene	5.7
Chlorodibromomethane	16
Chloroethane	6.0
bis-(2-Chloroethoxy) methane	7.2
bis-(2-Chloroethyl) ether	7.2
Chloroform	5.6
bis-(2-Chloroisopropyl) ether	7.2
p-Chloro-m-cresol	14
Chloromethane	33
2-Chloronaphthalene	5.6
2-Chlorophenol	5.7
3-Chloropropene	28
Chrysene	8.2
o-Cresol	5.6
Cresol (m- and p- isomers)	3.2
1, 2-Dibromo-3-Chloropropane	15
1, 2-Dibromoethane (Ethylene dibromide)	15
Dibromomethane	15
2, 4-Dichlorophenoxyacetic acid (2, 4-D)	10
o,p'-DDD	0.087
p,p'-DDD	0.087
o,p'-DDE	0.087
p,p'-DDE	0.087
o,p'-DDT	0.087
p,p'-DDT	0.087
Dibenzo(a,h) anthracene	8.2
m-Dichlorobenzene	6.2
o-Dichlorobenzene	6.2
p-Dichlorobenzene	6.2
Dichlorodifluoromethane	7.2
1,1-Dichloroethane	7.2
1,2-Dichloroethane	7.2
1,1-Dichloroethylene	33
trans-1,2-Dichloroethylene	33
2,4-Dichlorophenol	14
2,6-Dichlorophenol	14
1,2-dichloropropane	18
cis-1,3-Dichloropropene	18
trans-1,3-Dichloropropene	18
Dieldrin	0.13
Diethyl phthalate	28
2,4-Dimethyl phenol	14
Dimethyl phthalate	28

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE—Continued

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Di-n-butyl phthalate	28
1,4-Dinitrobenzene	2.3
4,6-Dinitrocrasol	160
2,4-Dinitrophenol	160
2,4-Dinitrotoluene	140
2,6-Dinitrotoluene	28
Di-n-octyl phthalate	28
Di-n-propylnitrosamine	14
1,4-Dioxane	170
Disulfoton	6.2
Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan sulfate	0.13
Endrin	0.13
Endrin Aldehyde	0.13
Ethyl acetate	33
Ethyl benzene	6.0
Ethyl ether	160
bis-(2-Ethylhexyl) phthalate	28
Ethyl methacrylate	160
Famphur	15
Fluoranthene	8.2
Fluorene	4.0
Fluorotrichloromethane	33
Heptachlor	0.066
Heptachlor epoxide	0.066
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachlorocyclopentadiene	4.8
Hexachlorodibenzo-furans	0.001
Hexachlorodibenzo-p-dioxins	0.001
Hexachloroethane	28
Hexachloropropene	28
Indeno (1,2,3-c,d) pyrene	8.2
Iodomethane	65
Isobutanol	170
Isodrin	0.066
Isosafrole	2.6
Kepone	0.13
Methacrylonitrile	64
Methapyrene	1.5
Methoxychlor	0.16
3-Methylcholanthrene	15
4,4-Methylene-Bis-(2-chloroaniline)	35
Methylene chloride	33
Methyl ethyl ketone	36
Methyl isobutyl ketone	33
Methyl methacrylate	160
Methyl Parathion	4.8
Naphthalene	3.1
p-Nitroaniline	28
Nitrobenzene	14
5-Nitro-o-toluidine	28
4-Nitrophenol	29
N-Nitrosodiethylamine	28
N-Nitroso-di-n-butylamine	17
N-Nitrosomethylethylamine	2.3
N-Nitrosomorpholine	2.3
N-Nitrosopiperidine	35
N-Nitrosopyrrolidine	35
Parathion	4.6
Pentachlorobenzene	37
Pentachlorodibenzo-furans	0.001
Pentachlorodibenzo-p-dioxins	0.001
Pentachloronitrobenzene	4.8
Pentachlorophenol	7.4
Phenacetin	16
Phenanthrene	3.1
Phenol	6.2
Phorate	4.6
Propanenitrile	360
Pronamide	1.5

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE—Continued

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Pyrene	8.2
Pyridine	16
Safrole	22
Silvex (2,4,5-TP)	7.9
2,4,5-T	7.9
1,2,4,5-Tetrachlorobenzene	19
Tetrachlorodibenzo-furans	0.001
Tetrachlorodibenzo-p-dioxins	0.001
1,1,1,2-Tetrachloroethane	42
1,1,2,2-Tetrachloroethane	42
Tetrachloroethylene	5.6
2,3,4,6-Tetrachlorophenol	37
Toluene	28
Toxaphene	1.3
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	5.6
1,1,2-Trichloroethane	5.6
Trichloroethylene	5.6
2,4,5-Trichlorophenol	37
2,4,6-Trichlorophenol	37
1,2,3-Trichloropropane	28
1,1,2-Trichloro-1,2,2-trifluoroethane	28
Vinyl chloride	33
Xylene(s)	28
Cyanides (Total)	1.8
Antimony	0.23
Arsenic	5.0 (EP)
Barium	52
Cadmium	0.066
Chromium (Total)	5.2
Lead	0.51
Mercury	0.025
Nickel	0.32
Selenium	5.7
Silver	0.072

¹ Maximum for any single grab sample; TCLP (mg/l).

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE

[Wastewaters]

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
Acetone	0.28
Acenaphthalene	0.059
Acenaphthene	0.059
Acetonitrile	0.17
Acetophenone	0.10
2-Acetylaminofluorene	0.059
Acrylonitrile	0.24
Aldrin	0.021
4-Aminobiphenyl	0.13
Aniline	0.81
Anthracene	0.059
Aroclor 1016	0.013
Aroclor 1221	0.014
Aroclor 1232	0.013
Aroclor 1242	0.017
Aroclor 1248	0.013
Aroclor 1254	0.014
Aroclor 1260	0.014
alpha-BHC	0.0014
beta-BHC	0.0014
delta-BHC	0.023

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE—Continued

[Wastewaters]

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
gamma-BHC	0.017
Benzene	0.14
Benz (a) anthracene	0.059
Benzo (a) pyrene	0.061
Benzo (b) fluoranthene	0.055
Benzo (g,h,i) perylene	0.0055
Benzo (k) fluoranthene	0.059
Bromodichloromethane	0.25
Bromomethane	0.11
4-Bromophenyl phenyl ether	0.055
n-Butyl alcohol	5.5
Butyl benzyl phthalate	0.017
2-sec-Butyl-4,6-dinitrophenol	0.066
Carbon tetrachloride	0.057
Carbon disulfide	0.014
Chlordane	0.0033
p-Chloroaniline	0.46
Chlorobenzene	0.057
Chlorobenzilate	0.10
Chlorodibromomethane	0.057
Chloroethane	0.27
bis-(2-Chloroethoxy) methane	0.036
bis-(2-Chloroethyl) ether	0.033
2-Chloroethyl vinyl ether	0.057
Chloroform	0.046
bis-(2-Chloroisopropyl) ether	0.055
p-Chloro-m-cresol	0.018
Chloromethane (methyl chloride)	0.19
2-Chloronaphthalene	0.055
2-Chlorophenol	0.044
3-Chloropropene	0.036
Chrysene	0.059
o-Cresol	0.11
Cresol (m- and p- isomers)	0.77
Cyclohexanone	0.36
1,2-Dibromo-3-chloropropane	0.11
1,2-Dibromoethane	0.028
Dibromomethane	0.11
2,4-Dichlorophenoxyacetic acid	0.72
o,p'-DDD	0.023
p,p'-DDD	0.023
o,p'-DDE	0.031
p,p'-DDE	0.031
o,p'-DDT	0.0039
p,p'-DDT	0.0039
Dibenzo (a,h) anthracene	0.055
m-Dichlorobenzene	0.036
o-Dichlorobenzene	0.088
p-Dichlorobenzene	0.050
Dichlorodifluoromethane	0.23
1,1-Dichloroethane	0.059
1,2-Dichloroethane	0.21
1,1-Dichloroethylene	0.025
trans-1,2-Dichloroethene	0.054
2,4-Dichlorophenol	0.044
2,6-Dichlorophenol	0.044
1,2-Dichloropropane	0.85
cis-1,3-Dichloropropene	0.036
trans-1,3-Dichloropropene	0.036
Dielsin	0.017
Diethyl phthalate	0.20
p-Dimethylaminoazobenzene	0.13
2,4-Dimethyl phenol	0.036
Dimethyl phthalate	0.047
Di-n-butyl phthalate	0.057
1,4-Dinitrobenzene	0.32
4,6-Dinitroresol	0.23
2,4-Dinitrophenol	0.12
2,4-Dinitrotoluene	0.32
2,6-Dinitrotoluene	0.55
Di-n-octyl phthalate	0.017
Di-n-propylnitrosamine	0.40

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE—Continued

[Wastewaters]

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
1,2-Diphenyl hydrazine.....	.037
1,4-Dioxane.....	.12
Disulfoton.....	.017
Endosulfan I.....	.023
Endosulfan II.....	.029
Endosulfan sulfate.....	.029
Endrin.....	.0028
Endrin aldehyde.....	.025
Ethyl acetate.....	.34
Ethyl benzene.....	.057
Ethyl cyanide.....	.24
Ethyl ether.....	.12
bis-(2-Ethylhexyl) phthalate.....	.28
Ethyl methacrylate.....	.14
Ethylene oxide.....	.12
Famphur.....	.017
Fluoranthene.....	.068
Fluorene.....	.059
Heptachlor.....	.0012
Heptachlor epoxide.....	.016
Hexachlorobenzene.....	.055
Hexachlorobutadiene.....	.055
Hexachlorocyclopentadiene.....	.057
Hexachlorodibenzo-furans.....	.000063
Hexachlorodibenzo-p-dioxins.....	.000063
Hexachloroethane.....	.055
Hexachloropropene.....	.035
Indeno (1,2,3-c,d) pyrene.....	.0055
Iodomethane.....	.19
Isobutyl alcohol.....	5.6
Isodrin.....	.021
Isosafrole.....	.081
Kepona.....	.0011
Methacrylonitrile.....	.24
Methapyrene.....	.081
Methoxychlor.....	.25
3-Methylchloanthrene.....	.0055
4,4-Methylene-bis-(2-chloroaniline).....	.50
Methylene chloride.....	.089
Methyl ethyl ketone.....	.28
Methyl isobutyl ketone.....	.14
Methyl methacrylate.....	.14
Methyl methanesulfonate.....	.018
Methyl Parathion.....	.014
Naphthalene.....	.059
2-Naphthylamine.....	.52
p-Nitroaniline.....	.028
Nitrobenzene.....	.068
5-Nitro-o-toluidine.....	.32
4-Nitrophenol.....	.12
N-Nitrosodiethylamine.....	.40
N-Nitroso-di-n-butylamine.....	.40
N-Nitrosomethylethylamine.....	.40
N-Nitrosomorpholine.....	.40
N-Nitrosopiperidine.....	.013
N-Nitrosopyrrolidine.....	.013
Parathion.....	.017
Pentachlorobenzene.....	.055
Pentachlorodibenzo-furans.....	.000035
Pentachlorodibenzo-p-dioxins.....	.000063
Pentachlorodibenzofuran.....	.055
Pentachlorophenol.....	.089
Phenacetin.....	.081
Phenanthrene.....	.059
Phenol.....	.039
Phorate.....	.021
Pronamide.....	.093
Pyrene.....	.067
Pyridine.....	.014
Safrole.....	.081
Silvex (2,4,5-TP).....	.72
2,4,5-T.....	.72

BDAT TREATMENT STANDARDS FOR
MULTI-SOURCE LEACHATE—Continued

[Wastewaters]

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
1,2,4,5-Tetrachlorobenzene.....	.055
Tetrachlorodibenzo-furans.....	.000063
Tetrachlorodibenzo-p-dioxins.....	.000063
2,3,7,8-Tetrachlorodibenzo-p-dioxin.....	.000063
1,1,1,2-Tetrachloroethane.....	.057
1,1,2,2-Tetrachloroethane.....	.057
Tetrachloroethene.....	.056
2,3,4,6-Tetrachlorophenol.....	.030
Toluene.....	.080
Toxaphene.....	.0095
Tribromomethane (bromofom).....	.63
1,2,4-Trichlorobenzene.....	.055
1,1,1-Trichloroethane.....	.054
1,1,2-Trichloroethane.....	.054
Trichloroethene.....	.054
Trichloromonofluoromethane.....	.020
2,4,5-Trichlorophenol.....	.18
2,4,6-Trichlorophenol.....	.035
1,2,3-Trichloropropane.....	.85
1,1,2-Trichloro-1,2,2-trifluoroethane.....	.057
Vinyl chloride.....	.27
Xylene(s).....	.32
Fluoride.....	35
Sulfide.....	14
Antimony.....	1.9
Arsenic.....	5.0
Barium.....	1.2
Beryllium.....	.82
Cadmium.....	.20
Chromium (Total).....	.37
Copper.....	1.3
Lead.....	.28
Mercury.....	.15
Nickel.....	.55
Selenium.....	.82
Silver.....	.29
Vanadium.....	.042
Zinc.....	1.0

7. Applicability of Treatment Standards
to Soil and Debris

Soil and debris that are contaminated with prohibited wastes are subject to the land disposal restrictions and must meet the treatment standard for the contaminating waste prior to land disposal. The Agency realizes, however, that there are certain problems associated with regulating hazardous wastes in soil and debris matrices. It may be difficult to obtain a representative sample of the waste in order to determine the level of contaminant concentrations in soil and debris. Additionally, there are a wide variety of soil types, and wastes that may be classified as debris that may range in size from clay-sized particles to large contaminated tanks and buildings. Because of such problems, the Agency is preparing a separate rule-making that will establish treatability groups and treatment standards for contaminated soil and debris. Until contaminated soil and debris can be better organized into

treatability groups, however, promulgated treatment standards apply. (The Agency is establishing certain debris subcategories in this final rule. See the discussion of treatment standards for certain characteristic metal wastes in section III.A.3.a.)

If the contaminated soil and debris cannot be treated to meet the promulgated treatment standards, alternative treatment standards can be established under a site-specific variance from the treatment standards (see 53 FR 31221, August 17, 1988) or a full-scale variance (40 CFR 268.44). Categorizing such contaminated soil and debris according to type, volume, form, and contaminant concentration poses several problems best resolved on a site-specific basis. In order to be granted a site-specific variance from the treatment standard, the petitioner must demonstrate to the Agency that because the physical (or chemical) properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods (see 40 CFR 268.44).

At proposal, EPA solicited comment on the appropriate treatment standard for scrap metal destined for land disposal that is unavoidably contaminated with a listed hazardous waste (54 FR 48469). The problem potentially arises because scrap metal can itself contain the same metallic constituents present in a listed waste. The Agency proposed that such scrap metal would not have to meet the treatment standard for the listed hazardous waste if it was unavoidably contaminated and the listed waste had been removed by rinsing or other demonstrated decontamination techniques. The Agency also noted the imprecision of these terms and the difficulties in developing an implementable approach. *Id.*

Most commenters supported the Agency's proposal, and some commenters urged the Agency to extend the same concept to other types of debris mixtures. Commenters were not able, however, to find satisfactory answers for the problems that EPA raised at proposal. It also appears that there are only isolated instances of scrap metal destined for land disposal being contaminated unavoidably with listed prohibited hazardous wastes. EPA consequently believes that the best way to deal with this situation at the present time is on an individualized basis through the § 268.44 treatability variance rather than in a general rule. (The Agency believes that one approach for variance applicants to consider

would be a demonstration that all of the BDAT constituents not common to both the scrap metal and the listed prohibited waste meet the treatment standards. In addition, it may be possible to remove common constituents to the level found in unadulterated scrap metal. In this way, the applicant could show compliance with as much of the treatment standard for the listed waste as is readily demonstrable.) As the Agency studies the whole issue of treatment standards for debris further, it may prove that such situations can be dealt with by rule, rather than on a case-by-case basis. At present, however, EPA believes that an individualized approach is preferable.

8. Radioactive Mixed Waste

Radioactive mixed wastes are those wastes that satisfy the definition of radioactive waste subject to the Atomic Energy Act (AEA) that also contain waste that is either listed as a hazardous waste in subpart D of 40 CFR part 261, or that exhibits any of the hazardous waste characteristics identified in subpart C of 40 CFR part 261. On July 3, 1986 (51 FR 4504), EPA determined that the hazardous portions of mixed wastes are subject to the RCRA regulations. This created a dual regulatory framework for mixed waste because the hazardous component is regulated under RCRA, and the radioactive component is regulated under the AEA.

Statutorily and administratively, management of the radioactive component of mixed wastes differs from that of the RCRA hazardous component. Although EPA may develop ambient health and environmental standards for the RCRA hazardous component, the specific standards for radioactive material management developed under the AEA are administered by the Department of Energy (DOE) for government owned facilities, and by the Nuclear Regulatory Commission (NRC) for commercially owned facilities.

Since the hazardous portions of the mixed waste are subject to RCRA, the land disposal restrictions apply to such waste. This means that the RCRA hazardous portion of all mixed waste must meet the appropriate treatment standards for all applicable waste codes before land disposal.

There are a number of potential problems presented by applying the land disposal restrictions to mixed waste relating to technical achievability of all of the proposed standards, as well as to whether treatment standards can be achieved consistently with requirements imposed pursuant to the AEA. These problems may be resolved by

establishing specific treatment standards for certain mixed waste, as the Agency has done in this final rule. In addition, site-specific variances from the treatment standard (40 CFR 268.44) may be used to resolve such problems. If the treatment technologies determined to represent BDAT (and used to establish the treatment standards) are "inappropriate" due to the radioactive hazard of a mixed waste (i.e., requiring a different technology design), a demonstration may be made to this effect in a petition to the Agency for a site-specific variance from the promulgated treatment standard. If such a variance is granted, alternative treatment standards would be established (for the mixed waste at the site) that must be met prior to land disposal.

a. Characterization and Industries Affected

Based on information provided by generators of mixed wastes, the majority of mixed wastes can be divided into three categories based on the radioactive component of the waste: (1) Low-level wastes, (2) transuranic (TRU) wastes, and (3) high-level wastes. Low-level wastes include radioactive waste that is not classified as spent fuel from commercial nuclear power plants, or defense high-level radioactive waste from producing weapons. TRU wastes are those wastes containing elements with atomic numbers greater than 92, the atomic number for uranium. These wastes generally pose greater radioactivity hazards than the low-level wastes because they contain long-lived alpha radiation emitters. High-level radioactive wastes are defined as spent fuel from commercial nuclear power plants, and defense high-level radioactive waste from the production of weapons.

Mixed low-level wastes may be generated in several ways. For example, medical diagnostic procedures use scintillation fluids that contain small amounts of radioactivity in toxic organic solvents (e.g., xylene and toluene). These solvents generally pose a greater chemical hazard than does the low-level radioactivity. The principal generators of low-level mixed wastes are nuclear power plants, DOE, academic, and medical institutions.

One commenter submitted a list of substances generated at commercial nuclear power plants that may be classified as low-level mixed wastes. This included a wide variety of liquid organic wastes such as spent solvents containing suspended or dissolved radionuclides, scintillation cocktails, spent freon used for cleaning protective

garments, acetone or solvents used for cleaning pipes or other equipment, and still bottoms from the distillation of freon. Also, the list included a wide variety of solid materials such as spent ion-exchange resins (contaminated with various metals), filters used in reclaiming freon, adsorbents, residues from the cleanup of spills, lead shields, lead-lined containers, welding rods, and batteries.

Military weapons production involves the generation of large amounts of wastes that can fall into the low-level and TRU categories of mixed waste. These wastes are similar in form, but TRU waste is considered by government regulators to be more dangerous because of the alpha radiation emitters.

High-level mixed wastes are extremely dangerous to handle due to their high level of radioactivity. The DOE is responsible for the storage and disposal of all the nation's high-level mixed wastes. High-level wastes are defined as the waste resulting from the reprocessing of irradiated fuel rods from commercial and military nuclear reactors. This reprocessing involves the handling of materials that are extremely hot both thermally and radiologically. One of the reprocessing steps involves dissolving the fuel rods in a nitric acid bath so that plutonium-239 and tritium can be recovered. It is the high-level waste generated from this reprocessing that is considered mixed waste and which requires treatment. DOE has indicated that this high-level waste is EP-toxic for several metals, including lead (D008), silver (D011), chromium (D007), barium (D005), and mercury (D009), and may also exhibit the characteristic of corrosivity (D002).

b. Applicable Technologies

The Agency believes that for treatment of metals in low-level mixed wastes and for some TRU mixed wastes containing low radioactive components, chemical precipitation will remove the metals in wastewaters, and stabilization technologies will reduce the leachability of the metal constituents in nonwastewater matrices. These are the same technologies that are applicable to nonradioactive wastes containing metals.

DOE submitted data demonstrating the applicability of stabilization as a treatment technology for the low-level waste fractions that are separated from the high-level waste generated during the reprocessing of fuel rods. As used by one particular facility, a stabilization process called grout stabilization involves blending commercially produced cement-based reagents with

the liquid low-level waste fraction. The material sets up as a solid mass, immobilizing the waste. The performance data indicate that stabilization provides immobilization of the characteristic metal constituents and radioactive contaminants for this low-level radioactive waste, and that it is possible to stabilize the RCRA hazardous portions to meet the treatment levels for the characteristic metals.

For organic low-level mixed wastes, the Agency believes that incineration is an applicable technology for organic compounds in both wastewater and nonwastewater matrices, and that technologies such as carbon adsorption can achieve removal of organics in wastewaters where incineration is not practical. DOE has submitted information indicating that plans are in place to begin incineration of a D001 ignitable liquid mixed waste containing benzene. Incineration is also an applicable technology for D001 Ignitable Liquids Subcategory nonradioactive wastes. Therefore, this particular mixed waste, if incinerated, would meet the treatment standard for D001 Ignitable Liquids Subcategory.

For TRU mixed wastes with considerable radioactive components, and for high-level wastes, EPA believes that vitrification is an applicable technology for treatment of both organic and inorganic constituents. DOE provided information to support that vitrification is an applicable technology for their high-level wastes generated from the reprocessing of fuel rods. Treatment can be accomplished by using either direct vitrification or a more complex treatment process which includes a series of chemical steps that separate the low-level radioactive waste fractions from the high-level radioactive waste. The high-level radioactive portion is then vitrified. When using separation technologies such as precipitation followed by settling or filtration, the bulk of the radioactivity can be incorporated into a high-level liquid waste containing up to 99 percent of the radioactivity of the original irradiated fuel rods. By separating high-level and low-level mixed wastes, the amount of high-level waste that may require vitrification treatment can be reduced.

DOE submitted specific data on how vitrification will be used to treat high-level mixed waste. As used in the facility design, the vitrification process will incorporate the high-level mixed waste into a glass matrix, achieving a reduction in the mobility of its RCRA hazardous and radioactive constituents.

The waste will enter the vitrification system as a slurry (i.e., a blend of solid particles in a liquid base). The mixture will be pumped into a glass melter and heated so that the water is evaporated and the solid glass and waste particles melt and blend. After the mixture has been converted into molten glass, it will be poured into protective stainless steel canisters, where it will harden to form borosilicate glass. The canisters will then be capped and decontaminated and a second cap will be welded into place, forming an additional seal.

c. Determination of EDAT for Certain Mixed Wastes

In many cases, current practice or planned treatment will achieve the promulgated treatment standards for the RCRA hazardous wastes. For example, DOE generates radioactive zirconium fines that are pyrophoric under 40 CFR 261.21(a)(2) (i.e., that cause fire through friction). Consequently, the RCRA hazardous portion of this mixed waste is considered a characteristic ignitable waste included under the D001 Reactive Ignitable Subcategory by EPA. The Agency is promulgating "Deactivation as a Method of Treatment" as the treatment standard for D001 Ignitable Reactives Subcategory. The DOE submitted data which indicate that this waste can be stabilized to remove the characteristic, thereby achieving the treatment standard.

(1) *Treatment Standards for Mixed Wastes Not Otherwise Subcategorized.* The Agency is reiterating that as of the effective date of today's rule, all promulgated treatment standards for RCRA listed and characteristic wastes apply to the RCRA hazardous portion of mixed radioactive (high-level, TRU, and low-level) wastes, unless EPA has specifically established a separate treatability group for a specific category of mixed waste. In other words, unless specifically noted in §§ 268.41, 268.42, or 268.43 of today's rule, the standards located in these sections apply to all mixed wastes. (All alternative standards that are specifically discussed later in this section of the preamble that apply only to specific mixed wastes are identified in § 268.42 Table 3 of today's rule.) All handling requirements for radioactive materials set forth by the Nuclear Regulatory Commission must also be met.

(2) *Treatment Standards for Specific High-Level Wastes.* For most characteristic metal wastes, the Agency has determined that conventional stabilization is BDAT, and has developed treatment standards using stabilization performance data. The Agency does not believe, however, that

stabilization using cementitious binders is an appropriate treatment for high-level radioactive mixed wastes generated specifically during the reprocessing of fuel rods. Such mixed wastes exhibit the characteristic of toxicity for certain RCRA hazardous metals (lead, chromium, barium, mercury, and silver). While stabilization would reduce the leaching potential of the characteristic metals, it would not provide treatment of the high-level radioactive portion of the mixed waste.

The Agency provided notice in the proposed rule (54 FR 48492) that DOE was providing to the Agency treatment data for mixed waste. These data were received and placed in the docket for the proposed rule and were available during the comment period for notice and public comment. The Agency analyzed these data and performed a subsequent site visit to the vitrification unit to assess the treatment process. Based upon these data and the site visit, the Agency has concluded that vitrification will provide effective immobilization of the inorganic constituents (i.e., both radioactive and RCRA hazardous) in high-level mixed waste generated during the reprocessing of fuel rods. The Agency is hereby specifying that vitrification is BDAT for these wastes.

The Agency lacks, however, performance data upon which to base a concentration-based standard for this mixed waste. Additionally, the Agency believes that the potential hazards associated with exposure to radioactivity during analysis of this high-level mixed waste preclude setting a concentration-based treatment standard. For these reasons, the Agency is promulgating "Vitrification of High Level Radioactive Waste as a Method of Treatment" as the treatment standard for the high-level fraction of the mixed waste generated during the reprocessing of fuel rods exhibiting the characteristics of corrosivity (D002) and toxicity for metals (D004-D011). (See § 258.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.)

BDAT TREATMENT STANDARDS FOR D002, D004, D005, D006, D007, D008, D009, D010, AND D011

[Radioactive high-level wastes generated during the reprocessing of fuel rods subcategory]

Vitrification of high-level radioactive waste (HLVIT) as a method of treatment

(3) *Treatment Standards for D008 Radioactive Lead Solids.* The Agency proposed to develop a subcategory within the D008 wastes and to establish separate treatment standards for specific radioactive lead solids (54 FR 48439). These lead solids were proposed to include, but not be limited to, all forms of lead shielding, lead "pigs", and other elemental forms of lead. The proposed treatment standard for these wastes was "Surface Deactivation or Removal of Radioactive Lead Portions Followed by Encapsulation; or Direct Encapsulation as Methods of Treatment."

The Agency received comments requesting that the Agency clarify what would be included in "lead solids" for purposes of meeting this treatment standard. To clarify this point, today's treatment standard applies to all forms of radioactive mixed waste containing elemental lead (including discarded equipment containing elemental lead that served a personnel- or equipment-shielding purpose prior to becoming a RCRA hazardous waste). These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ash that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and then stabilized as ash.

One commenter challenged the Agency's proposed approach, stating that the proposed method that included "Surface Deactivation" was not based on a demonstrated, available technology. The Agency has information indicating that the lead surface of a shield can be decontaminated using a number of commercially available processes. The Agency agrees, however, that these processes have not been adequately investigated to determine which may be considered "demonstrated" or "best". The Agency, therefore, is dropping "Surface Deactivation" from the final treatment standard.

The Agency is today promulgating a treatment standard expressed as a required method of treatment for the radioactive lead solids treatability group: "Macroencapsulation as a Method of Treatment" (MACRO). See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.) Pretreatment practices such as surface decontamination are not precluded by this final rule. Following pretreatment, any nonradioactive lead is subject to the

treatment standard for characteristic lead wastes, 5.0 mg/l.

For low-level radioactive wastes containing lead, conventional stabilization technologies generally should not be affected by the presence of radioactive versus nonradioactive lead. As a result, the Agency is not including mixed wastes such as wastewater treatment residues and incinerator ash containing radioactive lead in a separate treatability group, except for the purpose of determining availability of treatment capacity (i.e., stabilization processes for radioactive materials should employ special safety precautions due to the radioactivity).

BDAT TREATMENT STANDARDS FOR D008

(Radioactive Lead Solids * Subcategory)

Macroencapsulation (MACRO) of radioactive lead solids as a method of treatment

* These lead solids include elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and then stabilized as ash.

(4) *Treatment Standards for Mixed Waste Containing Elemental Mercury.* Elemental mercury is typically found in vacuum pumps and related manometers. In the nuclear industry, this form of mercury has been contaminated with radioactive tritium (a radio-isotope of hydrogen). These wastes are identified as D009 or U151 mixed wastes.

The Agency proposed a treatment standard for radioactive wastes containing elemental mercury expressed as a method of treatment, "Amalgamation with Zinc as a Method of Treatment" (54 FR 48442-48443). A separate treatability group was established because the proposed treatment standard for nonradioactive wastes of this type was "Roasting or Retorting as a Method of Treatment", and the Agency had no information indicating that these processes could separate the mercury from the radioactive material (i.e., tritium). The Agency based its proposed treatment standard for radioactive wastes containing elemental mercury on data involving the application of elemental zinc powder dampened with dilute sulfuric acid (5-10%) to form a mercury amalgam.

The Agency is promulgating this treatment standard as proposed. The Agency is convinced that amalgamation provides significant reduction in the air emissions of mercury, as well as provides a change in mobility from

liquid mercury to a paste-like solid, and potentially reduces leachability. In response to comments stating that in addition to zinc, other inorganic reagents such as copper, nickel, gold, and sulfur were effective in forming mercury amalgamations, the required method, "Amalgamation" (AMLGM), may be accomplished using any of these reagents. (See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.) Roasting, retorting, or other recovery processes are not precluded from use by this standard as long as all residuals from these recovery processes comply with the amalgamation treatment standard prior to land disposal.

BDAT TREATMENT STANDARDS FOR D009 AND U151

(Radioactive elemental mercury subcategory)

Amalgamation (AMLGM) as a method of treatment

(5) *Treatment Standards for Mercury-Containing Hydraulic Oil Contaminated with Radioactive Materials.* The Agency proposed a treatment standard of "Incineration as a Method of Treatment with Incinerator Residues Meeting 0.2 mg/l" for D009 hydraulic oil contaminated with radioactive materials (54 FR 48443). This treatment standard was based on EPA's determination that a technology applicable to nonradioactive mercury wastes that contain high levels of organics was incineration. No comments were received on the proposed treatment standard. Upon reexamination of the proposed standard, however, the Agency is dropping the requirements that the treatment residues meet a specified level. This is consistent with the general land disposal restrictions policy that treatment residues resulting from the use of a required method of treatment are not required to also meet a concentration-based standard (see section III.A.1.b). Today's final treatment standard for D009 hydraulic oil contaminated with radioactive materials is "Incineration as a Method of Treatment" (INCIN). (See § 268.42 table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.)

BDAT TREATMENT STANDARDS FOR D009

[Mercury-containing hydraulic oil contaminated with radioactive materials subcategory]

Incineration (INCIN) as a method of treatment

*9. Alternate Treatment Standards for Lab Packs**a. Background*

The Agency received several comments in response to the Second Third proposed rule (54 FR 1056, January 11, 1989) on the regulatory status of lab packs. The commenters stated that lab packs are typically used by industry to dispose of small quantities of commercial chemical products (U and P wastes) and residues from analytical samples. These lab packs may contain hundreds of restricted wastes, and the applicable treatment standards must be achieved for each waste code contained in the lab pack. The commenters stated that these requirements pose an administrative burden that is incommensurate with the amount of waste being land disposed. In the Second Third final rule (54 FR 26594), the Agency restated its position that all restricted wastes placed in lab packs and land disposed must comply with the land disposal restrictions. However, the Agency solicited comments, data and specific suggestions to support treatment options for lab packs. As a result, the Agency proposed alternate treatment standards in the Third Third proposed rule (54 FR 48372, November 22, 1989), which generators would have the option of utilizing in managing "organic" and "inorganic" lab packs. The Agency received numerous comments in response to the proposal, and is today promulgating the alternate treatment standards with some revisions.

b. Alternate Treatment Standards

Many commenters suggested that EPA expand the universe of waste allowed in organic and inorganic lab packs. The Agency agrees with some of the information and suggestions provided by the commenters, and is promulgating revisions to the alternate treatment standards for lab packs in response to these comments. In order to facilitate implementation of the lab pack standards, the Agency is expanding the proposed list of waste codes in appendix IV to part 268 to include certain inorganic and organometallic hazardous wastes. The revised appendix IV includes the following hazardous wastes:

(1) Inorganic;

- (2) Organometallic;
- (3) Organic;
- (4) D003 reactives; and
- (5) D002 corrosives.

The Agency is promulgating an alternate treatment standard of incineration as a specified method followed by a requirement to meet the treatment standards for the EP toxic metals included in appendix IV (*i.e.*, D004-D008, and D010-D011; mercury wastes may not be included in appendix IV lab packs). Such lab packs are hereafter referred to as appendix IV lab packs.

The Agency is also revising the proposed appendix V to part 268, which now identifies organic hazardous wastes that can be effectively destroyed by incineration. The Agency is promulgating an alternate standard of incineration for lab packs containing organic hazardous wastes identified in appendix V to part 268, hereafter referred to as appendix V labpacks.

Generators may commingle unregulated (nonhazardous) waste in both appendix IV and appendix V lab packs. Generators may also commingle hazardous wastes that already meet the treatment standards in the appropriate appendix IV or V lab pack.

The Agency believes that the alternate approach being promulgated in today's final rule is broader in scope than the proposed approach and provides substantial administrative relief. It simplifies the management system for these wastes because owners/operators will not be required to analyze the treatment residue for compliance with individual treatment standards, except for the EP toxic metal constituents of organometallic, inorganic, D002 corrosive, and D003 reactive wastes where the waste codes are identified in appendix IV. As explained below, these waste streams must continue to meet all applicable treatment standards for the EP toxic metal constituents.

Generators who wish to use the alternate treatment standards for lab packs must notify the treatment facility in writing of the EPA Hazardous Waste Number(s) for each hazardous waste contained therein. Generators must submit such notices with each shipment of waste. Appendix V organic lab packs treated by the specified technology may be disposed of in subtitle C facilities without further testing or analysis for compliance with part 268. (The Agency reiterates, however, that owners/operators are responsible for determining whether all treatment residuals exhibit one or more of the characteristics of hazardous waste

before land disposal, either by waste analysis or knowledge of the waste.)

The Agency notes that the alternate treatment standard is not mandatory, and does not preempt the requirements for lab packs in 40 CFR 264.316 and 265.316. Generators may continue to ship regulated waste that meets all applicable treatment standards to land disposal facilities in accordance with the provisions of these sections. Generators of lab packs who wish to comply with the current implementation of the land disposal restrictions regulatory framework (*i.e.*, waste code carry through) as it applies to lab packs are free to do so. Lab packs containing hazardous wastes other than those specified in appendices IV and V are not eligible for the alternate treatment standards, and must meet the applicable treatment standard for each waste contained in the lab pack.

c. Agency Response To Major Comments

The Agency received numerous public comments on the proposed standards for lab packs. In general, commenters agreed with the proposed approach; however, they provided recommendations for further relief from the administrative and technical requirements for lab packs. The issues raised by commenters are addressed in the preamble and background document to today's final rule.

(1) *Inorganic and Organometallic Lab Packs.* The Agency proposed an alternate treatment standard of stabilization with Portland cement in a 20 percent binder-to-waste ratio (by weight) for lab packs containing certain EP toxic metals. As proposed, the alternate treatment standard was narrowly defined to include only barium, cadmium, trivalent chromium, lead, and silver; therefore, the alternate treatment standards were applicable primarily to those EP toxic characteristic wastes. Several commenters suggested that the Agency allow disposal of all hazardous and unregulated organic waste amenable to stabilization in inorganic lab packs. Several commenters suggested that EPA establish an alternate treatment standard of incineration followed by stabilization for organometallic wastes (including F and K waste codes for which EPA has promulgated treatment standards for metal constituents). The commenters stated that the organic constituents in these wastes are effectively destroyed by incineration, and stabilization of the remaining ash effectively reduces metals' leachability. The Agency agrees with the commenters

who stated that the alternate standard for inorganic hazardous waste disposed of in lab packs should be expanded, and that the treatment train proposed by the commenters may effectively treat certain organometallic wastes. The Agency believes that a more effective approach to managing inorganic and organometallic wastes would allow commingling of these wastes in an "organometallic" or "appendix IV lab pack." The alternate treatment standard of incineration followed by treatment to achieve the treatment standards for the EP toxic metals included in appendix IV will effectively destroy the organics and immobilize the metal constituents. The Agency, therefore, is not promulgating the alternate treatment standard for "inorganic lab packs" as proposed, but rather is promulgating an alternate standard for "organometallic" or "appendix IV lab packs."

The Agency is departing from its proposed approach for inorganic hazardous waste based on concern with specifying stabilization as a treatment standard for metallic waste streams with varying treatability with no requirement for verifying that stabilization of the hazardous constituents was effective. The Agency is also concerned that the proposed standard would create risks to worker health and safety due to the need for removal of inorganic waste from inner containers prior to stabilization with Portland cement. Several commenters claimed that such practices result in unnecessary exposure of treatment personnel, and increase the risk of accidents and resulting environmental exposure. The Agency was unaware of these safety and environmental concerns, and does not wish to increase the risks associated with treatment of these wastes.

Several commenters suggested that the Agency allow corrosive (D002) and reactive (D003) wastes in organic lab packs, while others requested that they be allowed in inorganic or organometallic lab packs. The commenters stated that industry experience with these wastes indicates that they can be effectively treated by incineration, and that recovery is not a cost-effective or practical method of treating these wastes. The Agency agrees in part with the commenters. Although Agency data show that some corrosive wastes can be incinerated effectively (54 FR 43422), many of these wastes contain metal constituents that may require further treatment. The Agency is concerned that incineration of metal-bearing wastes without verification may not be protective of

human health and the environment. (Where the Agency specifies a technology as the treatment standard, treatment using the specified technology satisfies the land disposal restriction requirements, and analysis of the treatment residues is not required for purposes of complying with part 268.) The Agency, therefore, is prohibiting D002 corrosive and D003 reactive wastes from appendix V lab packs. Rather, the Agency believes that the alternate treatment standard for Appendix IV organometallic lab packs, which requires incineration and treatment to meet certain EP toxic metal treatment standards, is more appropriate for D002 and D003 wastes because it requires incineration of organic constituents that may interfere with stabilization and verification that treatment of metals has occurred. The Agency, therefore, is including these waste codes in appendix IV to part 268. Generators may dispose of D002 and D003 wastes in an appendix IV (organometallic) lab pack along with other wastes identified in appendix IV, provided that the compatibility standards in §§ 268.316 and 265.316 are met.

The Agency wishes to clarify that where an appendix IV lab pack contains listed hazardous waste with waste code-specific treatment standards for inorganic constituents that are also EP toxic metals (§ 261.24) (within the same lab pack), the waste must be treated, at a minimum, to meet the EP toxic metal treatment standard. For example, an appendix IV lab pack may contain analytical samples of F006 waste (wastewater treatment sludges from electroplating operations) which has waste code-specific treatment standards for cadmium, chromium, lead and silver. These constituents are also EP toxic metals. In comparing the F006 treatment standards with the EP toxic metal treatment standards for these constituents, the F006 treatment standards for cadmium, lead, and silver are lower than their respective EP toxic metal treatment standards, while the F006 treatment standard for chromium is higher. The applicable alternate treatment standards for all of the metal constituents in this hypothetical analytic sample, at a minimum, would be the treatment standards for the EP toxic metals.

The Agency further wishes to clarify that where lab packs are combined with other non-lab pack hazardous wastes prior to or during treatment (e.g., prior to incineration), §§ 268.41 and 268.43(b) require that the entire mixture must be treated to meet the most stringent

treatment standards applicable to the wastes included in the mixture. For example, ash residue resulting from the incineration of a lab pack containing an EP toxic characteristic lead waste together with non-lab pack K001 nonwastewaters (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol), would have overlapping treatment standards for lead: 0.51 mg/l for the K001 nonwastewater, and 5.0 mg/l for the characteristic waste. In this case, the more stringent treatment standard would apply, based on the mixture of the K001 waste with the lab pack containing an EP toxic metal constituent.

(2) *Unregulated (Nonhazardous) Waste.* In the proposed rule, the Agency stated its concern with the effect of unregulated inorganic wastes on treatment of lab pack wastes. Specific data on the type and quantity of unregulated inorganics destined for disposal in "organic" and "inorganic" lab packs were not available; therefore, the Agency was reluctant to allow disposal of these wastes in lab packs where analysis of the treatment residuals was not required.

The Agency received several comments stating that unregulated waste such as glassware is typically disposed of and incinerated with hazardous waste generated by laboratories. The commenters also stated that protective clothing and gear, such as goggles, gloves, aprons, respirator cartridges, and pesticide products are also disposed of in lab packs. The commenters argued that these unregulated wastes should also be allowed in lab packs because their presence does not affect the performance of incineration of hazardous waste.

The Agency also received comments indicating that the excessive cost of lab pack disposal discourages commingling of hazardous and unregulated wastes. Thus, in most cases, disposal of unregulated waste in lab packs is limited to small quantities. The Agency believes that these small quantities can be effectively treated under the alternate treatment standard, and is revising its proposed approach to allow generators to dispose of unregulated waste in appendix IV lab packs.

(3) *Organic Lab Packs.* The Agency proposed to limit the applicability of the alternate treatment standard to organic wastes that have a treatment standard based on the performance of incineration or thermal destruction, or

where incineration only is specified as the treatment standard.

Some commenters stated that there is no sound basis for excluding waste codes that already meet the treatment standards from disposal in their respective lab packs. The Agency is not opposed to extending the alternate standards to such waste, but was unaware that generators disposed of treated waste (or waste that initially meets the treatment standard) in this manner. Numerous commenters have expressed a desire to continue this practice; therefore, the Agency is revising the language in 40 CFR 268.42(c)(1) so that prohibited waste that meets the applicable treatment standards is not precluded from disposal utilizing the alternate treatment standards, provided that each waste code(s) is listed in appendix IV or appendix V, and the waste is disposed of in the appropriate lab pack.

Several commenters stated that incineration (or deactivation by incineration) of small quantities of reactive U and P wastes in lab packs is proven to be safe and effective. The commenters further point to the fact that EPA proposed deactivation, incineration, or thermal treatment for several U and P waste codes that are potentially reactive wastes, but failed to include the applicable waste codes in appendix IV. The Agency agrees with the commenters that small quantities of reactive U and P waste codes as specified in the proposed rule (54 FR 48427-48428) can be safely packaged and incinerated in a lab pack provided that the requirements for incompatible waste in §§ 264.316 and 265.316 are met. The Agency is therefore amending appendices IV and V to include several additional U and P waste codes. The Agency also is including California list PCBs and dioxin-containing waste (F020-F023, F026-F028) in the lab pack treatability group as proposed, but reiterates that treatment of these wastes requires more stringent performance standards than wastes included in part 268 appendices IV and V (i.e., dioxins must achieve a destruction and removal efficiency of 99.9999 percent and PCBs must meet the technical standard in 40 CFR 761.70). Where generators choose to commingle one or both of these wastes with organic lab pack wastes listed in appendices IV and V, the entire lab pack must be incinerated to meet the more stringent standard. The following examples are provided for clarification:

(a) A lab pack containing dioxin-containing waste, California list PCBs and appendix V waste must be incinerated according to the technical

standards of 40 CFR 761.70 and the applicable requirements of parts 264, 265, and 266 (including all applicable performance standards for dioxin-containing waste).

(b) A lab pack that contains only dioxin-containing waste (F020-23 and F026-23) or a mixture of dioxin-containing waste and organic hazardous waste codes listed in appendix V to part 268 must be incinerated according to the provisions in part 264 or 265 subpart O (including the applicable performance standards for dioxin-containing waste).

According to the provisions of today's final rule, generators may utilize the alternate treatment standards if their lab packs contain those wastes summarized below:

(a) "Appendix IV organometallic lab packs" may contain the following hazardous waste identified in appendix IV:

- (1) Organometallic;
- (2) Inorganic;
- (3) Organic;
- (4) D002 corrosives; and
- (5) D003 reactives.

(b) "Appendix V organic lab packs" may contain only those organic hazardous wastes identified in appendix V.

Lab packs which contain any hazardous waste other than wastes listed in Appendix V are not appendix V organic lab packs, and may not use the alternate treatment standard.

d. Other Requirements

EPA proposed that generators or owners/operators who dispose of lab packs according to the alternate treatment standard must also meet the requirements for lab packs specified in 40 CFR 264.316 and 265.316. Several commenters expressed concern with the provision that requires metal outer containers (§ 264.316(b)) and § 265.316(b)), and pointed out that the original intent of these regulations was to ensure adequate containment for lab pack wastes that were being land disposed with or without prior treatment. The commenters further stated that lab packs destined for incineration are generally put in fiber packs that meet the Department of Transportation (DOT) requirements (49 CFR 173.12) and are suitable for incineration. The commenters requested that the Agency allow the continued use of fiber packs that meet applicable DOT requirements. The Agency does not wish to disrupt the use of fiber packs, and is amending §§ 264.316(b) and 265.316(b) to allow their continued use.

The Agency is promulgating its proposed approach with regard to

generator notification requirements, and is requiring generators to list each EPA Hazardous Waste Code on a notification form and identify the applicable lab pack categories. Several commenters stated that the notification provision as proposed is burdensome. The Agency believes, however, that notification is necessary in order for owners/operators to verify that they are accepting for treatment only those waste codes covered under their permit. The Agency reiterates that the provisions promulgated in today's final rule do not supersede permit requirements under the RCRA hazardous waste program.

Generators or owners/operators who intend to utilize the applicable alternate treatment standard for hazardous waste codes listed in appendix IV and appendix V to part 268 must comply with the notification, certification, and recordkeeping requirements of 40 CFR 268.7(a) (7) and (8). They must also comply with the provisions in sections (a)(1), (a)(5), (a)(6), (b)(2) and (c). The Agency is requiring generators utilizing the alternate treatment standards to state whether the lab pack is an appendix IV or appendix V lab pack, and certify that hazardous wastes included therein are listed in the applicable appendix. The Agency emphasizes that lab packs containing hazardous wastes other than those listed in appendix IV and appendix V to part 268 are excluded from the alternate treatment standards for lab packs.

III.B Capacity Determinations

1. *Determination of Alternative Capacity and Effective Dates for Surface-Disposed Wastes.* Between May 8, 1990, when this rule was signed, and the date of its publication in the Federal Register, EPA discovered and corrected several discrepancies between the capacity variances discussed in the preamble and those included in the regulatory language. For details on those corrections, please contact those listed in the additional information section at the beginning of the preamble.

a. *Total Quantity of Land-Disposed Wastes.* The capacity analyses for wastes for which EPA is today finalizing treatment standards were conducted using the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (the TSDR Survey). EPA conducted the TSDR Survey during 1987 and early 1988 to obtain comprehensive data on the nation's capacity for managing hazardous waste and on the volumes of hazardous waste being disposed of in or on the land in 1986 (i.e., land disposal).

Survey data are part of the record for this final rule.

Other major sources of data include the National Survey of Hazardous Waste Generators, conducted by EPA during 1988 and 1989. This survey includes data on waste generation, waste characterization, and hazardous waste treatment capacity in units exempt from RCRA permitting. These data are also part of the record for this final rule.

For mixed RCRA/radioactive wastes, EPA used data supplied by the U.S. Department of Energy. Low-level radioactive waste survey data from individual states and State compacts were also used, as were data summaries in several overview reports on mixed radioactive waste.

The various land disposal methods used in 1983 and the quantities of waste they handled (excluding mixed radioactive wastes) are presented in Table III.B.1.(a). The data indicate about 5.7 billion gallons of the wastes for which standards are being finalized today were disposed of in or on the land. This estimate includes 77 million gallons that were stored in waste piles for short-term storage purposes. These stored wastes will eventually be treated, recycled, or permanently disposed of in other units. To avoid double counting, the volumes of wastes reported as being stored in waste piles have not been included in the volumes of wastes requiring alternative treatment.

EPA estimates that about 22 million gallons of treatment residuals from minimum technology impoundments or from impoundments that were replaced by a tank (e.g., standard cement, steel tanks) will require alternative treatment. EPA assumes that these wastes are now being sent off-site for treatment. Consequently, this amount is included as treatment capacity required in today's rule.

TABLE III.B.1.(3)—VOLUME OF WASTES BY LAND DISPOSAL METHOD FOR WHICH STANDARDS ARE BEING FINALIZED

(millions of gallons/year)	
Land disposal method	Volume
Storage:	
Waste piles.....	77
Surface impoundments.....	2
Treatment:	
Waste piles.....	30
Surface impoundments.....	22
Disposal:	
Landfills.....	349
Land treatment.....	81
Surface impoundments.....	52
Underground injected.....	5,086

TABLE III.B.1.(a)—VOLUME OF WASTES BY LAND DISPOSAL METHOD FOR WHICH STANDARDS ARE BEING FINALIZED—Continued

(millions of gallons/year)	
Land disposal method	Volume
Total.....	5,701

In addition, 30 million gallons of wastes were treated in waste piles, 52 million gallons were disposed of in surface impoundments, 430 million gallons were disposed of in land treatment units or landfills, and 5.1 billion gallons were injected underground. All of these wastes will require alternative treatment capacity.

EPA notes, however, that the TSDR Survey may overstate demand for treatment capacity for wastewaters that were treated or disposed of in surface impoundments at the time of the survey (1987 and early 1988). This overstatement is due to the requirement that impoundments receiving most hazardous wastes must now be retrofitted to meet minimum technology requirements, or taken out of service, as a result of RCRA section 3005(j). If an impoundment continues to operate after being retrofitted, it becomes a section 3005(j)(11) impoundment, provided that the wastewaters are treated and residues are removed annually. Wastewaters that are not treated or disposed of in surface disposal units, or that are treated in section 3005(j)(11) impoundments, do not create any demand for alternative commercial treatment capacity.

EPA solicited comments on those wastewaters currently disposed of in surface units that require alternative commercial treatment capacity. One commenter mentioned that EPA did not include volumes associated with surface impoundments awaiting closure. No commenter provided information on the volumes associated with these impoundments. Based on EPA's data, approximately ten percent of the surface impoundments that have submitted closure plans are awaiting closure plan approvals. EPA believes that most of these impoundments removed liquid hazardous wastes on or about November 8, 1988. EPA believes that the remaining volume of wastewaters in surface disposal units awaiting closure is small. Consequently, EPA did not include in the capacity analysis additional volumes associated with surface impoundments awaiting closure. (This discussion does not apply to

wastewaters destined for deepwell disposal.)

EPA also requested comments on the quantity of RCRA P and U waste codes currently being disposed of in deepwells. The TSDR Survey data include some large-volume waste streams containing P and U RCRA codes. However, P and U wastes by definition are discarded off-specification products or residues and are usually generated in small volumes. Facilities disposing of these large-volume waste streams in deepwells have indicated that small volumes of P and U wastes were mixed with large volumes of other wastes, but the facilities were not able to provide a specific volume for the deepwell-disposed P and U wastes. Since the facilities generally described the volume of P and U wastes deepwell-disposed as "very small," EPA has assumed for the analysis of alternative treatment capacity that the national volume of P and U wastes needing alternative capacity is less than 100,000 gallons. EPA also requested comments on the assumption that the volumes of P and U wastes being deepwell-disposed are less than 100,000 gallons.

EPA received several comments concerning deepwell-injected P and U wastes. One commenter submitted data indicating that their facility disposed of 20,456 gallons of U wastes by deepwell injection in 1989. However, this commenter has received a no-migration petition approval and no alternative capacity is needed. One commenter indicated that EPA's methodology for determining actual P and U volumes was flawed, resulting in artificially low estimates, and believed that the true volume of these wastes was large enough to warrant a national capacity variance (3.3 million gallons at the commenter's facility alone). EPA has reviewed these data and agrees that the P and U volume at the second commenter's facility is much larger than previously assigned under the P and U methodology of 100,000 gallons. However, this volume has been determined to belong to a stream that is not a hazardous waste under Section 261.3(a)(2)(iv). The large volume of the stream does not reflect the volume of P and U wastes in the stream—which resulted from *de minimis* losses—but rather the total wastewater volume. This volume, therefore, does not require alternative treatment capacity. Consequently, EPA is not changing its P and U waste methodology and is not granting a national capacity variance to these wastes.

The following sections provide a summary of the capacity analysis for the

final rule. The detailed analyses are presented in the background document, and all data are included in the public docket.

b. Required Alternative Capacity for Surface-Disposed Wastes. EPA assessed the requirements resulting from today's final rule for alternative treatment capacity for surface-disposed wastes. Using primarily the TSDR and Generator Survey data, EPA first characterized the volumes of wastes for which treatment standards are being established. Waste streams were characterized on the basis of land disposal method, waste code, physical and chemical form, and waste characterization data. Using this information, EPA placed the wastes in treatability groups associated with applicable treatment technologies. The waste volumes were then summed by treatability group to determine the amount and type of alternative treatment capacity that would be required when owners or operators comply with the land disposal restrictions being finalized today.

Based on this analysis, EPA estimates that today's rule could affect about 5.7 billion gallons of wastes that are land-disposed annually. This total includes 77 million gallons in short-term storage, and 79 million gallons that already meet treatment standards or that can be treated on-site. Consequently, only about 5.5 billion gallons will require treatment to meet standards EPA is promulgating in today's rule. Of this total, 515 million gallons were surface-disposed (i.e., excluding underground injection), and the remaining 5 billion gallons were underground injected. (See Section 2 for determinations of alternative capacity and effective dates for wastes injected underground.) EPA estimates that treatment of these surface-disposed and deepwell-injected wastes will generate approximately 82 million gallons of residuals requiring treatment before land disposal.

The volumes of surface-disposed wastes by waste codes that require commercial treatment and/or recycling capacity to meet the standards that EPA is promulgating today are presented in Table III.B.1.(b). This table does not include waste volumes that can be treated on-site by the generator, nor does it contain volumes of mixed radioactive wastes.

As explained in section III.A of this preamble, EPA is finalizing treatment standards expressed either as concentration limits based on the performance of the BDAT, or as a specific treatment technology. When a treatment standard is expressed as a concentration limit, a specific treatment method is not required to achieve that

concentration level. However, the BDAT (and comparable technologies), as discussed in Section III.A., were used as the basis for determining available capacity. When the treatment standard is expressed as a specific technology (rather than a concentration limit), that technology must be used.

The TSDR Survey contains data on specific treatment processes at facilities. The data enable EPA to identify specific BDAT treatment (and comparable treatment) in its assessment of both off-site and on-site capacity. Therefore, EPA believes that the capacity identified as available for a specific treatment technology will be capable of meeting the BDAT standard, which has been developed such that a well-designed and well-operated BDAT treatment process should be capable of meeting it.

In the proposed rule, EPA established criteria for differentiating between a liquid and a solid waste because of the variance for D001 sludges and solids. EPA requested comments on the proposed criteria, and during the public comment period received two comments requesting clarification of the sludge/solid definition. EPA also received several comments identifying additional sludge/solid incineration capacity. Commenters identified new units at existing facilities and increased capacity resulting from trial burns conducted after the 1988 survey. Based on an analysis of this information, EPA has determined that there is adequate capacity to incinerate D001 sludge/solid wastes. Consequently, EPA is not granting D001 sludge/solids a variance, and the criteria proposed for differentiating between a liquid and a solid are no longer necessary.

TABLE III.B.1.(b)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES

[million gallons/year]	
Waste code	Capacity required for surface-disposed wastes
First Third Code:	
F006	20.3
F019	12.8
K004	0.1
K017	<0.1
K021	<0.1
K031	0.8
K035	<0.1
K048	37.1
K049	31.7
K050	11.8
K051	78.1
K052	12.5
K073	<0.1

TABLE III.B.1.(b)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

[million gallons/year]	
Waste code	Capacity required for surface-disposed wastes
K084	0.2
K085	<0.1
K106	0.5
P001	<0.1
P004	<0.1
P005	<0.1
P010	<0.1
P011	<0.1
P012	<0.1
P015	<0.1
P018	<0.1
P020	<0.1
P037	<0.1
P048	<0.1
P050	<0.1
P058	<0.1
P059	<0.1
P069	<0.1
P070	<0.1
P081	<0.1
P087	<0.1
P092	<0.1
P105	<0.1
P108	<0.1
P115	<0.1
P120	<0.1
P123	<0.1
U007	<0.1
U009	<0.1
U010	<0.1
U012	<0.1
U019	<0.1
U022	<0.1
U029	<0.1
U031	<0.1
U036	<0.1
U037	<0.1
U043	<0.1
U044	<0.1
U050	<0.1
U051	0.1
U061	<0.1
U066	<0.1
U067	<0.1
U077	<0.1
U078	<0.1
U103	<0.1
U105	<0.1
U108	<0.1
U122	<0.1
U129	<0.1
U133	<0.1
U134	<0.1
U151	<0.1
U154	<0.1
U158	0.3
U159	<0.1
U177	<0.1
U180	<0.1
U185	<0.1
U188	0.3
U192	<0.1
U209	<0.1
U210	<0.1
U211	<0.1
U219	<0.1
U220	0.1
U226	<0.1
U227	2.7
U228	<0.1

TABLE III.B.1.(b)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

(million gallons/year)

Waste code	Capacity required for surface-disposed wastes
U237	<0.1
U238	<0.1
U248	<0.1
U249	<0.1
Second Third Code:	
F024	<0.1
K105	<0.1
P002	<0.1
P003	<0.1
P014	<0.1
P066	<0.1
P067	<0.1
UC02	<0.1
U003	<0.1
U005	<0.1
U008	<0.1
U014	<0.1
U021	<0.1
U032	<0.1
U047	<0.1
U057	<0.1
U070	<0.1
U073	<0.1
U090	2.7
U083	<0.1
U092	<0.1
U093	<0.1
U101	<0.1
U106	<0.1
U109	<0.1
U114	<0.1
U116	<0.1
U119	<0.1
U127	<0.1
U131	0.1
U140	<0.1
U142	<0.1
U144	<0.1
U146	<0.1
U147	<0.1
U149	<0.1
U161	<0.1
U162	<0.1
U165	<0.1
U169	<0.1
U170	<0.1
U196	<0.1
U208	<0.1
U213	<0.1
U214	<0.1
U217	<0.1
U218	<0.1
U239	0.2
U244	<0.1
Third Third Code:	
D001	19.6
D002	25.6
D003	9.2
D004	12.9
D005	16.4
D006	16.3
D007	118.4
D008	73.0
D009	4.0
D010	2.0
D011	2.5
D012	0.5
D013	0.4
D014	1.9
D015	<0.1
D016	0.2

TABLE III.B.1.(b)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

(million gallons/year)

Waste code	Capacity required for surface-disposed wastes
D017	0.4
F039 ¹	46.6
K002	0.2
K003	0.2
K005	0.1
K006	0.2
K069	<0.1
K083	<0.1
P006	<0.1
P022	<0.1
P024	<0.1
P028	<0.1
P031	<0.1
P047	<0.1
P051	<0.1
P064	<0.1
P073	<0.1
P075	<0.1
P077	<0.1
P088	<0.1
P093	<0.1
P119	<0.1
U001	<0.1
U004	<0.1
U006	<0.1
U017	<0.1
U030	<0.1
U039	<0.1
U048	<0.1
U052	<0.1
U055	0.2
U056	<0.1
U071	<0.1
U072	0.2
U075	<0.1
U076	<0.1
U079	<0.1
U081	<0.1
U082	<0.1
U112	<0.1
U117	<0.1
U118	<0.1
U120	<0.1
U121	<0.1
U123	<0.1
U125	<0.1
U126	<0.1
U148	<0.1
U156	<0.1
U167	<0.1
U181	<0.1
U182	<0.1
U201	<0.1
U202	<0.1
U204	<0.1
U225	<0.1
U234	<0.1
U240	<0.1
U247	<0.1

¹ Multi-source leachate.

c. Capacity Currently Available and Effective Dates. Table III.B.1.(c) presents an estimate for each treatment technology of the volumes of wastes that will require alternative treatment before land disposal to comply with the standards finalized today. The amount

of capacity that is available at commercial facilities in each case is also presented. Available capacity was calculated using the TSDR Survey and other capacity data. Available capacity is equal to the specific treatment system's maximum capacity minus the amount used in 1988. In addition, the available capacity presented in this section was adjusted to account for wastes previously restricted from land disposal by subtracting the capacity required for land-disposed solvent wastes, First Third wastes, and Second Third wastes.

In general, Table III.B.1.(c) indicates that there is inadequate capacity for certain technologies: combustion of sludges and solids, mercury retorting, acid leaching followed by chemical precipitation, thermal recovery, and vitrification.

For combustion of sludges and solids, there is inadequate capacity for sludges and solids derived from treating multi-source leachate, for K048 through K052 nonwastewaters (temporarily), and soil and debris. (See section III.B.3 for a more detailed discussion.) However, there is adequate capacity for all other wastes needing combustion of sludges and solids. For mercury retorting, there is inadequate capacity for high mercury D009, K106, and U151 nonwastewaters. However there is adequate capacity for other wastes needing this technology. For acid leaching and chemical precipitation, there is insufficient capacity to treat low-mercury D009, K106, P065, P092, and U151 nonwastewaters. For thermal recovery, EPA has determined that there is insufficient capacity for P087 wastewaters and nonwastewaters. For vitrification, there is inadequate capacity for arsenic nonwastewaters.

It is important to note that some of the wastes, because of their actual physical form, cannot be treated to meet standards simply by using the technology identified as BDAT. These wastes must be treated through several steps, called a "treatment train." EPA assumes that the resultant residuals will also need to be treated using alternative technologies before land disposal; therefore, the total volumes reported were assigned to appropriate technologies.

The following sections discuss the results of the individual capacity analyses and effective dates for each waste code included in today's final rule. Table III.B.1.(d) summarizes all the surface-disposed wastes for which EPA is granting a two-year variance. The detailed basis for EPA's conclusions can be found in the capacity background document for this final rule.

TABLE III.B.1.(c)—AVAILABLE AND REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR SURFACE-DISPOSED WASTES

[millions of gallons/yr. ¹

Technology	Available capacity	Required capacity	Variance
Acid leaching followed by chemical precipitation ²	0	3	Yes
Alkaline chlorination	7	6	No
Alkaline chlorination followed by chemical precipitation	6	2	No
Biological treatment	47	<1	No
Biological treatment followed by chemical precipitation	14	<1	No
Chemical oxidation followed by chemical precipitation	28	7	No
Chemical oxidation followed by chromium reduction and chemical precipitation	2	2	No
Chemical precipitation	339	25	No
Chromium reduction followed by chemical precipitation	96	85	No
Combustion of liquids	237	16	No
Combustion of sludges/solids	41	* 213	Yes
Mercury retorting	<1	3	Yes
Neutralization	35	22	No
Secondary lead smelting	37	2	No
Stabilization	478	155	No
Thermal recovery ³	0	<1	Yes
Thermal recovery of cadmium batteries	<1	<1	No
Vitrification	0	22	Yes

¹ This table does not include mixed radioactive wastes, which are receiving a national capacity variance for all applicable treatment technologies.² EPA has insufficient data to differentiate between low and high mercury nonwastewaters. Consequently, EPA conducted a worst-case analysis and assigned all nonwastewater volumes to both the high concentration and low concentration technologies (i.e., mercury retorting and acid leaching followed by chemical precipitation, respectively). EPA had no data on commercial acid leaching and chemical precipitation capacity and believes there is insufficient capacity to treat these low mercury nonwastewaters.³ Excluding secondary smelting of lead wastes.⁴ For further clarification of this number, see the discussion on K048-K052.TABLE III.B.1.(d)—SUMMARY OF NATIONAL CAPACITY VARIANCES FOR SURFACE-DISPOSED WASTES ¹

Required alternative treatment technology	Waste code/Physical form
Acid leaching and chemical precipitation	D009 Low mercury nonwastewater. K106 Low mercury nonwastewater. P065 Low mercury nonwastewater. P092 Low mercury nonwastewater. U151 Low mercury nonwastewater.
Combustion of sludge/solids	F039 ² Nonwastewater. K048 ³ Nonwastewater. K049 ³ Nonwastewater. K050 ³ Nonwastewater. K051 ³ Nonwastewater. K052 ³ Nonwastewater.
Mercury retorting	D009 High mercury nonwastewater. K106 High mercury nonwastewater. P065 High mercury nonwastewater. P092 High mercury nonwastewater. U151 High mercury nonwastewater.
Secondary smelting storage area	D008 Lead materials before secondary smelting.
Thermal recovery	P087 Nonwastewater/wastewater.
Vitrification	D004 Nonwastewater. K031 Nonwastewater. K084 Nonwastewater. K101 Nonwastewater. K102 Nonwastewater.

TABLE III.B.1.(d)—SUMMARY OF NATIONAL CAPACITY VARIANCES FOR SURFACE-DISPOSED WASTES ¹—Continued

Required alternative treatment technology	Waste code/Physical form
	P010 Nonwastewater. P011 Nonwastewater. P012 Nonwastewater. P036 Nonwastewater. P038 Nonwastewater. U136 Nonwastewater.

¹ EPA is granting these wastes a two-year national capacity variance, except for K048-K052 nonwastewaters. This table does not include mixed radioactive wastes, which are receiving a national capacity variance for all applicable treatment technologies.² Multi-source leachate.³ For K048-K052 petroleum-refining nonwastewaters, EPA is granting only a 6 month variance.

(1) *Ignitable, Corrosive, Reactive, and EP Toxic Halogenated Pesticide Characteristic Wastes.* This group includes ignitable characteristic wastes (D001), corrosive characteristic wastes (D002), reactive characteristic wastes (D003), and EP toxic halogenated pesticides (D012, D013, D014, D015, D016, and D017).

(a) *Ignitable Characteristic Wastes (D001).* EPA has identified four subcategories for D001 wastes: ignitable liquids, ignitable reactives, oxidizers, and ignitable compressed gases. EPA has determined that the D001 ignitable liquids subcategory should be divided

into three treatability groups: (1) D001 ignitable liquid nonwastewaters with a TOC content greater or equal to ten percent, (2) D001 ignitable liquid nonwastewaters with a TOC content greater than one percent but less than ten percent, and (3) D001 ignitable liquid nonwastewaters with a TOC content greater than or equal to 10 percent. EPA is promulgating deactivation as the method of treatment for ignitable liquids nonwastewaters with a TOC content less than ten percent. For ignitable liquids nonwastewaters with a TOC content greater than or equal to 10 percent, EPA is promulgating incineration, fuel substitution, or recovery as methods of treatment. EPA is promulgating deactivation as the method of treatment for D001 ignitable liquids wastewaters. For capacity analysis purposes, EPA assigned volumes of these wastes to incineration. Sufficient treatment capacity exists for the D001 ignitable liquids wastes destined for surface disposal; therefore, no capacity variance is being granted for them.

EPA requested comments on availability of capacity for incineration of D001 liquids mixed with sludges and solids. Several commenters stated that adequate capacity exists to treat D001 liquids mixed with sludges and solids, and therefore, that no capacity variance should be granted to these wastes. Based on the review of available sludges and solids treatment capacity

data for incineration and cement kilns, EPA has determined that adequate capacity exists to treat surface-disposed D001 liquids wastes. Therefore, EPA is not granting a national capacity variance for these wastes.

EPA is promulgating deactivation as the method of treatment for D001 ignitable reactives and oxidizers. EPA has determined that sufficient capacity exists for these wastes; therefore, EPA is not granting a national capacity variance for them.

For D001 ignitable compressed gases, EPA is promulgating deactivation as the method of treatment. EPA has determined that adequate capacity exists for these wastes; therefore, EPA is not granting a national capacity variance for them.

(b) Corrosive Characteristic Wastes (D002). EPA has identified three treatability groups for D002 wastes: acids, alkalines, and other corrosives. EPA is promulgating deactivation, which includes neutralization, as the method of treatment for the D002 acid and alkaline subcategories. In addition, recovery of acids or bases is included as an option for these standards. By definition, wastes in these subcategories are liquids; therefore based on the limited number of surface impoundments that meet minimum technology requirements and the ban on liquids in landfills, EPA believes that few, if any, of these wastes are surface-disposed. For the capacity analysis, EPA assigned all D002 wastes to neutralization. EPA has determined that sufficient neutralization capacity does exist for acid and alkaline D002 wastes that are surface-disposed; therefore, EPA is not granting a national capacity variance for them.

For the D002 other corrosives category, EPA is promulgating deactivation as the method of treatment. These wastes can be deactivated using chemical reagents or by other means. In addition, EPA believes that these wastes are generated in low volumes. Therefore, EPA is not granting a national capacity variance for them.

(c) Reactive Characteristic Wastes (D003). For D003 wastes, EPA has identified five treatability groups: reactive cyanides, explosives, water reactives, reactive sulfides, and other reactives. For D003 cyanides, EPA is promulgating concentration standards based on alkaline chlorination, wet-air oxidation, or electrolytic oxidation. Although reactive cyanides account for the majority of D003 generated wastes, EPA believes that most are already restricted from landfills by existing regulations (40 CFR Part 264.312, 35.312). EPA believes that sufficient capacity does exist for the volume of

surface-disposed D003 cyanide reactive wastes; therefore, EPA is not granting a national capacity variance for them.

For D003 reactive sulfides, EPA is promulgating deactivation as the method of treatment, which includes chemical oxidation. EPA believes sufficient capacity does exist for the volume of surface-disposed D003 sulfide wastes; therefore, EPA is not granting a national capacity variance for them.

For D003 explosive wastes, EPA is promulgating deactivation as the method of treatment. Because most of these wastes are already restricted from land disposal by existing regulations and are commonly burned and/or detonated, EPA is not granting a national capacity variance for them.

For D003 water-reactive wastes, EPA is promulgating deactivation as the method of treatment. EPA believes that these wastes are generated sporadically and in low volumes and are not typically land-disposed. Therefore, EPA is not granting a national capacity variance for them.

For other reactive D003 wastes, EPA is promulgating deactivation as the method of treatment. EPA believes these wastes could be incinerated or detonated openly and that there is adequate capacity for treating the small volumes that are surface-disposed. Therefore, EPA is not granting a national capacity variance for them.

(d) EP Toxic Halogenated Pesticide Wastes.

- D012—Characteristic of EP Toxic for Endrin
- D013—Characteristic of EP Toxic for Lindane
- D014—Characteristic of EP Toxic for Methoxychlor
- D015—Characteristic of EP Toxic for Toxaphene
- D016—Characteristic of EP Toxic for 2,4-D
- D017—Characteristic of EP Toxic for 2,4,5-TP

For these EP toxic halogenated pesticide nonwastewaters, EPA is promulgating concentration standards based on incineration. For D012 and D015 wastewaters, EPA is promulgating incineration or biological treatment as methods of treatment; for D013 wastewaters, EPA has set incineration or carbon adsorption as methods of treatment; for D014 wastewaters, EPA is promulgating incineration or wet-air oxidation as methods of treatment; for D016 and D017 wastewaters, EPA has set incineration or chemical oxidation as methods of treatment. EPA has also set biodegradation as an alternate method of treatment for D016 nonwastewaters. EPA has determined that sufficient treatment capacity exists for these wastes; therefore, EPA is not granting EP toxic pesticide wastewaters and

nonwastewaters a national capacity variance.

(2) *Metal Wastes*. This group includes arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, thallium, and vanadium wastes.

(a) Arsenic Wastes

- D004—EP Toxic for arsenic
- K031—By-product salts generated in the production of MSMA and cacodylic acid
- K084—Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
- K101—Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
- K102—Residues from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
- P010—Arsenic acid
- P011—Arsenic (V) oxide
- P012—Arsenic (III) oxide
- P036—Dichlorophenylarsine
- PC38—Diethylarsine
- U136—Cacodylic acid

For arsenic nonwastewaters, EPA is promulgating concentration standards based on vitrification. EPA has determined that for some arsenic nonwastewaters the standards can be met with chemical or thermal oxidation to the arsenate form followed by chemical precipitation with iron salts followed by arsenic stabilization of the precipitate. This technology may be inappropriate for all arsenic nonwastewaters because organics are known to interfere with the stabilization process. EPA believes vitrification will work for all forms of arsenic nonwastewaters, because high temperatures are expected to destroy the organo-metallic bonds, and therefore, its performance is not limited by the presence of organics. Thus, EPA has assigned arsenic nonwastewaters to vitrification for the capacity analysis. The TSDR Survey indicates that no commercial vitrification capacity exists. EPA requested information on commercial vitrification capacity, but received no comments demonstrating that this type of capacity exists. Therefore, EPA is granting a two-year capacity variance to the surface-disposed arsenic nonwastewaters listed above.

For arsenic wastewaters, EPA is promulgating concentration standards based on chemical precipitation. The TSDR Survey and other capacity data indicate that adequate chemical precipitation capacity exists; therefore,

EPA is not granting arsenic wastewaters a capacity variance.

(b) Barium Wastes. For D005 and P013 wastewaters, EPA is promulgating concentration standards based on chemical precipitation; for D005 and P013 (except as indicated below) nonwastewaters, EPA is promulgating concentration standards based on stabilization.

For P013 nonwastewaters with high levels of organics, EPA is requiring that these wastes be incinerated prior to stabilization. Sufficient capacity exists to treat surface-disposed D005 and P013 wastes. Therefore, EPA is not granting a national capacity variance for them.

(c) Cadmium Wastes. For D006 wastes, EPA is promulgating treatment standards for three categories: wastewaters, nonwastewaters, and cadmium batteries.

For D006 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For D006 nonwastewaters, EPA is promulgating concentration standards based on stabilization or metal recovery. EPA believes that sufficient capacity exists to treat surface-disposed cadmium nonwastewaters and wastewaters. Therefore, EPA is not granting a national capacity variance for them.

For D006 cadmium batteries, EPA is promulgating thermal recovery as the method of treatment. In the proposed rule, EPA proposed granting D006 cadmium batteries a national capacity variance due to a lack of identified recovery capacity. During the public comment period, two commenters identified available commercial cadmium battery recovery capacity (these comments were available for reply comments). EPA contacted these commenters to verify their capacity. Based on these contacts, EPA received additional information and determined that adequate capacity for treating surface-disposed cadmium batteries exists. Therefore, EPA is not granting D006 cadmium batteries a national capacity variance.

(d) Chromium Wastes. For D007 chromium and U032 (calcium chromate) wastewaters, EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation; for D007 and U032 nonwastewaters, EPA is promulgating concentration standards based on chromium reduction followed by stabilization. EPA believes sufficient treatment capacity exists for the volume of these wastes. Therefore, EPA is not granting a national capacity variance for them.

(e) Lead Wastes.

D008—EP toxic for lead

P110—Tetraethyl lead

U144—Lead acetate

U145—Lead phosphate

U146—Lead subacetate

K069—Emission control dust/sludge from secondary lead smelting

K100—Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting

For D008 wastes, EPA is promulgating standards for three categories: nonwastewaters, wastewaters, and lead-acid batteries. For D008 nonwastewater lead wastes, EPA is promulgating concentration standards based on stabilization, except where the waste contains significant concentrations of organics. In this case, these wastes may need to be incinerated prior to stabilization. For D008 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes sufficient capacity exists for surface-disposed D008 wastewaters and nonwastewaters. Therefore, EPA is not granting a national capacity variance for D008 wastewaters and nonwastewaters, with the exceptions noted below.

EPA is promulgating thermal recovery as the method of treatment for lead-acid batteries. Secondary lead smelters have stated that they store these wastes in piles prior to recovery. EPA has indicated in a previous rulemaking that the shells surrounding lead-acid batteries are considered to be storage containers (see 47 FR 12318 and 40 CFR 264.314(f)(3)). Therefore, to the extent that lead-acid battery storage meets all the requirements of the LDR storage prohibitions at 40 CFR 268.50, such storage is permissible.

In the proposed rule, EPA solicited comments on the management of other D008 lead material at secondary smelters. EPA also indicated that storage of lead materials in waste piles prior to smelting is a form of land disposal, and as such these staging areas are subject to the statutory prohibitions. During the public comment period, EPA received several comments from the secondary lead smelting industry regarding the storage of battery parts prior to smelting. Several commenters expressed concern that EPA's determination that staging piles are a form of land-disposal could force them to close or operate out of compliance while staging piles are replaced by tanks (assuming tank storage is viable). As a result of these comments, EPA contacted several secondary smelters to assess the potential capacity impact of required staging area reconstruction. Because of the large volume of batteries currently processed at smelting facilities whose

continued storage operation remains in question, EPA is granting a two-year national capacity variance to allow storage of the batteries preceding smelting. EPA is also reconsidering whether certain forms of battery parts storage meet the meaning of "land disposal" under section 3004(k). In particular, if battery parts (or other wastes) are stored in 3-sided tank-like devices on concrete inside buildings (the present storage method of some secondary lead smelters) the Agency is not certain that the language and policies underlying section 3004(k) warrant designating such practice as "land disposal." Given the two-year national capacity variance in this rule, however, the Agency need not make a final decision on this point in this rulemaking.

For P110, U144, U145, and U146 wastes, EPA is promulgating concentration standards based on chemical oxidation followed by chemical precipitation for wastewaters, and stabilization for nonwastewaters. P110, U144, U145, and U146 nonwastewaters containing significant concentrations of organics may require incineration prior to stabilization. EPA believes sufficient capacity exists for the small volume of these wastes that are surface-disposed; therefore, EPA is not granting a national capacity variance for them.

EPA is revoking the no land disposal standard based on recycling standard promulgated in the First Third rule for the non-calcium sulfate subcategory for K069 nonwastewaters. For K069 calcium sulfate nonwastewaters, EPA is promulgating concentration standards based on stabilization. For K069 non-calcium sulfate nonwastewaters, EPA is promulgating recycling as the method of treatment. For K069 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes adequate capacity exists to treat the volume of surface-disposed K069 wastewaters and nonwastewaters; therefore, EPA is not granting a capacity variance for them.

For K100 nonwastewaters, EPA is revoking the no land disposal standard based on the "no generation standards" promulgated in the First Third rule. Today, EPA is promulgating concentration standards based on stabilization for the nonwastewaters and chemical precipitation for the wastewaters. EPA believes adequate capacity exists to treat the volume of surface-disposed K100 wastes. Therefore, EPA is not granting a capacity variance for them.

(f) Mercury Wastes.

D009—EP toxic for mercury

K071—Brine purification muds from the mercury cell process in chlorine production, where separately repurified brine is not used

K106—Wastewater treatment sludges from the mercury cell process in chlorine production

P065—Mercury fulminate

P092—Phenylmercuric acetate

U151—Mercury

For D009, K106, and U151 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For P065 and P092 wastewaters, EPA is promulgating concentration standards based on chemical oxidation followed by chemical precipitation. K071 wastewater standards were promulgated in the First Third rule and remain unchanged. It should be noted that mercury-bearing wastewaters containing hexavalent chromium may require chromium reduction prior to treatment of the mercury. Likewise, wastewaters containing organics may require chemical oxidation prior to treatment of the mercury.

For mercury nonwastewaters, EPA is establishing low mercury and high mercury subcategories. For the high mercury subcategory (greater than or equal to 260 mg/kg), EPA is promulgating roasting or retorting as methods of treatment for D009, K106, and U151 nonwastewaters. For the high mercury subcategory of P065 and P092 nonwastewaters, EPA is promulgating incineration followed by roasting or retorting as the method of treatment. For the low mercury subcategory of D009, K106, P065, P092, and U151 nonwastewaters, EPA is promulgating concentration standards based on acid leaching and chemical precipitation.

Treatment standards for K071 nonwastewaters were originally promulgated in the First Third rule. In the proposed Third Third rule, EPA proposed to revise the standards for K071 nonwastewaters with a high mercury content. For this high mercury subcategory, EPA proposed roasting or retorting as methods of treatment. For the final rule, EPA is not adopting the proposed revisions to K071 wastes, and the promulgated First Third BDAT remains unchanged.

EPA believes sufficient capacity exists to treat the volume of all surface-disposed mercury wastewaters. Therefore, EPA is not granting a national capacity variance for them. Because current data do not provide sufficient information on the volume of nonwastewaters that contain high and low concentrations of mercury, EPA

conducted a worst-case analysis and assigned all volumes of surface disposed mercury nonwastewaters to both mercury retorting and acid leaching followed by chemical precipitation. EPA has identified a small amount of commercial mercury retorting capacity (18,000 gallons). There is insufficient mercury retorting capacity for D009, K106, and U151 nonwastewaters. Due to the sporadic generation rate of P wastes from year to year and the small amount of available commercial mercury retorting capacity, EPA is granting all high mercury nonwastewaters a two-year national capacity variance. EPA has also determined that there is insufficient commercial capacity for acid leaching followed by chemical precipitation; therefore, EPA is granting low mercury D009, K106, P065, P092, and U151 nonwastewaters a national capacity variance.

(g) Selenium wastes.

D010—EP Toxic for selenium

P103—Selenourea

P114—Thallium selenite

U204—Selenious acid

U205—Selenium disulfide

For selenium nonwastewaters, EPA is promulgating concentration standards based on stabilization. EPA has also determined that vitrification or recovery may be used to reach the standards. The TSDR Survey and other capacity data indicate that adequate stabilization capacity exists. Therefore, EPA is not granting selenium nonwastewaters a national capacity variance.

For selenium wastewaters, EPA is promulgating concentration standards based on chemical precipitation. The TSDR Survey and other capacity data indicate that adequate chemical precipitation capacity exists; therefore, EPA is not granting selenium wastewaters a national capacity variance.

(h) Silver Wastes.

D011—EP toxic for silver

P099—Potassium silver cyanide

P104—Silver cyanide

Treatment standards for P099 and P104 nonwastewaters were promulgated in the Second Third final rule. For P099 and P104 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For D011, EPA is promulgating concentration standards based on chemical precipitation for wastewaters, and recovery or stabilization for nonwastewaters. EPA believes adequate capacity exists to treat surface-disposed D011, P099, and P104 wastewaters and D011 nonwastewaters. Therefore, EPA is

not granting a capacity variance for them.

(i) Thallium Wastes.

P113—Thallic oxide

P114—Thallium selenite

P115—Thallium (I) sulfite

U214—Thallium (I) acetate

U215—Thallium (I) carbonate

U216—Thallium (I) chloride

U217—Thallium (I) nitrate

For P113, P115, U214, U215, U216, and U217, EPA is promulgating thermal recovery or stabilization as methods of treatment for nonwastewaters, and concentration standards based on chemical precipitation for wastewaters. For P114, EPA is promulgating concentration standards based on stabilization, vitrification, recovery for nonwastewaters, and chemical precipitation for wastewaters. Based on the TSDR Survey and other capacity data, adequate capacity exists for surface-disposed thallium wastewaters and nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

(j) Vanadium Wastes.

P119—Ammonium vanadate

P120—Vanadium pentoxide

For P119 and P120, EPA is promulgating stabilization as the method of treatment for nonwastewaters, and concentration standards based on chemical precipitation for wastewaters. Because adequate capacity exists for chemical precipitation and stabilization, EPA is not granting P119 and P120 wastewaters and nonwastewaters a national capacity variance.

(3) *Treatment Standards for Remaining F and K Wastes and U051.* These groups include certain F002 and F005 wastes; F006 wastewaters and F019; F024; F025; K001 and U051; wastes from pigment production (K002 through K008); K011, K013, K014; K015; K017 and K073; K021; K022; K025, K026, K035, and K083; K028, K029, K095, and K096; K032, K033, K034, K041, K097, and K098 wastes; K036 and K037; K042, K035, and K105 wastes; K044, K045, K046, K047; K048 through K052; K060; K061 wastewaters; and K088.

(a) *Additional Treatment Standards for F002 and F005 Wastes.* Treatment standards for F002 and F005 were promulgated in the Solvents and Dioxins rule. Today, EPA is revising the treatment standards for F002 and F005 to account for four newly listed F002 and F005 constituents. Wastewater concentration standards for F002 containing 1,1,2-Trichloroethane and F005 containing benzene are based on: biological treatment, or steam stripping, or carbon adsorption, or liquid

extraction. For nonwastewaters, concentration standards for these two solvents are based on incineration. For F005 containing 2-Ethoxyethanol, EPA is promulgating incineration as the method of treatment for nonwastewaters, and incineration or biodegradation as methods of treatment for wastewaters. For F005 wastewaters containing 2-nitropropane, EPA is promulgating incineration, or wet-air oxidation followed by carbon adsorption, or chemical oxidation followed by carbon adsorption as methods of treatment. For F005 nonwastewaters containing 2-nitropropane, EPA is requiring incineration as the method of treatment. EPA believes that adequate treatment capacity exists for these wastes; therefore, EPA is not granting a national capacity variance for them.

(b) F006 and F019 Wastes. For F006 wastewaters, EPA is promulgating concentration standards based on alkaline chlorination for cyanides and chromium reduction followed by chemical precipitation for metals. EPA believes that adequate capacity exists for the volume of surface-disposed F006 wastewaters. Therefore, EPA is not granting a national capacity variance for them.

EPA is promulgating concentration standards for F019 wastewaters based on alkaline chlorination for cyanides and chromium reduction followed by chemical precipitation for chromium. In the proposed rule, EPA proposed treatment standards for amenable and total cyanide in F019 nonwastewaters based on wet-air oxidation. Due to insufficient wet-air oxidation capacity, EPA proposed a national capacity variance for these wastes. In the final rule, EPA is promulgating F019 nonwastewater concentration standards based on alkaline chlorination for cyanides and stabilization for chromium. Because sufficient treatment capacity exists to treat the F019 wastewaters and nonwastewaters, EPA is not granting a national capacity variance for them.

(c) F024 Wastes. EPA promulgated concentration standards for F024 wastewaters and nonwastewaters in the Second Third rule based on rotary kiln incineration for the organic constituents in nonwastewaters, and rotary kiln incineration for organic constituents followed by chemical precipitation for metal constituents in wastewaters. Today, EPA is revising certain of these standards and is promulgating concentration standards based on stabilization for metal constituents in F024 nonwastewaters. EPA is providing the option of incineration as a treatment

method for this waste in order to remove obstacles to acceptance, previously created by the explicit standard for dioxins and furans. Several commenters responded to EPA's request for information, indicating that the treatment facilities were not accepting the wastes due to the dioxin and furan standard. Today's revisions to the treatment standards are expected to ensure that sufficient capacity is available to treat F024, and that all F024 wastes containing dioxins and furans will be incinerated, thereby ensuring effective treatment of these constituents. EPA has determined that adequate capacity exists to treat these wastewaters and nonwastewaters; therefore, EPA is not granting a national capacity variance for them.

(d) F025 Wastes. On December 11, 1989 (54 FR 50968), EPA amended the listing for F025 waste (condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatics). The listing becomes effective on June 11, 1990. Most generators already treat F025 as if it were hazardous, and some facilities commingle F024 and F025. Today, EPA is promulgating concentration standards for all categories of F025 wastewaters and nonwastewaters based on incineration. EPA has determined that no alternative treatment capacity is needed for F025 wastes. Therefore, EPA is not granting these wastes a national capacity variance, restricting land disposal on August 8, 1990.

(e) K001 and U051 Wastes. EPA is promulgating revisions to the concentration-based treatment standards for K001 organics due to a mathematical error that was made in the calculation of the original standards in the First Third rule. Since the treatment standards for U051 wastewaters and nonwastewaters are based on a transfer of the performance of K001, the concentration-based standards for U051 also reflect this change. For the organics in K001 and U051 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. EPA is also finalizing concentration standards for lead in K001 and U051 based on stabilization for nonwastewaters and chemical precipitation for wastewaters. Sufficient capacity exists for treatment of both of these wastes; therefore, EPA is not granting a national capacity variance for them.

(f) Wastes from Inorganic Pigment Production (K002, K003, K004, K005, K006, K007, and K008). EPA is amending the no land disposal standard previously

promulgated for K004, K005, K007, and K008 nonwastewaters. EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation for K002, K003, K004, K006, and K008 wastewaters, and alkaline chlorination followed by chromium reduction followed by chemical precipitation for K005 and K007 wastewaters. For nonwastewater forms of these wastes, EPA is promulgating concentration standards based on stabilization. EPA believes that sufficient capacity exists for surface-disposed K002, K003, K004, K005, K006, K007, and K008 wastewaters and nonwastewaters. Therefore, EPA is not granting a capacity variance for them.

(g) K011, K013, and K014 Wastes. Treatment standards for the surface disposal of nonwastewater forms of K011, K013, and K014 were promulgated in the Second Third final rule. For K011, K013, and K014 wastewaters, EPA is promulgating concentration standards based on wet-air oxidation. The TSDR Survey indicates that sufficient capacity exists for the volume of surface-disposed K011, K013, and K014 wastewaters. Therefore, EPA is not granting a national capacity variance for them.

(h) K015 Wastes. EPA is revoking the no land disposal based on no generation standard previously promulgated for K015 (benzyl chloride distillation wastes) nonwastewaters because of the reported generation of ash containing this waste. Consequently, for K015 nonwastewaters, EPA is promulgating concentration standards for five organic and two metal constituents based on incineration followed by stabilization. Sufficient capacity exists to treat this waste; therefore, EPA is not granting a national capacity variance for K015 nonwastewaters.

(i) K017 and K073 Wastes.

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin
K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production

In today's rule, EPA is promulgating final treatment standards for K017 and K073 wastewaters and nonwastewaters. Concentration standards for the wastewater and nonwastewater forms of these wastes are based on incineration. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting a national capacity variance for K017 and K073 wastes.

(j) K021 Wastes.

K021—Aqueous spent antimony catalyst from fluoromethane production

Concentration standards are being promulgated today for wastewater and nonwastewater forms of K021 based on incineration. EPA is also promulgating concentration standards for antimony nonwastewaters based on stabilization and antimony wastewaters based on chemical precipitation. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting K021 wastes a national capacity variance.

(k) K022, K025, K026, K035, and K083 Wastes. EPA is promulgating treatment standards for K022 wastewaters and all forms of K025, K026, K035, and K083 wastes. Treatment standards being promulgated today for K025 and K083 would replace current treatment standards of "No Land Disposal Based on No Generation" that were promulgated in prior rules.

For organics contained in K022, K035, and K083 wastewaters, EPA is promulgating concentration standards based on: biological treatment, or steam stripping, or carbon adsorption, or liquid extraction. Concentration standards promulgated for metals in K022 and K083 wastewaters are based on chemical precipitation. For organics in K035 and K083 nonwastewaters, EPA is promulgating concentration standards based on incineration. For metals in K083 nonwastewaters, EPA is promulgating concentration standards based on stabilization of incinerator ashes.

For K025 and K026, EPA is promulgating incineration as the method of treatment for wastewaters and nonwastewaters. In addition, EPA is also promulgating liquid-liquid extraction followed by steam stripping followed by carbon adsorption as an alternative method of treatment for K025 wastewaters.

EPA has determined that adequate capacity exists for K022 wastewaters, and the wastewater and nonwastewater forms of K025, K026, K035, and K083. Therefore, EPA is not granting a national capacity variance for these wastes.

(l) K028, K029, K095, and K096 Wastes.

K028—Spent catalyst from hydrochlorinator reactor in the production of 1,1,1-trichloroethane

K029—Waste from the product steam stripper in the production of 1,1,1-trichloroethane

K095—Distillation bottoms from the production of 1,1,1-trichloroethane

K096—Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane

Treatment standards based on incineration were promulgated for K028

wastewaters and nonwastewaters and the nonwastewaters forms of K029, K095, and K096 in the Second Third rule. Today, EPA is promulgating concentration standards for organics in K029, K095 and K096 wastewaters based on incineration. EPA is also promulgating concentration standards for metal constituents in K028 nonwastewaters based on stabilization. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting a national capacity variance for K028, K029, K095 and K096.

(m) K032, K033, K034, K041, K097, and K098 Wastes.

K032—Wastewater treatment sludge from the production of chlordane

K033—Wastewater treatment scrubber water from the chlorination of cyclopentadiene in the production of chlordane

K034—Filter solids from filtration of hexachlorocyclopentadiene in the production of chlordane

K041—Wastewater treatment sludge from the production of toxaphene

K097—Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane

K098—Untreated process wastewater from the production of toxaphene

For K032, K033, K034, K041, K097, and K098 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. Sufficient capacity exists for treatment of these wastes; therefore, EPA is not granting a national capacity variance for them.

(n) K036 and K037 Wastes. EPA promulgated a treatment standard of "no land disposal based on no generation" for K036 nonwastewaters in the First Third rule. EPA also promulgated concentration standards based on incineration for K037 wastewaters and nonwastewaters in the First Third rule. Today, EPA is revising these treatment standards for the nonwastewater form of K036 (still bottoms from toluene reclamation distillation in the production of disulfoton) and the wastewater form of K037 (wastewater treatment sludges from the production of disulfoton). Today, EPA is promulgating concentration standards for K036 nonwastewaters based on incineration. EPA believes that adequate capacity exists for these surface-disposed K036 nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

For K037 wastewaters, EPA is revising the concentration standard from one based on rotary kiln incineration to one based on biological treatment. EPA believes that adequate capacity exists for surface-disposed K037 wastewaters;

therefore, EPA is not granting a national capacity variance for them.

(o) K042, K085, and K105 Wastes.

K042—Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T

K085—Distillation of fractionation column bottoms from the production of chlorobenzenes

K105—Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes

For K042, K085, and K105 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. Sufficient capacity exists for treatment of these wastes; therefore, EPA is not granting a national capacity variance for them.

(p) K044, K045, K046, K047 Wastes. For K044, K045, and K047, EPA is revoking the "no land disposal" standard promulgated in the First Third rule. EPA is promulgating deactivation as the method of treatment for wastewaters and nonwastewaters. EPA has determined adequate capacity exists to treat these wastes; therefore, EPA is not granting a national capacity variance for them.

Today, EPA is promulgating concentration standards for K046 reactive nonwastewaters based on deactivation followed by stabilization. For K046 reactive wastewaters, EPA is promulgating concentration standards based on deactivation and chemical precipitation. Deactivation includes chemical reduction or detonation. In the First Third rule, EPA promulgated treatment standards based on stabilization for K046 nonreactive nonwastewaters. For K046 nonreactive wastewaters, EPA is promulgating concentration standards based on deactivation followed by chemical precipitation. EPA has determined that adequate capacity exists for these wastes. Therefore, EPA is not granting them a national capacity variance.

(q) Petroleum Refining Wastes (K048–K052). EPA is promulgating treatment standards for organic constituents and cyanides in K048–K052 based on data from incineration, solvent extraction. For the metals in K048–K052, EPA is promulgating treatment standards based on stabilization and chemical precipitation. EPA is not revising the promulgated BDAT treatment standards for organic or metal constituents in K048–K052 wastewaters, nor for cyanide in nonwastewaters. In addition, today's rule deletes the treatment standards proposed for arsenic and selenium in nonwastewater forms of K048–K052 based on stabilization. Today's rule also promulgates revised treatment

standards for nickel and total chromium in nonwastewater forms of K048-K052 based on stabilization.

The TSDR Survey indicates that 642,000 tons of K048-K052 will require treatment capacity (i.e., will be displaced from land disposal and will require treatment). EPA recognizes, however, that this information is dated, and to this end undertook to obtain as current an assessment of demand for treatment capacity as possible.

Based on informal contact with the petroleum industry trade association, it appears that the industry may be able to manage approximately three quarters of these wastes on-site after August 1990, in ways not involving land disposal (primarily in-house incineration, use as fuel, or use in coking). (This figure is based on an informal survey of 33 API member companies and assumes that none of the pending no migration petitions for land treatment units will be granted. However, this estimate does not account for the uncertainty and timing of constructing and obtaining permits for on-site disposal/treatment facilities.) Therefore, assuming best case (i.e., on-site capacity is available), this results in approximately 161,000 tons per year of wastes that will require alternative treatment capacity.

EPA estimated that 100,000 tons of capacity for treatment of K048-K052 wastes existed in the form of solids incineration capacity and fuel substitution capacity (these wastes are suitable for use as alternative fuels in industrial furnaces provided that they are dewatered first). There is very little commercial solvent extraction capacity presently on-line. (EPA knows of some small volume mobile solvent extraction units being utilized in California, but these units provide limited volumetric treatment capacity.) Thus, based on these data, there would be a capacity shortfall of approximately 60,000 tons as of May 8.⁵

However, EPA is aware of one large commercial incinerator which could come on line after May 8 that could provide additional substantial volumes of capacity (60,000 tons of new annual capacity in addition to the 100,000 tons of existing capacity) for K048-K052 wastes. This facility is presently seeking

a no-migration variance from EPA regarding disposal of scrubber water into a deep injection well. If the petition is granted, this facility would provide sufficient capacity to accommodate treatment demand posed by petroleum wastes. A final decision on the no-migration petition is expected within the next six weeks. (There could still be short-term logistic difficulties associated with getting wastes to the facility and the facility coming on-line that could prevent immediate utilization of this capacity, however.)

EPA also recently became aware (within the last two weeks) of additional solids incineration capacity which is presently available that would provide significant additional treatment capacity for petroleum wastes. This technology, however, requires that wastes undergo a specialized dewatering pretreatment step. The treatment company presently has two mobile dewatering pretreatment units and (according to its estimates) can add two additional dewatering units every three months. This limited amount of pretreatment equipment (there are approximately 190 petroleum facilities to be serviced) could create a temporary treatment bottleneck to use the incineration capacity. (This information appears to have been presented to the petroleum industry by the treatment company late in 1989, so that EPA does not see notice and comment problems vis-a-vis the petroleum industry in relying on the information in this rulemaking.)

Based on this information, EPA has decided to grant a six-month national capacity variance for these wastes, lasting until November 7, 1990. (This effectively extends the industry's prohibition compliance date three months from the date established in the first third rulemaking). EPA believes that by this date, there will be adequate pretreatment capacity as well as incineration and fuel substitution capacity to satisfy demand. There also may be solvent extraction capacity available by that date, although there are sharply conflicting estimates in the record of how quickly solvent extraction capacity can be brought on-line. EPA would be unjustified, however, in extending the national capacity variance until solvent extraction capacity is available. See S. Rep. No. 284, 98th Cong. 1st Sess. 19 ("It is not intended that a generating industry . . . could be allowed to continue to have its wastes disposed of in an otherwise prohibited manner solely by binding itself to using a facility which has not been constructed. Thus, when an 'alternate technology' facility is

operating at less than maximum capacity, the Administrator should determine that alternative capacity is available * * *"). Thus, EPA's decision today is based on its best estimates of when treatment capacity of any type will be available to accommodate these wastes.

EPA recognizes that these data are not the most precise, in some cases. In addition, EPA is concerned with using data that it obtains at the very end of the rulemaking in making such decisions (albeit these data tend to corroborate other existing information regarding amounts of solids combustion capacity coming on-line). Therefore, based on further information provided to EPA, EPA may amend the capacity extension in today's rule (through use of appropriate rulemaking procedures).

(r) K060 Wastes. Today EPA is revoking the "no land disposal" based on a no generation standard promulgated for K060 nonwastewaters in the First Third rule. Instead, for K060 nonwastewaters, EPA is also promulgating concentration standards based on incineration. EPA is establishing concentration standards for K060 wastewaters based on biological treatment. EPA believes that adequate capacity exists for the volume of surface-disposed K060 wastewaters and nonwastewaters requiring treatment. Therefore, EPA is not granting a national capacity variance for them.

(s) K061 Wastes. Today, EPA is promulgating concentration standards based on chemical reduction followed by chemical precipitation for K061 wastewaters. EPA believes adequate capacity exists for the volume of surface-disposed K061 wastewaters. Therefore, EPA is not granting a variance for them.

(t) Revisions to K086 Wastes. EPA promulgated concentration standards for K086 solvent washes in the First Third rule based on incineration and stabilization of ash for nonwastewaters, and incineration and chromium reduction followed by chemical precipitation for wastewaters. EPA is promulgating revised concentration standards for all K086 wastewater forms of these wastes based on biological treatment or wet-air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption for organics, chromium reduction followed by chemical precipitation for metals, and alkaline chlorination for cyanides. For nonwastewaters, EPA is promulgating concentration standards based on incineration for organics, followed by stabilization for metals. As a "worst-

⁵ It was on the basis of this analysis that EPA senior management tentatively concluded that a one-year national capacity extension might be warranted, which draft determination was communicated to all interested parties by letter late in April, a copy of which is available in the docket. This was not a final EPA decision, however, and EPA continued to monitor the situation. The determination in the final rule reflects more information than was available to EPA at the time of its tentative determination.



case" analysis, EPA included in the capacity analysis conducted for First Third wastes all of the K086 wastes identified in the TSDR Survey. Consequently, no additional capacity will be required by today's rule, and no capacity variance is being granted for K086 wastes.

(4) *Treatment Standards for U and P Wastes.* Today's rule promulgates treatment standards and capacity determinations for wastewater and nonwastewater forms of U and P wastes (as defined in 40 CFR 261.33 (e) and (f)). Treatment standards and capacity determinations for other U and P wastes that are listed specifically as metal salts or organo-metallics are discussed in previous sections of today's rule. This section also includes a discussion of U and P wastes that have been identified as potentially reactive, primarily as gases, or as cyanogens.

In the proposed rule, EPA grouped all of the U and P wastes into various treatability groups based on (1) similarities in elemental composition (e.g., carbon, halogens, and metals); and (2) the presence of key functional groups (e.g., phenolics, esters, and amines) within the structure of the individual chemical represented. EPA has also accounted for physical and chemical factors that are known to affect the selection of treatment alternatives and to affect the performance of the treatment, such as volatility and solubility, when developing these treatability groups.

While EPA presented the proposed treatment standards and capacity determinations for U and P wastes according to these treatability groups, the promulgated treatment standards and capacity determinations are presented as follows: (a) Concentration-based standards for wastewaters; (b) concentration-based standards for nonwastewaters; (c) technology-based standards for wastewaters; and (d) technology-based standards for nonwastewaters.

(a) *Concentration-Based Standards for Specific Organic U and P Wastewaters.* EPA is promulgating concentration-based standards for those specific constituents for which the U or P waste is listed. For various reasons, EPA is regulating additional constituents for several U and P wastes.

U and P Wastewaters with Concentration Standards Based on Biological Treatment or Wet-Air Oxidation Followed by Carbon Adsorption

P004, P020, P022, P024, P037, P047 (4,6-Dinitrocresol), P048, P050, P051, P059, P060, P077, P082, P101, P123, U002, U003, U004,

U005, U009, U012, U018, U019, U022, U024, U025, U027, U029, U030, U031, U036, U037, U038, U039, U043, U044, U045, U047, U048, U050, U051, U052, U057, U060, U061, U063, U066, U067, U068, U070, U071, U072, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U101, U105, U106, U108, U111, U112, U117, U118, U120, U121, U127, U128, U129, U131, U137, U138, U140, U141, U142, U152, U155, U157, U158, U159, U161, U162, U165, U168, U169, U170, U172, U174, U179, U180, U181, U183, U185, U187, U188, U192, U196, U203, U207, U208, U209, U210, U211, U220, U225, U226, U227, U228, U229, U240, (2,4-D acetic acid), U243, and U247

For these U and P wastewaters, EPA is promulgating concentration standards based on biological treatment, or wet air oxidation followed by carbon adsorption. EPA has identified sufficient capacity for treatment of these wastewaters; therefore, EPA is not granting a national capacity variance for them.

(b) *Concentration-Based Standards for Specific Organic U and P Nonwastewaters.* EPA is promulgating nonwastewater concentration-based standards for the following U and P wastes, as proposed.

U and P Nonwastewaters with Concentration Standards Based on Incineration

P004, P020, P024, P037, P047, P048, P050, P051, P059, P060, P077, P101, P123, U002, U004, U005, U009, U012, U018, U019, U022, U024, U025, U027, U029, U030, U031, U036, U037, U039, U043, U044, U045, U047, U048, U050, U051, U052, U060, U061, U063, U066, U067, U068, U070, U071, U072, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U101, U105, U106, U108, U111, U112, U117, U118, U120, U121, U127, U128, U129, U131, U137, U138, U140, U141, U142, U152, U155, U157, U158, U159, U181, U182, U185, U187, U188, U192, U196, U203, U207, U208, U209, U210, U211, U220, U225, U226, U227, U228, U239, U240 (2,4-D acetic acid), U243, and U247

For all of these specific organic U and P nonwastewaters, EPA has identified sufficient incineration capacity to treat these nonwastewaters; therefore, EPA is not granting a national capacity variance for them.

(c) *Technology-Based Standards for Specific Organic U and P Wastewaters.* EPA is promulgating technology-based treatment standards (i.e., methods of treatment) rather than concentration-based constituent specific standards for these wastes. EPA is promulgating wet-air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption or incineration as methods of treatment. Organic U and P wastes technology-based standards are indicated below:

U and P Wastewaters With (Wet-Air Oxidation, or Chemical Oxidation), Followed By Carbon Adsorption; or Incineration as Methods of Treatment

P001, P002, P003, P005, P007, P008, P014, P016, P017, P018, P023, P026, P027, P028, P034, P042, P045, P046, P047 (4,6-dinitrocresol salts), P049, P054, P057, P058, P064, P066, P067, P069, P070, P072, P075, P084, P088, P093, P095, P102, P108, P116, P118, U001, U006, U007, U008, U010, U011, U014, U015, U016, U017, U020, U021, U026, U033, U034, U035, U041, U042, U046, U049, U053, U055, U056, U059, U062, U064, U073, U074, U085, U089, U090, U091, U092, U093, U094, U095, U097, U110, U113, U114, U116, U119, U122, U123, U124, U125, U126, U130, U132, U143, U147, U148, U149, U150, U153, U154, U156, U163, U164, U166, U167, U171, U173, U176, U177, U182, U184, U186, U191, U193, U194, U197, U200, U201, U202, U206, U213, U218, U219, U222, U234, U236, U237, U239, U240 (2,4-D salts and esters), U244, and U248.

EPA has identified sufficient capacity for these organic U and P wastewaters. Therefore, EPA is not granting a national capacity variance for them.

(d) *Technology-Based Standards for Specific Organic U and P Nonwastewaters.* EPA is promulgating the proposed technology-based standards for the following organic U and P wastes.

U and P Nonwastewaters With Incineration as the Method of Treatment

P002, P007, P008, P014, P016, P017, P018, P022, P023, P026, P027, P028, P034, P042, P045, P046, P047 (4,6-dinitrocresol salts), P049, P054, P057, P058, P064, P066, P067, P069, P070, P072, P075, P082, P084, P093, P095, P108, P116, P118, U003, U006, U007, U010, U011, U014, U015, U017, U020, U021, U026, U033, U034, U035, U038, U041, U042, U046, U049, U057, U059, U062, U073, U074, U091, U092, U093, U095, U097, U110, U114, U116, U119, U130, U132, U143, U148, U149, U150, U153, U156, U163, U164, U167, U168, U171, U173, U176, U177, U178, U184, U191, U193, U194, U200, U202, U206, U218, U219, U222, U234, U236, U237, U238, U240 (Salts and esters), U244

Incineration or Fuel Substitution as Methods of Treatment

P001, P003, P005, P068, P102, U001, U008, U016, U053, U055, U056, U064, U085, U089, U090, U094, U113, U122, U123, U124, U125, U128, U147, U154, U166, U182, U188, U197, U201, U213, U248

EPA has identified sufficient capacity for all of these U and P nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

(5) *Potentially Reactive P and U Wastes.* This subgroup includes the following waste codes:

P006—Aluminum phosphide
P009—Ammonium picrate

P015—Beryllium dust
 P056—Fluorine
 P068—Methyl hydrazine
 P073—Nickel carbonyl
 P081—Nitroglycerin
 P087—Osmium tetroxide
 P096—Phosphine
 P105—Sodium azide
 P112—Tetranitromethane
 P122—Zinc phosphide (<10%)
 U023—Benzotrichloride
 U086—N,N-Diethylhydrazine
 U096—*a,a*-Dimethyl benzyl hydroperoxide
 U098—1,1-Dimethylhydrazine
 U099—1,2-Dimethylhydrazine
 U103—Dimethyl sulfate
 U109—1,2-Diphenylhydrazine
 U133—Hydrazine
 U134—Hydrofluoric acid
 U135—Hydrogen sulfide
 U160—Methyl ethyl ketone peroxide
 U189—Phosphorus sulfide
 U249—Zinc phosphide (<10%)

These wastes either are highly reactive or explosive or are polymers that also tend to be highly reactive. For the purpose of BDAT determinations, EPA has identified four subcategories: incinerable reactive organics and hydrazine derivatives (P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, and U160); incinerable inorganics (P006, P096, P122, U135, U189, and U249); fluorine compounds (P056 and U134); and recoverable metallic compounds (P015, P073, and P087). For incinerable reactive organics and hydrazine derivatives, EPA is promulgating incineration, fuel substitution, chemical oxidation, or chemical reduction as methods of treatment for nonwastewaters, and incineration, chemical oxidation, chemical reduction, carbon adsorption, or biodegradation as methods of treatment for wastewaters. Because EPA has determined that sufficient treatment capacity exists for the small volume of surface-disposed incinerable reactive organic hydrazine derivatives (P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, U160, and U186), EPA is not granting a national capacity variance for them.

For all incinerable inorganic nonwastewaters, EPA is promulgating incineration, chemical oxidation, or chemical reduction as methods of treatment. For wastewaters, EPA is promulgating incineration, chemical oxidation, or chemical reduction as methods of treatment. EPA has determined that sufficient treatment capacity exists for the small volume of surface-disposed incinerable inorganic wastes; therefore, EPA is not granting a national capacity variance for them.

For fluorine compounds nonwastewaters, EPA is promulgating adsorption followed by neutralization as the method of treatment for P056

nonwastewaters, and neutralization or adsorption, followed by neutralization as methods of treatment for U134 nonwastewaters. For P056 and U134 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes that adequate treatment capacity exists for these wastes; therefore, EPA is not granting a capacity variance for them.

In the proposed rule, EPA proposed recovery as the method of treatment for P015 wastes. During the comment period, EPA received one comment concerning P015 beryllium recovery, and EPA verified that beryllium recovery capacity does exist. Because EPA has determined that sufficient capacity exists for P015 wastes, EPA is not granting a variance for these wastes. For P073 wastewaters, EPA is promulgating concentration standards based on incineration or chemical oxidation; for P073 nonwastewaters, EPA is promulgating concentration standards based on stabilization. EPA has determined that there is enough capacity available to treat P073 wastewaters and nonwastewaters; therefore, EPA is not granting a capacity variance for them. For P087 wastewaters and nonwastewaters, EPA is promulgating recovery as the method of treatment. EPA has determined that there is not sufficient treatment capacity for P087 wastewaters and nonwastewaters, and is granting these wastes a national capacity variance.

(6) *Gases*. This treatability group includes the following groups: P076 (Nitric oxide), P078 (Nitrogen dioxide), and U115 (Ethylene oxide). For P076 and P078 wastewaters and nonwastewaters, EPA is promulgating venting into a reducing medium as the method of treatment. For U115, EPA is promulgating thermal or chemical oxidation as methods of treatment for nonwastewaters, and incineration, or chemical oxidation followed by carbon adsorption, or wet-air oxidation followed by carbon adsorption as methods of treatment for wastewaters. Because no volumes of P076, P078, and U115 were reported as surface disposed in the TSDR survey, EPA is not granting a national capacity variance for them.

(7) *U and P Cyanogens*. For the U and P wastes containing cyanide, P031 (Cyanogen), P033 (Cyanogen chloride), and U246 (Cyanogen bromide), EPA is promulgating incineration, chemical oxidation, or wet-air oxidation as methods of treatment for both wastewaters and nonwastewaters. EPA has determined that sufficient capacity exists to treat these wastes; therefore, EPA is not granting a national capacity variance for them.

(8) *Capacity Determination for Multi-Source Leachate*. (a) *Definition and Applicability*. EPA defines multi-source leachate as leachate that is derived from the treatment, storage, disposal, or recycling of more than one listed hazardous waste. Under today's final rule, such leachate will be restricted from land disposal. Residues from treating such leachate, as well as residues such as soil and groundwater that are contaminated by such leachate, are also restricted from land disposal under this rule. Leachate derived from a single source must meet the standard developed for the waste code from which it is derived; therefore, such leachate is not subject to the standards developed for multi-source leachate.

(b) *Previous Treatment Standards*. EPA imposed land disposal prohibitions on multi-source leachate in the Solvents and Dioxins, California list, and First Third rulemakings. In the First Third rule, multi-source leachate would have to be treated to satisfy all the standards applicable to the original wastes from which the leachate is derived (see 53 FR 31146-150 (August 17, 1988)). EPA revisited the issue of treatability of multi-source leachate to address concerns raised by the hazardous waste management industry, and rescheduled promulgation of a land disposal restriction for multi-source leachate to the Third Third rule in order to fully study the most appropriate section 3004(m) treatment standards for multi-source leachate and to reevaluate the issue of available treatment capacity (see 54 FR 8264 (January 27, 1989)).

(c) *Final Treatment Standards*. In today's rule, EPA is promulgating one set of wastewater and one set of nonwastewater treatment standards for multi-source leachate; these standards would apply to residuals derived from the storage, treatment, or disposal of multi-source leachate. For treating multi-source leachate in the form of wastewater, EPA is promulgating concentration standards primarily based on biological treatment followed by chemical precipitation, or wet-air oxidation followed by carbon adsorption followed by chemical precipitation for organic and inorganic constituents. For nonwastewaters, EPA is promulgating concentration standards based on incineration for organic constituents and on stabilization for metals.

(d) *Volumes Requiring Alternative Treatment or Recovery Capacity*. EPA relied on data from the TSDR Survey, the Generator Survey, and other capacity data to determine whether sufficient alternative treatment or

recovery capacity is available for multi-source leachate.

Multi-source leachate is primarily generated in landfills. However, EPA recognizes that multi-source leachate can also be generated at closed facilities. Because only sparse data exist on such leachate, EPA requested comments on the characterization of multi-source leachate at closed facilities and on the volume of treated leachate that is presently land-disposed in surface disposal units. EPA also requested the submission of current data from interested parties on the volumes of multi-source leachate generated, the current management of such leachate, the amount of residuals generated, and the waste constituent composition of multi-source leachate.

Several commenters suggested that EPA has underestimated required capacity for multi-source leachate because leachate from closed landfills and ground water from corrective actions and CERCLA cleanups were not considered. EPA did not obtain adequate data to quantify the volumes of such leachates and leachate treatment residuals that might be surface disposed. These surface-disposed volumes, however, are not expected to affect the national capacity variance determination.

In addition to data from the TSDR and Generator Surveys, EPA examined data submitted as part of a leachate study plan by four major companies managing hazardous wastes at 17 facilities. EPA evaluated this information to estimate the volume of multi-source leachate requiring alternative treatment.

(e) *Determining National Variances for Multi-Source Leachate.* EPA analyzed the alternative treatment or recovery capacity for two categories of multi-source leachate: wastewaters and nonwastewaters.

Most multi-source leachate is managed in wastewater treatment systems and discharged via an NPDES permit and/or to a POTW. EPA estimates that over 41 million gallons of multi-source leachate nonwastewater residues are surface disposed.

Given the low volumes of surface-disposed multi-source leachate wastewaters and the adequate capacity to treat these wastes, EPA proposed and has decided not to grant a national capacity variance for surface-disposed multi-source leachate wastewaters. For multi-source leachate nonwastewaters, EPA is finalizing its proposal to grant a two-year national capacity variance for these wastes, because there is insufficient incineration capacity.

Most commenters agreed with the proposed variance for surface-disposed

multi-source leachate nonwastewaters. However, a few commenters requested a national capacity variance for surface-disposed multi-source leachate wastewaters. However, commenters did not provide evidence of surface-disposed volumes of multi-source leachate wastewaters. EPA did not revise the estimates of wastewater volumes because no data were provided showing volumes of multi-source leachate wastewaters that are surface-disposed. Also, as noted above, this surface disposal must involve retrofitted surface impoundments, under RCRA section 3005(j), which ordinarily are section 3005(j)(11) impoundments. Therefore, there should be little additional demand for capacity for displaced leachate wastewaters. Commenters did not dispute this analysis.

(9) *Capacity Determination for Mixed Radioactive Wastes.* (a) *Background.*

EPA has defined a mixed RCRA/radioactive waste as any matrix containing a RCRA hazardous waste and a radioactive waste subject to the Atomic Energy Act (53 FR 37045, 37046, September 23, 1988). Regardless of the type of radioactive constituents that these wastes contain (e.g., high-level, low-level, or transuranic), they are subject to the RCRA hazardous waste regulations, including the land disposal restrictions.

Radioactive wastes that are mixed with spent solvents, dioxins, or California list wastes are subject to the land disposal restrictions already promulgated for those hazardous wastes. EPA has determined, however, that radioactive wastes that are mixed with First Third and Second Third wastes will be included in the Third Third rulemaking (40 CFR 268.12(c)). Thus, today's rule addresses radioactive wastes that contain First Third, Second Third, and Third Third wastes.

(b) *Data Sources.* The Department of Energy (DOE) is a major generator of mixed RCRA/radioactive wastes. For data on DOE wastes, EPA used a data set submitted by DOE. This data set is based on a recent DOE survey and contains information on mixed RCRA/radioactive waste inventories, generation rates, and existing and planned treatment capacity at 21 DOE facilities.

A variety of non-DOE facilities also generate mixed RCRA/radioactive wastes, including nuclear power plants, academic and medical institutions, and industrial facilities. A variety of information sources were used to identify the non-DOE generators, estimate the quantities and types of mixed RCRA/radioactive wastes that

they generate, and determine current management practices and treatment capacity. These sources included the TSDR Survey, the Generator Survey, and other studies. EPA believes that these sources provide available information on non-DOE mixed RCRA/radioactive wastes.

(c) *Determining National Variances for Mixed RCRA/Radioactive Wastes.* After investigating the data sources noted above, EPA estimated that approximately 393 million gallons of radioactive waste mixed with First, Second, and Third Third wastes will require treatment. Contaminated soil and debris accounts for 193 million gallons of this total, which also includes wastes generated annually as well as untreated wastes in storage. Although DOE is in the process of increasing its capacity to treat mixed RCRA/radioactive wastes, data supplied by DOE indicate a current capacity shortfall for the treatment of First, Second, and Third Third mixed RCRA/radioactive wastes. DOE indicated a stabilization capacity of approximately 2.8 million gallons and a neutralization capacity of approximately 400,000 gallons. The data, however, showed significant alternative treatment capacity shortfalls for all treatment technologies, including stabilization and neutralization. EPA's investigation of non-DOE data sources showed a significant lack of commercial treatment capacity as well. Although one facility was identified that manages a specific type of mixed RCRA/radioactive waste, data sources indicate a lack of sufficient treatment capacity for all treatment technologies. Thus, EPA has determined that sufficient alternative treatment capacity is not available and is granting a two-year national capacity variance for mixed RCRA/radioactive waste wastewaters and nonwastewaters.

One commenter indicated that the proposed two-year national capacity variance is unlawfully and unnecessarily broad, and that EPA should grant variances only for specific waste streams. EPA disagrees with this statement. The capacity analysis was based on detailed, stream-specific data supplied by DOE as well as the best available non-DOE data sources. Although sufficient treatment capacity may exist at certain facilities for certain mixed RCRA/radioactive wastes, EPA's capacity analysis methodology is designed to assess available treatment capacity at the national level. (See RCRA section 3004(h)(2).) EPA believes the capacity analysis performed demonstrates a mixed RCRA/radioactive waste capacity shortfall for

all alternative treatment technologies at the national level.

The same commenter indicated that EPA must determine that available treatment capacity existing for non-radioactive RCRA hazardous waste is inappropriate for mixed RCRA/radioactive wastes. EPA believes that the lack of commercial mixed RCRA/radioactive waste treatment capacity was sufficiently demonstrated in the proposed rule. Not only does the TSDR Survey show a lack of permitted treatment facilities accepting mixed RCRA/radioactive wastes, the most recent data made available by States and State low-level waste compacts support the same conclusion. For the reasons iterated here, EPA believes that the national capacity variance for mixed RCRA/radioactive wastes is both necessary and justified. All other commenters addressing the national capacity variance were in support of EPA's proposal.

One commenter raised the question of whether naturally-occurring radioactive materials (NORM) containing RCRA listed or characteristic hazardous wastes fall under the definition of mixed RCRA/radioactive wastes. The question was also raised whether the national capacity variance extends to these materials. EPA believes that because NORM are not regulated by the Atomic Energy Act, these materials do not fall under the definition of mixed RCRA/radioactive wastes. EPA recognizes, however, that insufficient alternative treatment capacity exists to handle these materials. Therefore, EPA is granting a two-year national capacity variance to hazardous wastes mixed with NORM.

EPA recognized that its information for the proposed rule on mixed RCRA/radioactive wastes generated and managed by non-DOE facilities might have been incomplete. Consequently, EPA requested comments by interested parties on the current generation of mixed RCRA/radioactive wastes. Of particular interest to EPA was information on mixtures of radioactive wastes and First, Second, or Third Third waste streams. Although several commenters addressed problems associated with the storage and disposal of mixed RCRA/radioactive wastes, only one commenter indicated that additional data were available. The data confirm the lack of available treatment capacity and the commenter supports the proposed national capacity variance.

2. Determination of Alternative Capacity and Effective Dates for Underground Injected Waste.

Today, EPA is prohibiting the underground injection of virtually all remaining RCRA section 3004(g) wastes, including characteristic wastes, for which no effective dates have been set. EPA is not acting on certain newly listed or newly identified wastes. In the proposed rule, EPA solicited comments on the volumes and characteristics of the wastes represented in this section, as well as any information on the characteristics and volumes of any multi-source leachate that is currently being injected.

EPA received several responses to this request. One commenter submitted data on the volume of U wastes (20,456 gallons) deepwell injected at its facility in 1989. However, this facility has subsequently received approval of its no-migration petition. Another stated that 3.3 million gallons of P and U wastes are underground injected at its facility. The facility has proved, however, that this stream qualified for the mixture rule exception under RCRA section 261.3(a)(2)(iv), and is therefore not considered a hazardous waste. One commenter indicated it was injecting 7,200 tons of D004 waste at one of its facilities. Further, one commenter stated that it was injecting a wastewater containing U115. Additionally, one commenter submitted an underground injection well survey. EPA acknowledges these comments and has incorporated them appropriately into the capacity analysis.

EPA also received comments pertaining to the form of certain wastes. Several commenters indicated that the nonwastewater forms of D002, D003 (reactive cyanide), D007, and K014 were injected and needed to be included in the capacity analysis. EPA agrees that nonwastewaters were not discussed for many deepwell injected wastes and has evaluated these waste forms for the final rulemaking.

a. Effective Date Determinations for Wastes with Treatment Standards in Today's Rule

Consistent with the policy established in previous land disposal restrictions, EPA is restricting on August 8, 1990, the underground injection of all wastes, with treatment standards in today's rule, that are not currently being deepwell-injected. This decision is consistent with the intent of RCRA in moving hazardous wastes away from land disposal and toward treatment. Wastes that are not currently being deepwell-injected are listed in table III.B.2.(a).

The volumes of deepwell-injected wastes that require alternative commercial treatment and/or recycling capacity are presented in table III.B.2.(b). This table does not include wastes that are currently being deepwell-injected by facilities with appropriate on-site alternative treatment technologies for treating the waste.

EPA is establishing effective date determinations for all underground injected wastes in treatability groups. If there is adequate available alternative treatment capacity for all the injected volume in a single treatability group, then every waste in that group will be restricted from underground injection. If there is inadequate available alternative treatment capacity for the injected volume in a single treatability group, then EPA is allocating as much of the available capacity to the wastes requiring treatment. All remaining wastes in the treatability group, for which no capacity exists, will receive a two-year national capacity variance. EPA believes that this is most consistent with Congressional intent, which favors both treatment over disposal and minimal use of capacity variances. EPA specifically solicited comments on this approach; however no comments were received during the public comment period.

EPA recognizes that the effective prohibition date of the Third Third rule will critically affect the management of large volumes of wastes disposed of on-site in injection wells at a number of facilities. On-site injection wells are characterized by direct piping of wastes from plant operations to the injection facility. In contrast, off-site injection facilities receive manifested wastes from other plant operations which are transported directly to the injection facility.

The injection wells at on-site facilities are directly connected to the plant operations and, all totaled, handle at least five billion gallons of hazardous waste per year. In order to realistically meet the treatment requirements for the Third Third rule, the plant managers will need time to make considerable logistical adjustments such as repiping, retooling, and development of transportation networks at the plant operation facility. Therefore, EPA does not believe that treatment capacity is available if there is no feasible way for generators to transport their wastes to the treatment facilities. EPA can legitimately consider the time necessary to do this in determining whether to grant a national capacity variance.

EPA has relied on such logistic factors in prior rulemakings to determine when

capacity is realistically available. EPA notes that these same logistic factors do not appear necessary to warrant any extension for waste sent to off-site commercial injection facilities as those for on-site injection facilities. EPA believes that facilities disposing of wastes through off-site deepwell injection already have these plant adaptations and transportation networks in place, and therefore do not require any extension of the effective date. Consequently, EPA is using its authority under section 3004(h) of RCRA to provide a six-month extension beyond the May 8, 1990 statutory prohibition date for all Third Third wastes disposed of at on-site injection facilities directly connected to plant operations.

Table III.B.2(c) indicates the amount of capacity available for treating underground injected wastes, the demand from these injected wastes on each treatability groups, and which treatability groups require capacity variances. More information on EPA's procedure for apportioning treatment capacity in these treatability groups can be found in the Third Third Background Document for the treatability groups.

A number of the following treatability groups account for relatively small (less than 100,000 gallons/year) amounts of underground injected wastes. EPA believes that these small streams place little demand on nationwide treatment capacity.

Presented below are the treatment technologies EPA used in the capacity analysis for all deepwell-injected wastes. EPA selected these technologies based on the BDATs used for establishing the concentration and technology based standards being promulgated today. For the capacity analysis, EPA assigned volumes of wastes mixed with other wastes to the appropriate treatment such that the treatment standards for all wastes will be met. Consequently, some of the technologies listed below are treatment trains that include the BDAT used to determine the standard plus another technology. Table III.B.2(d) summarizes the wastes for which EPA is granting a two-year national capacity variance for underground injected wastes.

TABLE III.B.2.(a).—WASTES (WITH TREATMENT STANDARDS) THAT ARE NOT UNDERGROUND INJECTED

[Prohibited from Underground Injection on August 8, 1990]

First Third Codes

K004, K008, K015 (nonwastewaters), K017, K021 (wastewaters), K022 (wastewaters), K035, K036 (nonwastewaters), K037 (wastewaters), K044, K045, K046 (reactive nonwastewaters and all wastewaters), K047, K060 (wastewaters), K061 (wastewaters), K069 (CaSO₄ nonwastewaters and all wastewaters), K073, K084, K085, K101 (nonwastewaters), K102 (nonwastewaters), K106, P001, P004, P010, P012, P015, P016, P018, P036, P037, P068, P070, P081, P092, P084, P087, P092, P105, P108, P110, P115, P120, P123, U010, U016, U018, U020, U022, U029, U036, U041, U043, U046, U050, U051, U053, U061, U063, U054, U066, U067, U077, U079, U086, U099, U108, U124, U129, U130, U137, U155, U158, U171, U177, U180, U209, U237, U238, U248, U249.

Second Third Codes

K025 (Wastewaters), K028 (wastewaters), K029 (wastewaters), K041, K042, K095 (wastewaters), K096 (wastewaters), K098, K105, P002, P003, P007, P008, P013 (wastewaters), P014, P026, P027, P049, P054, P060, P066, P067, P072, P099, P104, P107, P112, P113, P114, U003, U005, U011, U014, U015, U021, U023, U025, U026, U035, U047, U049, U057, U059, U060, U062, U073, U083, U092, U093, U094, U095, U097, U098, U099, U101, U109, U110, U111, U114, U116, U119, U127, U128, U131, U135, U142, U143, U144, U146, U149, U150, U161, U163, U164, U169, U172, U173, U174, U176, U178, U179, U189, U193, U196, U203, U205, U206, U208, U213, U214, U215, U216, U217, U218.

Third Third Codes

K003, K005 (wastewaters), K006, K007 (wastewaters), K026, K033, K034, K100 (wastewaters), P006, P009, P017, P022, P023, P024, P028, P031, P033, P034, P038, P042, P045, P046, P047, P064, P065, P073, P076, P077, P078, P088, P093, P095, P096, P101, P103, P116, P118, P119, U004, U006, U017, U024, U027, U030, U033, U038, U039, U042, U048, U052, U068, U071, U072, U075, U076, U079, U081, U082, U084, U085, U090, U091, U096, U117, U120, U121, U123, U125, U126, U132, U136, U139, U141, U145, U148, U152, U153, U156, U166, U167, U181, U182, U183, U184, U186, U187, U191, U201, U202, U204, U207, U222, U225, U234, U236, U240, U243, U246, U247.

Newly Listed Wastes
F025.

TABLE III.B.2.(b).—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR UNDERGROUND INJECTED WASTES

[million gallons/year]

Waste code	Capacity required for underground injected wastes
First Third Code	
F006.....	5.0
F019.....	<0.1
K011.....	433.2
K013.....	407.2
K014.....	131.0
K031.....	1.1
K086.....	0.2
P005.....	<0.1
P011.....	<0.1
P020.....	0.1
P048.....	0.1
P050.....	0.4
P058.....	<0.1
P059.....	0.4
P059.....	0.1
P102.....	<0.1
P122.....	<0.1
U007.....	0.1
U009.....	<0.1
U012.....	0.1
U019.....	0.8
U031.....	0.1
U037.....	<0.1
U044.....	0.1
U074.....	<0.1
U103.....	<0.1
U105.....	0.1
U115.....	8.0
U122.....	0.1
U133.....	0.1
U134.....	0.2
U151.....	0.1
U154.....	0.3
U157.....	0.1
U159.....	<0.1
U185.....	1.0
U188.....	0.2
U192.....	0.1
U200.....	0.3
U210.....	1.0
U211.....	0.1
U219.....	<0.1
U220.....	<0.1
U226.....	0.1
U227.....	2.7
U228.....	<0.1
Second Third Code	
K097.....	<0.1
P057.....	<0.1
U002.....	0.1
U008.....	0.1
U032.....	<0.1
U070.....	0.1
U080.....	2.8
U106.....	0.1
U138.....	0.1
U140.....	1.0
U147.....	<0.1
U162.....	0.1
U165.....	<0.1
U169.....	0.1
U170.....	0.3
U239.....	0.2
U244.....	<0.1
Third Third Code	
D001.....	6.9
D002.....	1924.5
D003.....	1745.7
D004.....	10.0
D005.....	1.3
D006.....	1.8

Waste code	Capacity required for underground injected wastes	Waste code	Capacity required for underground injected wastes	Waste code	Capacity required for underground injected wastes
D007	201.2	D017	2.3	U045	<0.1
D008	3.8	F039 ¹	15.1	U055	0.1
D009	1.2	K002	0.1	U056	<0.1
D010	95.2	K032	<0.1	U112	<0.1
D011	0.3	K083	5.0	U113	<0.1
D012	2.3	P051	<0.1	U118	<0.1
D013	2.3	P056	<0.1	U160	<0.1
D014	2.4	P075	<0.1	U194	<0.1
D015	2.3	U001	0.5	U197	0.1
D016	2.3	U034	<0.1		

¹ Multi-source leachate.

TABLE III.B.2.(C)—AVAILABLE AND REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR UNDERGROUND INJECTED WASTES

[millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Acid leaching followed by chemical precipitation	0	<1	Yes.
Alkaline chlorination	1	48	Yes.
Alkaline chlorination followed by chemical precipitation	4	<1	No.
Biological treatment	47	2	No.
Biological treatment followed by chemical precipitation	13	15	Yes.
Chemical oxidation followed by chemical precipitation	21	1,684	Yes.
Chemical oxidation followed by chromium reduction and chemical precipitation	<1	195	Yes.
Chemical precipitation	314	119	No.
Chromium reduction followed by chemical precipitation	9	239	Yes.
Combustion of liquids	219	54	No.
Mercury retorting	<.01	<.02	Yes.
Neutralization	14	1,638	Yes.
Stabilization	305	4	No.
Wet-air oxidation	<1	1,027	Yes.
Wet-air oxidation followed by carbon adsorption	<1	<1	No.

TABLE III.B.2. (d) SUMMARY OF TWO-YEAR NATIONAL CAPACITY VARIANCES FOR UNDERGROUND INJECTED WASTES

Required alternative treatment technology	Waste code	Physical form
Acid leaching followed by chemical precipitation	D009	Low mercury nonwastewater
Alkaline chlorination	D003 ¹	Wastewater/nonwastewater
Chemical oxidation followed by chemical precipitation	D003 ²	Wastewater/nonwastewater
Chemical oxidation followed by chromium reduction and chemical precipitation	D003 ³	Wastewater/nonwastewater
Chromium reduction followed by chemical precipitation	D007	Wastewater/nonwastewater
Mercury Retorting	D009	High mercury nonwastewaters
Neutralization	D002 ⁴	Wastewater/nonwastewater
Wet-air oxidation	K011	Wastewater
	K013	Wastewater
	K014	Wastewater/nonwastewater
Wet-Air oxidation followed by carbon carbon adsorption followed by chemical precipitation; biological treatment followed by chemical precipitation.	F039 ⁵	Wastewater

¹ D003 (Cyanides)² D003 (Sulfides)³ D003 (Explosives, water reactives, and other reactives)⁴ Deepwell injected D002 liquids with a pH less than 2.0 must meet the California list treatment standards on August 8, 1990.⁵ Multi-source Leachate

(1) *Acid Leaching followed by Chemical Precipitation.* EPA is promulgating concentration standards for low mercury D009 nonwastewaters based on acid leaching followed by chemical precipitation. EPA's data does not differentiate between low and high mercury concentration nonwastewaters. Consequently, for the capacity analysis EPA conducted a worst-case analysis and assigned the volume of deepwell-injected D009 nonwastewaters to both

acid leaching followed by chemical precipitation and mercury retorting (the BDAT for the high concentration mercury subcategory).

There is no commercial acid leaching followed by chemical precipitation capacity, therefore, EPA is granting D009 low concentration mercury nonwastewaters a two-year national capacity variance, restricting this waste from underground injection on May 8, 1992.

(2) *Alkaline Chlorination.* Treatment standards based on alkaline chlorination are being promulgated today for D003 (reactive cyanide)-(EPA also determined that the standards may be met using wet-air oxidation or electrolytic oxidation.) As shown in table III.B.2.(c), the less than 1 million gallons per year of available capacity are inadequate to address the quantity of hazardous waste annually deepwell-injected requiring this type of treatment.

Therefore, EPA is granting a two-year national capacity variance to D003 (reactive cyanide) wastewaters and nonwastewaters. This waste will be restricted from injection on May 8, 1992.

(3) *Alkaline Chlorination followed by Chemical Precipitation.* Treatment standards based on alkaline chlorination and chemical precipitation are today being promulgated for F006 cyanide wastewaters and F019 wastewaters. As shown in Table III.B.2.(c), the available capacity of 6 million gallons is adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. EPA is prohibiting these wastes from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(4) *Biological Treatment.* For P020, P048, U002, U009, U019, U031, U112, U140, U159, U170, U188, U220, and U239, EPA is promulgating concentration standards based on biological treatment for wastewaters. (EPA also determined that the standards may be met using wet-air oxidation followed by carbon adsorption). Because there is adequate biological treatment capacity for these deepwell injected wastes, EPA is not granting a national capacity variance for them. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(5) *Chemical Oxidation followed by Chemical Precipitation.* EPA is promulgating concentration standards for P122 wastewaters based on chemical oxidation. For the capacity analysis, EPA assigned P122 wastewaters to chemical oxidation followed by chemical precipitation. EPA has determined that adequate capacity exists to treat P122 wastewaters; therefore, EPA is not granting P122 wastewaters a national capacity variance.

EPA is promulgating deactivation as the method of treatment for D003 (sulfides), which includes chemical oxidation. For the capacity analysis, EPA assigned this waste to chemical oxidation followed by chemical precipitation. As indicated in Appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating these D003 wastes. Therefore, EPA is granting a two-year national capacity variance to D003 (sulfide) wastewaters and nonwastewaters. This

waste will be restricted from injection on May 8, 1992.

(6) *Chemical Oxidation followed by Chromium Reduction and Chemical Precipitation.* For D003 (explosives, water reactives, and other reactives), EPA is promulgating standards based on deactivation. EPA did not have data in sufficient detail to differentiate between explosives, water reactives and other reactives. Consequently, for the capacity analysis, EPA has grouped these wastes into one group. For the capacity analysis, EPA assigned all volumes to chemical oxidation, chromium reduction, and chemical precipitation. As indicated in Appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating these D003 wastes. Therefore, EPA is granting a two-year national capacity variance to these wastes, restricting D003 (explosives/reactives) wastewaters and nonwastewaters from underground injection on May 8, 1992.

(7) *Chemical Precipitation.* Wastewater forms of D004, D005, D006, D008 (lead-non-battery), D009, D010, D011, F006, K031, P011, P056, U134, and U151 represent those wastes best treated by chemical precipitation. As shown in table III.B.2.(c), the 331 million gallons per year of available chemical precipitation are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. EPA is prohibiting these wastes from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(8) *Chromium Reduction followed by Chemical Precipitation.* Treatment standards based on chromium reduction and chemical precipitation are today being promulgated for wastewater forms of D007, F006, K002, P011, and U032. As shown in Table III.B.2.(c), the 32 million gallons per year capacity of available chromium reduction and chemical precipitation is inadequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. Excluding D007, however, adequate capacity exists to treat the remaining wastes. Therefore, EPA is granting a two-year national capacity variance to D007 wastewaters and nonwastewaters, prohibiting this waste from underground injection on May 8, 1992. For the remaining wastes, no national capacity variance is being granted.

(9) *Combustion of Liquids.*

Combustion of liquids is the standard of treatment for deepwell injected D001 (ignitable liquids), D011, D012, D013, D014, D015, D016, D017, K032, K083, K086, K097, P005, P050, P051, P057, P059, P069, P075, P102, U001, U007, U008, U012, U019, U034, U037, U044, U045, U055, U056, U070, U074, U080, U103, U105, U106, U112, U113, U115, U118, U122, U133, U138, U147, U154, U157, U159, U160, U162, U165, U169, U185, U192, U194, U197, U200, U210, U211, U219, U220, U226, U227, U228, U239, and U244. Although U041, U077, U083, U084, and U213 are also underground injected, because they will be treated on-site, their quantities are not included in required capacity for combustion of liquids. As shown in table III.B.2.(c), the 219 million gallons per year of available capacity are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. Therefore, these wastes will be restricted from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(10) *Mercury Retorting.* Treatment standards based on mercury retorting are being promulgated for nonwastewaters forms of D009 wastes. As shown in table III.B.2.(c), the less than .01 million gallons per year of available mercury retorting capacity are inadequate to treat the quantity of this waste annually deepwell-injected requiring this type of treatment. EPA is granting a two-year national capacity variance to the nonwastewater forms of D009, restricting this waste from underground injection on May 8, 1992.

(11) *Neutralization.* EPA is promulgating deactivation as the method of treatment for D002 wastewaters and nonwastewaters. For the capacity analysis, EPA assigned all D002 acids and alkalines to neutralization. As indicated in appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating D002 wastewaters and nonwastewaters. Therefore, EPA is granting a two-year national capacity variance for the D002 wastewaters and nonwastewaters, restricting this waste from underground injection on May 8, 1992. Deepwell injected D002 liquids with a pH less than 2.0, which received a two-year national variance in the California list rulemaking, are required

to meet the California list treatment standards on August 8, 1990.

(12) *Stabilization*. For residuals containing D005, D006, D007, D008 (lead-non-battery), D011, K002, K083, K086, and U032, stabilization is part of the treatment train. As shown in Table III.B.2.(c), the 265 million gallons per year of available capacity are adequate to treat the quantity of hazardous waste residuals requiring this type of treatment. These residuals will be prohibited from land disposal on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(13) *Wet-Air Oxidation*. K011, K013, and K014, represent all of the underground injected hazardous wastes addressed in today's rule that are best treated by wet-air oxidation. As shown in table III.B.2.(c), the less than 1 million gallons of available capacity are inadequate to treat the quantity of K011 wastewaters, K013 wastewaters, and K014 wastewaters and nonwastewaters annually deepwell-injected requiring this type of treatment. Therefore, EPA is granting a two-year national capacity variance to the wastewater forms of K011, K013, and K014, and the nonwastewater form of K014, prohibiting these wastes from underground injection on May 8, 1992.

(14) *Wet-Air Oxidation followed by Carbon Adsorption*. For P053 wastewaters, treatment standards based on wet-air oxidation and carbon adsorption are being finalized today. As shown in Table III.B.2.(c), the less than 1 million gallons of available capacity are adequate to treat the quantity of P053 annually deepwell-injected required this type of treatment; therefore, EPA is not granting a national capacity variance for this waste. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(15) *Biological Treatment followed by Chemical Precipitation or Wet Air Oxidation followed by Carbon Adsorption followed by Chemical Precipitation*. For F039 (multi-source leachate) wastewaters, EPA is promulgating concentration standards based primarily on biological treatment followed by chemical precipitation or wet air oxidation followed by carbon adsorption followed by chemical precipitation. As shown in table III.B.2.(c), the approximately 14 million gallons of available capacity is insufficient to handle the 15 million gallons of required capacity. EPA notes that the 14 million gallons of available

capacity is the maximum available, as a portion of this volume is contributed by a facility that was scheduled to come on-line in 1988. EPA was unable to determine whether this facility is currently operating. Because of the lack of available capacity, EPA is granting a national capacity for this waste.

b. *Response to Request for Data on Underground Injected K014 Nonwastewaters*.

EPA addressed the underground injection of K011 and K013 nonwastewaters in the June 8, 1989, Second Third final rule. In that rule, a two-year national capacity variance was granted due to the lack of alternative incineration capacity (54 FR 28642). Action on K014 nonwastewaters was deferred so that EPA could evaluate information on the composition, characteristics, and volumes associated with this waste. EPA has received information indicating that, by definition, K014 nonwastewaters are being underground injected. Because inadequate wet-air oxidation capacity exists to treat K014 nonwastewaters, EPA is granting a two-year national capacity variance for the underground injection of these wastes, restricting K014 nonwastewaters from underground injection on May 8, 1992.

c. *Deepwell Injected Multi-Source Leachate*.

Commenters supported the proposed capacity variance for underground injected multi-source leachate. One commenter provided data or additional volumes of multi-source leachate that are underground injected. Consequently, EPA is updating its estimate of the volume of underground injected multi-source leachate by 1.5 million gallons. EPA estimates that at least 15 million gallons of multi-source leachate wastewaters are currently deep-well injected and will require alternative treatment capacity. EPA believes that most multi-source leachate currently underground injected contains both organic and inorganic constituents. EPA is promulgating concentration standards for wastewaters primarily based on biological treatment followed by chemical precipitation, or wet-air oxidation followed by carbon adsorption followed by chemical precipitation for organic and inorganic constituents. Because there is insufficient capacity to treat wastewaters based on these treatment technologies, EPA is granting a two-year national capacity variance for multi-source leachate that is underground injected. This waste will be prohibited from underground injection on May 8, 1992.

d. *Mixed Radioactive Wastes*.

EPA requires radioactive wastes mixed with RCRA-regulated solvents and dioxins to meet LDRs and treatment standards established for those solvents and dioxins when mixed with radioactive wastes. EPA currently has no information on mixed radioactive wastes that are underground injected. EPA requested comments on mixed radioactive wastes that are being underground injected. EPA received no information indicating that mixed radioactive wastes were being underground injected; thus, EPA is not granting a national capacity variance for them. These wastes will be prohibited from underground injection on August 8, 1990.

3. *Capacity Variances for Contaminated Soil and Debris*

Today, EPA is granting an extension of the effective date for certain First, Second, and Third Third contaminated soil and debris for which the treatment standards are based on incineration, vitrification, or mercury retorting. EPA is also granting a national capacity variance for inorganic solids debris contaminated with D004 through D011 wastes. RCRA section 3004(h)(2) allows the Administrator to grant an extension to the effective date based on the earliest date on which adequate alternative capacity will be available, but not to exceed two years "... after the effective date of the prohibition which would otherwise apply under subsection (d), (e), (f), or (g)." For First third and Second Third wastes that have heretofore been subject to the "soft hammer" provisions (see section I.B.9) but for which treatment standards are being promulgated today, EPA is interpreting the statutory language "... effective date of the prohibition that would otherwise apply" to be the date treatment standards are promulgated for these wastes (i.e., May 8, 1990), rather than the date on which the "soft hammer" provisions took effect (i.e., August 8, 1988, and June 8, 1989, respectively). EPA finds this the best interpretation for two reasons. Extensions of the effective date are based on the available capacity of the BDAT for the waste, so it is reasonable that such an extension begin on the date on which treatment standards based on performance of the BDAT are established. Furthermore, EPA does not intend, in effect, to penalize generators of First Third and Second Third wastes by allowing less time (i.e., 28 months and 37 months, respectively) for the development of needed capacity, while

generators of Third Third wastes in the same treatability group are allowed the maximum 48 months (assuming capacity does not become available at an earlier date). The capacity extension will therefore commence for First, Second, and Third Third wastes on May 8, 1990, and would extend (at maximum) until May 8, 1992.

For the purpose of determining whether a contaminated material is subject to this capacity extension, "soil" is defined as materials that are primarily geologic in origin, such as silt, loam, or clay, and that are indigenous to the natural geological environment. In certain cases, soils will be mixed with liquids or sludges. EPA will determine on a case-by-case basis whether all or portions of such mixtures should be considered soil (52 FR 31197, November 8, 1986).

Debris is generally defined as materials that are primarily non-geologic in origin, such as grass, trees, stumps, shrubs, and man-made materials (e.g., concrete, clothing, partially buried whole or crushed empty drums, capacitors, and other synthetic manufactured items). Debris may also include geologic materials (1) identified as not indigenous to the natural environment at or near the site, or (2) identified as indigenous rocks exceeding a 9.5-mm sieve size that are greater than 10 percent by weight, or that are at a total level that, based on engineering judgment, will affect the performance of available treatment technologies. In many cases, debris will be mixed with liquids or sludges. EPA will determine on a case-by-case basis whether all or portions of such mixtures should be considered debris.

In addition, EPA has established a specific treatability group for inorganic solids debris contaminated with D004 through D011 wastes. Wastes in this treatability group are defined as follows: nonfriable inorganic solids that are incapable of passing through a 9.5-mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: (1) Metal slags (either gross or scoria); (2) glassified slag; (3) glass; (4) concrete (including cementitious or pozzolanic, and mixed hazardous wastes); (5) masonry and bricks; (6) metal castings, metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment; and (8) "scrap metal" (as defined in 40 CFR 261.1(c)(6)). EPA has determined that there is inadequate treatment capacity for all debris in this treatability group.

Therefore, EPA is granting inorganic solids debris a national capacity variance.

Analysis of the TSDR Survey data indicated that a volume of approximately 17 million gallons of soil and debris contaminated with wastes subject to this rule were land-disposed in 1986. However, the Superfund remediation program has expanded significantly since that time. Plans for remediation at Superfund sites indicate that the excavation of soil and debris requiring treatment (including incineration and subsequent land disposal) will be far greater in 1990 than in 1986. Because of the major increase in the Superfund remediation program, EPA has determined that capacity is not adequate for incineration, vitrification, and mercury retorting of Third Third contaminated soil and debris. In addition, EPA has determined that there is insufficient treatment for inorganic solids debris. Therefore, EPA is granting a two-year national capacity variance for Third Third contaminated soil and debris for which BDAT is incineration, vitrification, or mercury retorting, and all inorganic solids debris.

EPA is also granting a two-year national capacity variance to all soil and debris contaminated with mixed RCRA/radioactive waste. EPA has estimated that insufficient treatment capacity exists to handle soil and debris contaminated with mixed radioactive waste.

EPA notes that if soil and debris are contaminated with Third Third prohibited wastes whose treatment standard is based on incineration (or other technologies for which EPA determines there is insufficient capacity) and also with other prohibited wastes whose treatment standard is based on an available type of technology, the soil and debris would remain eligible for the national capacity variance. This is because the contaminated soil and debris would still have to be treated by some form of technology that EPA has evaluated as being unavailable at present. However, there is one exception to this principle. If the soil and debris are contaminated with a prohibited waste whose treatment standard is no longer available, the national capacity variance would not apply.

For certain types of prohibited solid wastes, then the soil and debris would have to be treated to meet the treatment standard for that prohibited waste (or wastes). Any other interpretation would result in EPA's extending the date of a prohibition beyond the dates established by Congress, and therefore beyond EPA's legal authority.

C. Ninety Day Capacity Variance for Third Third Wastes

EPA is delaying the effective date of the treatment standards in today's rule for three months, or until August 8, 1990 (except for those portions of the rule delayed because of long-term national capacity variances). EPA is taking this step because the Third Third rule is of unusual breadth (approximately 350 waste codes affected, plus all characteristic wastes, multi-source leachate, and mixed wastes), complexity, and difficulty. Persons having to comply must not only determine what the treatment standards are for their wastes, but must also grapple with the interplay between standards for listed and characteristic wastes, certain new interpretations regarding permissible and impermissible dilution, and certain new tracking requirements for characteristic wastes. Although the Agency has made all efforts legally available to communicate its resolution of some of these matters in advance of the May 8, 1990, prohibition date, most members of the regulated community are just receiving notice of the requirements with which they must comply. It takes some reasonable amount of time to determine what compliance entails, as well as time to redesign tracking documents, possibly adjust facility operations, and possibly segregate wastestreams which heretofore had been centrally treated. EPA believes that these legitimate delays are encompassable within the concept of a short-term national capacity variance because part of the notion of available capacity is the ability to get wastes to the treatment capacity in a lawful manner. Accordingly, the Agency is granting a short-term national capacity variance for three months.

The Agency emphasizes that during this variance, all Third Third wastes that remain hazardous and that are being disposed of in landfills or surface impoundments may only be disposed of in landfill or impoundment units that meet the minimum technology standards set out in § 268.5(h)(2). (See also section III.D of today's preamble explaining that a different principle holds for prohibited wastes that are now nonhazardous.) In addition, the recordkeeping requirements of existing 40 CFR 268.7 (a)(4) and (b)(6) will apply during this period. These provisions require a certification that a restricted waste is not subject to a prohibition for enumerated reasons, such as existence of a national capacity variance. EPA does not intend, however, that



recordkeeping requirements apply to characteristic wastes that have been treated to meet the treatment standard during this three-month period. The new recordkeeping requirements applicable to these situations in fact do not take effect for three months based on the Agency's determination that it will take that long to understand how to use them. Thus, tracking documents would only be required for restricted wastes that are hazardous wastes when sent off-site. In addition, all existing treatment requirements (e.g., California list requirements applicable during the period of a capacity extension) are applicable from May 8, 1990 to August 8, 1990.

D. Applicability of Land Disposal Restrictions

1. Introduction

Under RCRA, wastes can be designated as "hazardous" in one of two ways: (1) they may be specifically listed based on EPA's evaluation of factors set out in 40 CFR 261 subpart B ("listed wastes"), or (2) they may be considered hazardous because they exhibit certain indicator characteristics set out in 40 CFR part 261 subpart C ("characteristic wastes").

A central issue in this rulemaking concerns EPA statutory authority to require full treatment for characteristic wastes. Some industry commenters argue that EPA lacks jurisdiction over characteristic wastes if the indicator characteristic is removed before land disposal. Environmentalists and the treatment industry, on the other hand, argue that EPA must, in all cases, require treatment of characteristic wastes in the same manner it would for listed wastes. EPA disagrees with both positions. Rather, EPA believes that the statute provides EPA ample authority to determine whether additional treatment beyond removal of the characteristic is necessary for particular types of wastes to achieve the goals of the statute.

In some cases, EPA is requiring additional treatment beyond removing the characteristic; in others, EPA deems removal of the characteristic itself to be sufficient especially where no toxic contaminants are specifically identified; finally, in several cases, EPA has determined that there is only sufficient information in the record to justify treatment requirements to the characteristic levels at this time. For these respective wastes, data in the administrative record is not adequate to determine whether treatment below characteristic levels is feasible to minimize threats to human health and the environment for the wide range of

differing waste matrices encompassed by a single characteristic waste code. In these respective cases, EPA is establishing a treatment level based on its best judgment on the information currently available, and will review its decision in light of new information in the future.

Another critical issue is whether or not to prohibit dilution of characteristic wastes as part of the LDR program. As discussed below, in some circumstances a dilution prohibition is important to ensure actual treatment of the waste. EPA is applying a dilution prohibition to wastes which exhibit a characteristic at the point of generation, with two exceptions. The first exception to the dilution prohibition is for characteristic wastes treated for purposes of CWA requirements. CWA requirements, including CWA dilution rules, serve goals similar to the LDR dilution rules. Relying on the CWA dilution rules will generally accomplish the goals of the LDR program without creating potential inconsistencies or duplication in EPA's regulations. A second general exception to the LDR prohibitions is for characteristic wastes that are subsequently diluted and disposed in injection wells authorized under the SDWA. This exclusion is based, in part, on EPA's evaluation that the disposal of dilute, nonhazardous wastes into appropriately confined injection zones would not constitute a threat to human health and the environment. EPA's decision also is based on the unnecessary regulatory burden that would ensue from application of the LDR prohibitions on the SDWA program regulating nonhazardous well disposal. A more detailed discussion of EPA's rationale and decision rules follow.

2. Legal Authority over Characteristic Wastes

a. Introduction. One of the most fundamental issues in this rulemaking is whether the prohibition on the land disposal of untreated characteristic wastes applies at the point of generation or at the point of land disposal. The choice of approach will affect EPA's ability to establish methods of treatment (rather than allowing dilution to meet a level), to apply a dilution prohibition, to require treatment of constituents other than those specifically addressed by the characteristic, and to establish treatment levels below characteristic levels.

This issue arises from current regulatory distinctions between characteristic hazardous wastes and listed hazardous wastes. Listed wastes, and wastes derived from the storage, treatment and disposal of listed wastes,

remain hazardous for all regulatory purposes unless that waste is specifically delisted by Agency approval of a delisting petition under 40 CFR 260.22. Thus, a listed hazardous waste remains hazardous from the point of generation through the point of land disposal unless specifically delisted.

In contrast, a characteristic hazardous waste is no longer deemed hazardous when it ceases to exhibit a hazardous waste characteristic. 40 CFR 261.3(d)(1). However, as discussed below, the characteristic level is only one indicator of hazard and, thus, removal of the specific characteristic is not the same as assuring that the waste is safe. Until today, a hazardous waste characteristic could be removed by treatment; however, it could also be removed by simple mixing or dilution. Thus, if LDR requirements were applied only to wastes which exhibit a characteristic at the point of land disposal, EPA would be unable to require full treatment or, in some cases, any legitimate treatment of wastes which exhibit a characteristic at the point of generation.

EPA's proposed approach for both treatment standards and applying a dilution prohibition for characteristic wastes received many comments. Most commenters expressed concern about the regulatory impact of these rules on land disposal facilities regulated under RCRA subtitle D. There was particular concern over the impact of the proposed rules on existing wastewater treatment trains regulated under the Pretreatment and National Pollutant Discharge Elimination System (NPDES) programs, pursuant to sections 307(b) and 402 of the CWA, which use surface impoundments not regulated under RCRA subtitle C. In addition, there were many comments concerning the impact of the proposed rules on the SDWA program for nonhazardous injection wells.

As discussed below, Congress has given apparently conflicting guidance on how the Agency should address land disposal prohibitions for characteristic wastes. EPA believes it has authority to reconcile these potential conflicts and to harmonize statutory provisions to forge a coherent regulatory system. (See RCRA Section 1006(b)—"The Administrator shall integrate all provisions of (RCRA) for the purposes of administration and enforcement and shall avoid duplication to the maximum extent practicable, with the appropriate provisions of the (CWA and SDWA)".) Within this authority EPA seeks to further the policy of section 3004(m) to treat hazardous waste prior to land disposal. However, EPA may also take

steps to address problems that could arise from integration of LDR prohibitions in the context of the RCRA Subtitle D, CWA and SDWA programs. A more detailed discussion of the legal authority for this approach is provided below.

b. *General Standard for Agency Construction of Statutes.* Chevron U.S.A. Inc. v. NRDC, 467 U.S. 837 (1984) sets forth a two-step process for determining whether to sustain an agency's statutory interpretations. First, a court determines whether Congress has spoken directly to the precise question at issue. If the intent of Congress is clear, then the agency construction must be consistent with the Congressional directive. If, however, the statute is silent or ambiguous with respect to the specific issue, the agency choice must be based on a permissible construction of the statute. The construction may reflect a reasonable accommodation of policies that are committed to the agency by statute.

For the reasons stated below, EPA believes that Congress has not spoken to the precise question of the point at which LDR prohibitions apply and, thus, the Agency may develop a reasonable interpretation of the statute considering the goals and objectives of the LDR program and RCRA in general.

c. *Scope of Agency Authority for Treatment Requirements.* Several industry commenters argue that EPA must determine the applicability of LDR requirements at the point of land disposal based on the language of RCRA section 3004(g), which authorizes EPA to prohibit "the land disposal of hazardous waste." Commenters argue that this language indicates a Congressional decision to apply LDR requirements only to waste which is listed or exhibits a characteristic at the point of land disposal.

The Agency agrees that this is one permissible construction of the language in section 3004(g). Clearly a waste must be "hazardous" to fall under the mandate of 3004(g). EPA could assess whether or not a waste is hazardous at the point of land disposal to determine whether the prohibition in 3004(g) applies. The Agency, however, does not believe this is the only permissible construction. Although section 3004(g) clearly authorizes EPA to prohibit the land disposal of characteristic waste, it does not specify that the status of the waste for purposes of the prohibition can only be evaluated at the point of land disposal. Rather, the evaluation of whether a hazardous waste is subject to the prohibitions can apply at the point of generation or at the point of disposal (and possibly at some other point or

combination of the two). Indeed, section 3004(g)(5) requires EPA to consider "... the goal of managing hazardous waste in an appropriate manner in the first instance," (emphasis added) when determining the scope of the land disposal prohibitions. See reference to section 3004(d)(1)(B) in section 3004(g)(5). This language can be read to refer to a point of generation approach. Moreover, the statutory structure provides for treatment of hazardous waste under section 3004(m) treatment standards before land disposal and not necessarily at the physical point of land disposal. Commenters further argue that the Congressional policy is to limit the scope of the LDR provisions to facilities currently regulated under subtitle C of RCRA.

As discussed below, the Agency has concluded that applying LDR requirements at the point of generation is not only a permissible construction of the statute, but one which may better serve the goals and objectives of the LDR program.⁶ Specifically, EPA believes that applying LDR requirements at the point of generation may, in some cases, be necessary to effectuate the requirement that the Agency set treatment standards or methods for characteristic wastes under section 3004(m). As the Agency noted in the proposal at 54 FR 48490, the point of disposal approach could undermine the Congressional goals of the land disposal restrictions in critical ways when applied to characteristic wastes.

First, the Agency would not effectively be able to set a particular method of treatment or limit dilution for a characteristic waste. A point of disposal approach might permit dilution of characteristic wastes, since waste diluted below a characteristic level prior to land disposal would not be regulated by LDR provisions. Such dilution could be in lieu of treatment or a specified method and would not fulfill the goals of

section 3004(m). In many cases, dilution simply increases the volume of a waste without reducing or immobilizing the mass of hazardous constituents in the waste.

Second, the point of disposal approach could be construed to limit treatment standards both in terms of treatment levels and the range of hazardous constituents affected by the treatment standard. For characteristic wastes, a point of disposal approach would, in effect, preclude a requirement to treat below the characteristic level. In some cases, characteristic levels are not levels below which there may be no significant risks to human health and the environment. Rather, the EP (and TC) limits are levels at which wastes clearly are hazardous. 45 FR 33084 (May 19, 1980); 51 FR 21648 (June 13, 1986); 55 FR 11798 (March 29, 1990).⁷

Characteristic wastes also may exhibit both a specific characteristic and contain significant concentrations of other hazardous constituents. (This is true, for example, of the high TOC ignitable wastes and reactive cyanide wastes regulated under today's rule.) Simply treating the one specific characteristic which is an indicator that the waste is a hazardous waste would not necessarily fulfill the goal of section 3004(m), i.e., to "substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (emphasis added). The statutory focus on hazardous constituents beyond the specific characteristic constituent is also enunciated in sections 3004(d)-(g) of RCRA. These provisions authorize EPA to take into account "... the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous wastes and their hazardous constituents" in establishing hazardous

⁶ The Agency has previously adopted the point of generation approach with respect to identification of waste subject to the California list prohibitions set out in RCRA section 3004(d)(1) and (2). 52 FR 25760 (July 8, 1987). Like characteristic wastes, California list wastes must contain constituents or exhibit a property above a certain level. Moreover, as a general matter, to ensure the proper management of waste in the first instance, EPA has required application of several 40 CFR part 268 requirements at the point of generation. See § 268.30(a)(3) and 52 FR 21012 (June 4, 1987) (initial generator must determine whether solvent wastes are prohibited); 53 FR 31146-47 (August 17, 1988) and 54 FR 28605 (June 23, 1989) (waste code carry-through principle applies at the point of generation and determines both the prohibition and the treatment standard for listed wastes). All land disposal restriction tracking requirements likewise attach at the point of generation. (268.7(a) and 54 FR 36968 (Sept. 6, 1989)).

⁷ In *Hazardous Waste Treatment Council v. EPA* (HWTC III), 886 F.2d 355 (D.C. Cir. 1989) the court noted that it would be inappropriate under section 3004(m) to require treatment below levels which there are no longer threats to human health and the environment. *Id.* at 383. However, the court noted that the inquiry under section 3004(m) concerning the extent of treatment is different than levels established for other regulatory purposes, and specifically noted that EPA need not construe characteristic levels as levels below which no further minimization of threats can occur. *Id.* at 362. The Agency has recently discussed its rationale for a technology-based approach to treatment standards under section 3004(m) which does not cap the treatment requirements at delisting levels. (See 55 FR 6640, (February 28, 1990)). EPA recognizes that HWTC III is not dispositive on the issue we address today whether characteristic levels at the point of disposal serve as a jurisdictional bar to application of section 3004(m) treatment standards.

waste prohibitions. Section 3004(d)(1)(C) (emphasis added). Thus, EPA believes it has statutory authority to take into account all aspects of a waste stream in determining appropriate treatment and is not limited to considering merely one specific "characteristic" that indicates that the waste is hazardous in the first instance.

EPA also has general authority under RCRA section 3004 (a)(3) to establish different criteria for determining when wastes will enter and exit the hazardous waste management system—i.e., when they will initially be designated as hazardous waste and when they no longer require RCRA subtitle C management controls. For example, the clean-closure standards for regulated units that hold characteristic wastes require removal of hazardous constituents even if the waste no longer exhibits a hazardous characteristic. See 53 FR 8705 (March 19, 1987). EPA also has previously promulgated regulations requiring that incinerators treating hazardous waste be operated to a certain efficiency even if a characteristic waste in the waste feed ceases to exhibit a characteristic somewhere in the combustion process.

EPA believes that under the first test in *Chevron*, Congress has neither mandated nor precluded a point of generation approach. In this case the "meaning or reach of a statute involve[s] reconciling conflicting policies." *Chevron*, 467 U.S. at 846 (citation omitted). Moreover, "a full understanding of the force of the statutory policy in the given situation has depended upon more than ordinary knowledge respecting the subject matters subjected to agency regulations." *Id.* Accordingly, EPA should make choices which represent "a reasonable accommodation of conflicting policies that were committed to the agency's care by statute." *Id.*

In this regard, section 1006(b) of RCRA provides EPA authority to integrate provisions of RCRA and other acts it administers, including the CWA and SDWA, for purposes of administration and enforcement. Such integration must be consistent with the goals and policies of these acts. Under this framework, EPA can analyze potential overlaps between regulatory programs in its decision-making. Where the goals are consistent, and uniform administration or enforcement is preferable, EPA may rely on one regulatory framework instead of applying potentially duplicative or inconsistent regulations. Accordingly, the Agency believes that it can harmonize potentially conflicting

policies by considering both the benefits of a given approach and any regulatory problems (including regulatory overlap) that would be engendered by the approach. The balancing may thus result in different application of LDR requirements for certain classes of facilities.

d. *Agency Framework for Addressing Treatment Standards for Characteristic Wastes and Integrating them With Other Regulatory Programs.* The Agency believes that it has authority to apply LDR requirements at the point of waste generation for characteristic wastes and that such an approach will generally better achieve the goals of the LDR program. Specifically, EPA believes it has the authority to set treatment levels below the characteristic levels, to specify methods of treatment, and to prohibit dilution for characteristic wastes where necessary and appropriate to further the goals of the statute. EPA recognizes, however, that there are many far-reaching policy considerations respecting the actual implementation of this approach. For example, a point of generation approach could apply to management of waste prior to RCRA subtitle D land disposal.*

LDR standards which require waste to be treated to below characteristic levels would apply to wastes currently destined for RCRA subtitle D facilities. Application of the LDR provisions would be a very significant change in the regulatory scheme for these facilities, and could cause major administration and enforcement problems for both EPA and these facilities. For example, EPA currently has no authority to enforce subtitle D criteria against subtitle D facilities, and hence has no enforcement program for these facilities. In order to ensure that these facilities met the subtitle C requirements, the Agency would have to implement an enforcement scheme that addressed thousands of subtitle D facilities. In addition, owners and operators of subtitle D facilities would need to meet complex LDR tracking requirements. Many may decide not to accept partially treated characteristic wastes rather than comply, thus, diverting potentially large volumes of non-hazardous waste to subtitle C facilities and potentially aggravating capacity problems at subtitle C

facilities.⁹ As noted in the proposal at 54 FR 48491, some of these problems may be addressed by future regulatory revisions. EPA will continue to evaluate this issue as it addresses standards for the wastes identified by the new Toxicity Characteristic (TC).

In addition, many of these potentially affected subtitle D units contain wastes that are regulated, in part, under the National Pollutant Discharge Elimination System (NPDES) and pretreatment programs under sections 301, 304, 307, and 402 of the CWA, and the Underground Injection Control (UIC) program under the SDWA. Requiring treatment below characteristic levels or imposing a dilution prohibition would require significant changes to the operations of these facilities and create problems of regulatory integration.

This is not to say that the section 3004(m) objectives carry little weight with respect to characteristic wastes. On the contrary, particularly with respect to toxic wastes, these policies are of critical importance. Moreover, many of these potential implementation problems may be addressed by future rulemakings.

Section 1006(b) of RCRA requires the Agency to integrate "for the purposes of administration and enforcement" RCRA subtitle C with the goals and policies of other portions of RCRA, as well as other statutes administered by EPA. In light of this requirement and the absence of any clear Congressional directive to apply LDR requirements directly to subtitle D facilities, the Agency must ask itself whether the benefits of treating below characteristic levels warrant the serious implementation problems such as those discussed above. This is particularly true where the administrative record contains inadequate data to set levels below the characteristic level for the many waste matrices represented by a single characteristic waste code. However, where the data is adequate, EPA believes it can successfully implement treatment requirements beyond removal of the characteristic, on a case-by-case basis, without significant disruptions to other regulatory programs to further the goals of section 3004(m) by requiring treatment beyond removal of the characteristic. EPA is prepared to reevaluate these issues in future rulemakings based on further information and experience with implementing the LDR program.

The extent to which the treatment goals of section 3004(m) are furthered by

* Waste disposed into such units would need to meet the treatment requirements unless disposal is (1) into a "no migration" unit approved under 40 CFR part 148 or 268, or (2) into a surface impoundment which meets the requirements of RCRA section 3005(j)(11).

⁹ As noted below, EPA has provided a regulatory structure to enforce dilution rules which does not impact subtitle D facilities.

treatment beyond removal of the specific characteristic and by application of LDR dilution rules is discussed below for certain classes of wastes and certain classes of waste management practices. EPA also will consider section 3004(g) and the Congressional directive under section 1003(b) of RCRA to integrate regulatory programs. Accordingly, EPA's approach is to balance both the extent of additional treatment provided from treatment beyond removal of a characteristic and regulatory integration concerns for LDR standards relating to characteristic wastes.¹⁰

Below, EPA addresses three separate LDR requirements: treatment levels, methods of treatment, and dilution prohibitions. In addition, EPA discusses exclusions for some of these requirements for certain practices regulated under the CWA and SDWA.

3. Treatment Levels

a. Environmental Considerations.

Section 3004(m) states that treatment standards should substantially diminish the toxicity or mobility and minimize short-term and long-term threats. The legislative history of this provision also states that regulation under RCRA should complement and reciprocally reinforce regulations under the CWA. S. Rept. at 18. EPA's framework for developing best demonstrated available technologies helps to ensure that toxicity and mobility are minimized. Additionally, the methods or levels derived through the BDAT process also minimize short and long-term threats to human health and the environment. Thus, in establishing BDAT, EPA seeks to achieve substantial reductions in toxicity and mobility, not merely incidental or small reductions. Available data and objectives of the land disposal

restrictions program are both relevant for determining the appropriate level of minimization in individual cases. Treatment to a characteristic level will result in a substantial reduction in the toxicity or mobility of the characteristic waste matrices EPA has evaluated in this rulemaking. For example, EPA's stabilization data for arsenic demonstrated untreated EP toxicity from 41 to 6450 mg/l. Treatment of these wastes to the characteristic level of 5 mg/l results in a reduction of 88 to 99.9%. The Agency also believes that further treatment may, in some cases, continue to minimize threats to human health and the environment. However, for other waste treatability groups addressed in this rulemaking, EPA believes it only has sufficient data, at this time, to establish treatment levels at the characteristic level. See section III A above.

This section sets forth EPA's approach for developing treatment standards for each category of characteristic wastes. The Agency based its decisions on the data available at the time of this rulemaking. See RCRA section 3004(d)(1). EPA plans to re-examine these standards as new information becomes available. In addition, EPA will develop additional standards for the newly-identified wastes in the toxicity characteristic rule.

Today's rule reflects a decision to take limited, but nonetheless significant, steps within the point of generation framework. As a general matter, the Agency believes that the goals of section 3004(m) may require application of standards which go beyond the characteristic level (subject to harmonization with section 3004(g) policies) in some future cases. EPA intends in the rulemaking for TC wastes to evaluate more stringent treatment levels for more treatability groups. This would potentially require lower levels for characteristic constituents and treatment of other hazardous constituents in a given characteristic waste matrix. The phased approach in today's rule is consistent with the principle that an agency is entitled to the highest deference in deciding the sequence and grouping in which it addresses issues. *Hazardous Waste Treatment Council v. EPA*, 861 F.2d 277, 287 (D.C. Cir. 1988) (upholding EPA's construction of HSWA statutory provisions in a way that allowed the Agency to take one step at a time in implementing the provisions under HSWA); *Associated Gas Distributors v. FERC*, 824 F.2d 981, 1039 (D.C. Cir. 1987).

(1) *Toxic Wastewaters*. EP toxic inorganic wastewaters are primarily destined for NPDES wastewater treatment systems, pretreatment systems and UIC injection wells. Given current data EPA could set treatment levels about an order of magnitude below the characteristic levels for some of the EP toxic metal wastewaters. Imposing treatment standards below the characteristic level, however, could have the effect of invalidating legitimate methods of treatment involving surface impoundments that are part of CWA wastewater treatment trains (equalization basins used to equalize flows to centralized chemical precipitation and sedimentation treatment, for example). A treatment standard below characteristic levels would need to be met prior to placement in a subtitle D treatment impoundment. This would be so even though the impoundment might treat the waste for purposes of CWA requirements. In effect, this could move BAT/PSSES standards from end-of-pipe to in-process, requiring facilities to change their existing wastewater treatment systems or comply with internal waste stream requirements that would overlap with CWA requirements. Imposing such standards on Class I non-hazardous UIC disposal could interfere with protective disposal practices with no corresponding environmental benefit (see discussion on dilution below).

As a result, EPA is not imposing treatment standards below characteristic levels for such wastewaters. Based on the information in the rulemaking record virtually all wastewaters are managed in the context of CWA treatment impoundments or UIC wells.¹¹

(2) *Toxic nonwastewaters*. With respect to nonwastewaters exhibiting the EP characteristic for metals, EPA determined that BDAT is based on vitrification of stabilization. These technologies are matrix-dependent types of treatment. When considering characteristic wastes, the amount of diversity within a single waste code is typically extensive. This is because, unlike listed wastes, the characteristics do not identify wastes from single processes, single industries, or single chemical species, but rather can come from virtually any process or industry.

¹⁰ In determining that some balancing of competing section 3004(m) and 1006(b)/3004(g) interests is necessary in establishing prohibitions for characteristic wastes, the Agency is further determining that the framework outlined in the court's opinion in *HWTC III*, 886 F.2d 355 (D.C. Cir. 1989) and the Agency's response to that opinion (55 FR 6640 (Feb. 28, 1990)) is not dispositive in the differing context of characteristic wastes. Both the opinion and the Agency's response dealt with situations where listed hazardous wastes were being disposed so there were no competing interests to balance against the Section 3004(m) mandate. Consequently, the Agency determined that until it could develop *de minimis* concentration levels which establish when threats from prohibited wastes are minimized, it would opt for the certainty of technology-based treatment standards to remove as much of the uncertainty associated with land disposal of hazardous wastes. 55 FR at 6642. Characteristic wastes present a different situation, however, due to the potential disruption of other programs, see *supra*, and possible minimal benefits to treatment below the characteristic levels in some cases.

¹¹ If EPA should receive information in the future indicating that significant volumes of wastewater is land disposed in another context EPA will reevaluate the issue of setting treatment levels lower than the characteristic level for EP toxic metals. Again EPA is utilizing its considerable discretion to address issues one at a time. See *HWTCIII*, *supra*, 861 F.2d at 287.

Using available data, it is not possible in this rulemaking, due to lack of time and data on this diverse universe, to subcategorize each characteristic waste into treatability groups designed specifically for certain industries or processes. Thus, in considering what treatment standards are achievable for EP toxic metal nonwastewaters, the Agency had to develop uniform standards based on BDAT technology that constitute all or most of the wastes identified by the characteristic.

As discussed in section IIIA. of the preamble, the Agency is confident that these wastes can be treated at least to characteristic levels. However, the Agency is unable to treatment standards below the characteristic level are achievable for all of such wastes. Certainly, as shown by data submitted by the waste treatment industry and other commenters, some samples in these waste categories can be treated to levels below the characteristic, and some to levels well below (an order of magnitude or more, in some cases). The Agency does not believe that these data are sufficiently representative, however, to warrant extrapolation to all waste matrices under a given waste code.¹² See discussion in section IIIA.

In reviewing the additional data submitted by commenters, the Agency was struck by the amount of diversity often present in the treatment data for a particular characteristic, not only confirming the matrix-dependent nature of the technology, but the difficulty of finding a single numerical standard that would be generally achievable for all wastes in that particular metal waste code. Another problem confirmed by data is that many wastes exhibit characteristics for more than one metal, and optimized treatment for one metal can preclude optimized treatment for another. Yet virtually all of the metal treatability data in this record is for treating only one metal.

Even if the Agency had enough data to require treatment below the characteristic levels for these wastes, it would likely have to establish specific treatability groups within the individual codes (as done today to a limited extent). Many of the difficulties in assessing data noted briefly above, and discussed in detail in the sections on each characteristic metal, appear to be industry or process specific. It should be noted that the Agency expects that treatment will result in levels slightly

below the characteristic levels in any case. This is because most treatment technologies cannot easily be "turned off" at precisely the characteristic level and, thus, EPA believes the requirement to treat to the characteristic level will often result in further treatment.

For EP toxic pesticide nonwastewaters, treatment is based on a non-matrix dependent technology that can reduce hazardous constituent levels to orders of magnitude below the characteristic level. Thus, the types of difficulties posed for EP metals—assessing treatment achievability for a wide variety of wastes treated by a matrix-dependent technology—are not presented for pesticide wastes. Moreover, the pesticide wastes are potent carcinogens, so that removing the uncertainties of the threats they pose when land disposed is highly desirable. The Agency, thus, is establishing treatment standards for these wastes based on performance of optimized destruction technology. EPA does not believe the general regulatory difficulties in implementing this requirement to treat below characteristic levels are significant in the context of subtitle D facilities as there is a limited amount of this waste in existence and the destruction of the toxic constituents is a clear benefit over other treatment approaches.

(3) *Other Characteristic wastes.* As discussed in section IIIA., for most corrosive, reactive, and ignitable characteristic wastes, the Agency has determined that the appropriate treatment for these wastes is to remove the characteristic. The environmental concerns from the properties of ignitability, corrosivity, and reactivity are different from the environmental concern from EP toxic wastes. Toxic constituents can pose a cumulative impact on land disposal even where waste is below the characteristic level. Where wastes pose an ascertainable toxicity concern, as with high TOC ignitable wastes, and cyanide-bearing and sulfide-bearing reactive wastes, the Agency has developed treatment standards that address the toxicity concern and (in-effect) require treatment below the characteristic level. As discussed in section IIIA., this approach is important to address toxic constituents in this waste. EPA does not believe the regulatory problems in implementing standards for this limited number of streams will be significant. Otherwise, treatment that removes the properties of ignitability, corrosivity, and reactivity, fully addresses the environmental concern from the properties themselves. Further

discussion is contained in the preamble dealing with each specific characteristic.

b. *Regulatory Problems.* In reaching the approach set forth in today's rule, EPA has considered the advantages of additional treatment, with the difficulties in (1) implementing a requirement to treat below characteristic levels and (2) the effect of such a rule on overlapping federal environmental programs.

The characteristic level evaluated at the point of disposal serves to distinguish certain disposal practices and facilities from other permitting and regulatory requirements under Subtitle C of RCRA. Many commenters argued that there are significant advantages to providing a clear regulatory boundary which serves, in most cases, to separate the jurisdiction of different environmental programs. As discussed above, LDR provisions that apply to require treatment beyond removal of the characteristic might require complicated tracking and enforcement provisions that would apply at many subtitle D disposal facilities which are currently not subject to any subtitle C requirements. The most complicated of such requirements would involve enforcing levels below the characteristic levels. To enforce and implement such requirements, EPA would potentially need to expand the universe of disposal facilities covered by the LDR provisions to perhaps thousands of facilities.

Requiring levels of treatment below the characteristic level would also have specific disruptive impact on practices regulated, in part, under the CWA. In effect, a treatment standard below characteristic levels would need to be met prior to placement in a surface impoundment used in the treatment process. EPA estimates that up to 2000 nonhazardous treatment impoundments could be affected by a requirement for treatment below characteristic levels. There are other difficulties in applying treatment standards below characteristic levels to injection wells regulated under the SDWA which are described in detail below.

EPA does not believe that the current technical data in the record justifies treatment levels below characteristic levels for the nonwastewater EP toxic metals. Thus, EPA has not engaged in an extensive balancing of regulatory integration problems for the wastes in this rule. For the EP toxic pesticides, EPA believes treatment to the levels provided for in the BDAT incineration technology is important to destroy these particularly dangerous pesticides. Because there is a limited amount of these pesticides, EPA believes the

¹² The treatment industry data, for example, was often deficient in such information as to whether and how concentrated characteristic wastes are mixed and back calculations for dilution effects resulting from pretreatment mixing. See section IIIA.



environmental considerations outweigh any difficulties in implementing the LDR requirement to treat below the characteristic level. For wastewaters, EPA believes the regulatory difficulties in integrating the CWA and SDWA programs outweigh the limited benefit from additional treatment based on the current information. Finally, EPA has set requirements to remove certain toxic constituents from certain ignitable and reactive wastes. Some of these treatment requirements are in the form of methods which are discussed below. Again, EPA believes the environmental benefit in terms of treatment outweighs the regulatory problems in providing such standards for these wastes because of the limited circumstances involving such wastes.

4. Methods of treatment

a. *Environmental Considerations.* EPA has express authority to specify methods of treatment as the treatment standard. As discussed above, this necessarily entails a point of generation approach. Imposition of these treatment methods normally results in more than the removal of the characteristic and further minimizes threats to human health and the environment.

EPA proposed methods of treatment for certain classes of characteristic wastes. There are several advantages to specifying a method of treatment. First, EPA may not have enough data to set a level of treatment. In such cases, a method can still fulfill the purposes of 3004(m) by providing for treatment. Second, analytic methods may not exist to measure key constituents in a prohibited waste, in which case designation of a method is the only way to ensure treatment. Third, a method may treat other constituents beyond those addressed by the specific characteristic. Finally, specifying a method may preclude other treatment alternatives which the Agency believes create other risks to the environment. For example, some wastewater treatment systems remove volatile organics from the wastestreams simply by venting these volatiles to the atmosphere. However, there are two disadvantages to specifying methods of treatment: (1) It may preclude the use of alternative methods or development of alternatives that are cost-effective and consistent with Agency objectives; and (2) it establish a national requirement that may not be appropriate for a variety of case-specific applications. For these reasons, EPA must consider carefully a decision to rely on methods of treatment.

In today's rulemaking, EPA is specifying incineration or fuel

substitution for ignitable characteristic wastes with high levels of total organic carbon (TOC). The TOC content of these wastes serves as an indicator of high concentrations of hazardous constituents which incineration will destroy. See, e.g., Senator Chaffee's floor statement introducing the amendment that became section 3004(m): "for wastes with a high organic content, incineration should be required in lieu of land disposal." 130 Cong. Rec. S9179 (July 25, 1984).

b. *Regulatory Problems.* To have any practical effect, methods of treatment must generally attach at the point of generation. EPA does not believe, however, that this requirement will be difficult to implement in this rule because a limited number of characteristic wastes are affected. EPA is also somewhat limiting the circumstances under which the methods would apply to avoid certain regulatory integration problems with the SDWA program regulating underground injection wells. However, as discussed below, the requirement to incinerate these wastes is entirely consistent with and promoting of the objectives of the CWA. Accordingly, EPA believes the benefits of incineration of certain categories of characteristic waste outweigh any limited regulatory problems under the CWA.

5. General Dilution Prohibition

a. *Environmental Considerations.* Dilution rules are intended to prohibit dilution in lieu of treatment and to ensure that wastes are treated in appropriate ways. As discussed in the preamble sections on treatment of characteristic wastes, EPA believes the mixing of waste streams to eliminate certain characteristic is appropriate treatment for most wastes which are purely corrosive, or in some cases, reactive or ignitable. As a general matter, these are properties which can effectively be removed by mixing. On the other hand, simple dilution is not effective treatment for toxic constituents. Dilution does not itself remove or treat any toxic constituent from the waste. Accordingly, EPA believes that a dilution prohibition for characteristic wastes is important for purposes of the treatment requirements and carries a significant benefit.

The dilution rules will help minimize hazardous constituents that are currently disposed under both the RCRA subtitle C and D programs. Although few data on specific health and environmental impacts resulting from subtitle D facilities are available, the large volume of waste and number of facilities involved present concerns

about actual and potential threats. Based on a 1984 study, EPA estimated that there were 7.6 billion tons of industrial nonhazardous waste disposed in approximately 28,000 industrial solid waste and disposal facilities. More than half of these facilities were surface impoundments, which create concerns because of the mobility and physical driving force of liquids in impoundments and the current limited use of design controls. Study results indicated only sporadic use of design and operating controls at industrial solid waste landfills and surface impoundments, with only 12 percent and 22 percent, respectively, employing any type of liner system. (53 FR 33320, August 30, 1988). Study findings also reveal that few of these facilities have monitoring systems, and only 35 percent were inspected by States in 1984, the latest year for which data are available. The present inspection status is unknown. Limited data on violations of State requirements, coupled with these statistics on design and operating controls, suggest that releases may be occurring (53 FR 33320, August 30, 1988). As discussed below, EPA believes this is an area where the environmental benefits imposing a prohibition on characteristic wastes at the point of generation outweigh the problems in integrating other regulatory programs.

b. *Regulatory Problems.* As discussed below, the LDS dilution prohibition could have a significant disruptive effect on practices regulated, in part, by programs under the CWA and SDWA. EPA generally agrees with the many comments regarding impacts on these programs. In harmonizing or reconciling the general need for a dilution prohibition with the need to avoid these disruptive impacts, EPA believes it is appropriate to exempt certain practices from the dilution prohibition. These practices and the rationale for the exemptions are described in the sections that follow.

EPA does not believe these same regulatory problems apply to the program for disposal of other waste under subtitle D of RCRA. Subtitle D establishes a framework for Federal, State, and local government cooperation in controlling the management of nonhazardous solid waste. The Federal role in this arrangement is to establish the overall regulatory direction, to provide minimum standards for protecting human health and the environment, and to provide technical assistance to States for planning and developing environmentally sound waste management practices. The actual planning and direct implementation of

solid waste programs under subtitle D, however, remain State and local functions. Most States impose some set of overall facility performance standards; however, among the States, specific design and operating standards vary greatly.

Under the authority of sections 1008(a)(3) and 4004(a) of RCRA, EPA promulgated the "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR part 257), and subsequently issued minor modifications to these Criteria. These Subtitle D Criteria establish minimum national performance standards necessary to ensure that "no reasonable probability of adverse effects on health or the environment" will result from solid waste disposal facilities or practices. The existing Part 257 Criteria include general environmental performance standards addressing eight major topics: floodplains, endangered species, surface water, ground water, land application, disease, air, and safety. Currently, EPA does not have the authority to enforce these criteria directly.

EPA does not believe this regulatory framework is at all similar to those under the CWA and SDWA which, as discussed below, the Agency is excluding from the LDR dilution rules. Specifically, there are limited federal regulatory, implementation or enforcement provisions that would require integration. (This is not the case, incidentally if treatment standards are established below characteristic levels.) In that case, the subtitle D facility would necessarily be involved in the implementation and enforcement of the prohibitions. Accordingly, EPA is codifying the general dilution prohibition for characteristic wastes with certain exceptions.

6. Exemption to Dilution Prohibition for Characteristic Wastes Treated for Purposes of Certain CWA Programs

a. Introduction. For listed wastes, there are generally no overlapping CWA and RCRA treatment requirements for wastewater ultimately discharged to a water of the United States or POTW.¹³

¹³ Wastewater which contains a listed hazardous waste and is ultimately discharged to waters of the United States under an NPDES permit pursuant to section 402 of the CWA or to a Publicly Owned Treatment Works (POTW) pursuant to section 307 of the CWA is not ordinarily subject to the land disposal prohibitions for several reasons. First, in many situations, the wastewater is managed in tanks prior to discharge and, thus, there is no placement in a land disposal unit. Second, even where a surface impoundment is used to treat hazardous waste prior to discharge such surface impoundments may satisfy the requirements of section 3005(j)(11) of RCRA in lieu of meeting

(Of course, sludges or other residues from NPDES treatment trains which are subsequently land disposed are subject to the land disposal restriction provisions.) Some of these facilities, however, generate waste which exhibits a hazardous characteristic but after mixing with other waste streams ceases to exhibit that characteristic prior to placement in a subtitle D surface impoundment which is part of the wastewater treatment train. These surface impoundments are land disposal units for purposes of LDR prohibitions. The practice of mixing could thus trigger LDR dilution rules. EPA received many comments that the proposed RCRA dilution prohibition for wastewater going into these impoundments could undermine the ability of these operators to use nonhazardous waste surface impoundments as part of their NPDES treatment train.¹⁴ This impact would occur despite the fact that further treatment would occur in the impoundment to remove constituents from the wastewater prior to discharge to waters of the United States or to a POTW. These commenters further argued that application of such RCRA rules to wastewaters already required to be treated under CWA requirements would be unduly confusing and duplicative.

b. Environmental Considerations. As discussed below, the NPDES program has a series of technology-based requirements for the treatment of wastewater prior to discharge to waters of the United States. See 33 U.S.C. 1314 and 40 CFR Parts 400-471. These requirements provide for treatment of wastewaters prior to discharge. Indeed, many of the LDR treatment standards are based on data used to set the CWA standards. Thus, EPA believes the overlap of an LDR dilution prohibition where an NPDES treatment train includes a nonhazardous treatment impoundment would not substantially further the treatment goals of the land disposal restrictions.

c. Regulatory Problems. The regulatory overlap of similar but not identical dilution rules would create significant regulatory disruption. Section 1006(b) of RCRA provides EPA the

section 3004(m) treatment standards. See § 268.4. Section 3005(j)(11) requires an impoundment to meet certain design requirements set out in section 3004(o)(1) of RCRA and be dredged annually to remove residues.

¹⁴ As noted above, applying LDR requirements at a point of generation would require a facility either to (1) treat the waste prior to placement in the surface impoundment (2) obtain a "no migration variance," (3) comply with section 3005(j)(11); or (4) install tank treatment instead of using surface impoundments.

authority to consider these integration problems and set requirements that are consistent with the goals and policies of the CWA and RCRA. Many of the effluent limitations guidelines and standards, including all of those reflecting mass-based limits and standards, have factored in controls on dilution. In addition, NPDES permit writers can set requirements which reflect the nature of the treatment process, including best management practices, mass limitations in lieu of concentration based limitations, adjustments to reflect pollutants in intake water, and conditions on internal waste streams. 40 CFR 122.44(k); 122.45 (f), (g) and (h). Indirect dischargers are also subject to specific CWA dilution rules in both the general pretreatment rules and the Combined Wastestream Formula (as well as though many the categorical standards). 40 CFR 403.6 (d) and (e).

In this case, the general treatment requirements and associated dilution rules under the CWA are generally consistent with the similar requirements under RCRA. Relying on the existing CWA provisions is, thus, consistent with the goals of both Acts and avoids unnecessary duplication and potentially conflicting requirements.

EPA also believes, however, that where the Agency has established a method of treatment, and where application of that method is consistent with and promotes the objectives of the CWA program, then the dilution prohibition should apply to make it impermissible to dilute these wastes to avoid treating them by the designated treatment method. This group includes the ignitable nonwastewaters containing greater than 10% total organic carbon (TOC). The treatment methods for these wastes is incineration or, in the case of the ignitable waste, fuel substitution. Prohibiting dilution to require the specified method is entirely consistent with the regulatory framework for the CWA programs. The high TOC ignitable wastes, in particular, are inappropriate for wastewater treatment systems as the high TOC levels would overwhelm the capacity for most biological treatment systems. In addition, EPA believes there are few remaining pesticide wastes designated as D012-17. Thus, this requirement should have minimum impact on CWA systems. Accordingly, the exemption from the dilution prohibition for CWA systems is not an exemption for the requirement to follow specific methods of treatment.

7. Exemption from LDR Prohibitions for Characteristic Wastes Disposed Below Characteristic Levels in Wells Regulated under the SDWA

a. *Introduction.* EPA has set out a regulatory program under sections 1421, 1422, and 1425 of the SDWA which contains "minimum requirements for effective programs to prevent underground injection which endangers drinking water sources." 42 U.S.C. 300h(b)(1). Class I deep wells inject below the lowermost geologic formation containing an underground source of drinking water (USDW). 40 CFR 144.6(a).¹⁵ These wells are subject to location, construction, and operating requirements set out at 40 CFR parts 144 and 146. In addition, EPA may authorize states to administer the UIC program. 40 CFR parts 145 and 147. There are approximately 400 such wells currently injecting only nonhazardous waste.

The large facilities that have these wells often mix waste streams and through this mixing remove the characteristic prior to disposal. A dilution prohibition would require restructuring of these facilities. Alternatively, the facilities could apply for a "no migration" variance under 40 CFR part 148.

b. *Environmental Considerations.* LDR dilution rules for wastes currently disposed of below the characteristic levels in UIC wells would be limited to toxic wastes. As discussed below, EPA is generally providing that treatment of ignitable, corrosive or reactive wastewater may be accomplished simply by removing the characteristic. This could be accomplished by mixing. (There are a few exceptions discussed in the specific discussion on treatment standards.) These general standards are based on EPA's technical evaluation of appropriate treatment for purposes of 3004(m) regardless of the disposal scenario. Thus, for these particular characteristic wastes, the application of the part 268 dilution prohibition to operators of nonhazardous waste injection wells would not require any additional treatment beyond what is already occurring. Moreover, there is a very limited amount of the pesticide wastes D012-17, and EPA is unaware of deepwell injection practices for these wastes. Thus, the characteristic wastes of concern for UIC wells in this rule are those that exhibit the characteristic of EP toxicity for metals at the point of generation.

¹⁵ A USDW is defined to include aquifers containing waters with up to 10,000 milligrams per liter ("mg/l") of total dissolved solids ("TDS"). 40 CFR 144.3.

EPA believes that the application of dilution rules to these wastes would not further minimize threats to human health and the environment.

Specifically, EPA believes that disposal of these metals by underground injection at the characteristic level is as sound as the treatment option. Native formation fluids in injection zones already contain substantial concentrations of these metals. The addition of more metal-bearing fluid below characteristic levels would not appreciably alter these concentrations. Moreover, the propensity of such metals to adhere to and, thereby, generally stay contained in the injection zones makes the practice of deep well disposal of such constituents an environmentally sound one. The example of immobilizing heavy metals in a unit is also noted in the legislative history.¹⁶ In addition, as discussed below, there is a significant body of information that EPA has received from the petition process under 40 CFR part 148 concerning the containment properties of injection zones for dilute levels of the wider range of toxic constituents. This data supports the containment properties of these injection zones.

c. *Regulatory Problems.* There would be significant regulatory problems from application of a dilution prohibition to this category of facilities. If such a prohibition were to apply, many well operators would seek a "no migration" variance for their wells. EPA considers such wells likely candidates to be granted variances. Currently, however, EPA is processing variances for hazardous waste injection wells and is not processing variances for nonhazardous wells.

Hazardous waste injection is specifically subject to RCRA's land disposal restrictions. RCRA section 3004 (f), (g) and (k). Approximately 65 of these facilities have submitted petitions to obtain "no migration" variances from the LDR treatment requirements as provided for in 40 CFR part 148. EPA has proposed to grant 15 such variances, has granted 12, and anticipates that many other petitions will be both proposed and granted for underground injection. Thus, as a general matter, EPA believes the practice of deep well injection can be a protective practice within the framework of the land disposal restrictions rule. The petition process, however, has been very time consuming

and resource intensive. In addition, the process has involved a high degree of coordination with states that are authorized to administer the UIC permit program.

EPA experience with the "no migration" petition process indicates that many nonhazardous deep wells could probably qualify for a "no migration" variance under 40 CFR part 148. However, operators of nonhazardous waste wells have not had reason to believe that their operations would be subject to the land disposal restrictions and have not submitted variance petitions. Moreover, EPA is not convinced that the Part 148 regulations would be appropriate for nonhazardous waste wells. The goal of the SDWA regulations for deep well injection is containment of the wastes in an injection zone. This goal is consistent with the protectiveness goals behind the "no migration" variance under RCRA. There are no documented problems with the effectiveness of the UIC regulations.

Moreover, even where the practice involved disposal of hazardous waste, Congress fashioned statutory provisions in RCRA which reflect the view that there is more certainty concerning the safety of the deep well disposal practice than surface disposal practices. For example, RCRA sections 3004(c) and 3019(b) ban both landfilling of liquid hazardous waste and underground injection of hazardous waste into or above USDWs. RCRA provisions regarding deep well injection of hazardous waste, however, provided for further EPA review of this method of land disposal and allow for variances from the statutory prohibition. RCRA section 3004 (f) and (g). The legislative history of the 1984 Amendments also state that "underground injection of hazardous waste can be safe environmental technology." Statement of Senator Bentsen, 129 Cong. Rec. S9153 (daily ed. July 25, 1983), and envisioned that compliance with the then-existing underground injection control regulations could be sufficient to justify continued operation. *Id.* Through the Part 148 petitions, EPA has gained further knowledge concerning the critical issues determining the safety of the practice. In general, where the SDWA regulations are followed, injection of dilute amounts of toxic constituents is safe. Where injection is of waste below the characteristic level the injection zone will appropriately contain these hazardous constituents in a properly operating injection well.

Accordingly, if EPA were to apply a dilution prohibition to nonhazardous wells at this time, there would be

¹⁶ "Another example of a potentially acceptable land treatment situation involves wastes containing heavy metals. Although land treatment does not render the waste nonhazardous, a prohibition would not be necessary if there is long-term certainty that the hazardous constituents would be immobilized" H. Rep. No. 198 at 34.

considerable disruption at facilities that EPA generally considers safe. On balance, EPA believes it is appropriate to exempt from the LDR prohibitions characteristic waste disposed below the characteristic level in these wells.

E. Implementation of Requirements for Characteristic Wastes

In today's final rule, the Agency is promulgating several new provisions concerning implementation of the land disposal restrictions for characteristic wastes. Specifically, the Agency is amending 40 CFR 268.7 and adding 40 CFR 268.9 to incorporate recordkeeping requirements and special rules for characteristic wastes, and is revising the current regulations in parts 261 and 262 regarding the identification and management of wastes that exhibit a characteristic. In addition, the Agency is clarifying which requirements apply during the period of a national capacity variance both to wastes that are prohibited on the basis of exhibiting a characteristic only, and to wastes that have applicable treatment standards as both listed and characteristic wastes. Finally, the Agency is clarifying whether to apply the TCLP or EP analytical methods to verify compliance with the treatment standards.

1. Overlap of Treatment Standards for Listed Wastes that also Exhibit a Characteristic

The Agency is today promulgating its proposed approach with respect to determining applicable treatment standards for wastes that carry more than one waste code.

(1) For wastes that carry more than one characteristic waste code, the waste must be treated to meet the treatment standard for each characteristic.

(2) If a listed waste also exhibits one or more hazardous characteristics, the waste must be treated to meet the treatment standard for each of the waste codes with one exception. Under that exception, if the relevant constituents or narrative characteristics are specifically addressed in the treatment standard for the listed waste, then the standard for the listed waste operates in lieu of the standard for the relevant characteristic(s).

One commenter suggested that EPA should require treatment in compliance with the most stringent treatment standard rather than the most waste-specific treatment standard. The Agency disagrees, and EPA is following the general principle set out in previous rulemakings that the more specific treatment standard takes precedence. This is the principle EPA adopted with respect to California list wastes that are

covered by another treatment standard, an analogous situation. See 52 FR 25773 and 25776 (July 8, 1987). At the same time, when a listed waste exhibits a characteristic that is not addressed by the listed waste's treatment standard, EPA believes it is necessary for that characteristic to be treated to meet the characteristic treatment standard.

The Agency received several comments indicating that subjecting listed wastes to treatment standards for characteristics is a major shift in the current regulatory program. As stated in the proposed rule, the Agency believes that to ignore the characteristic would mean that the Third Third prohibition for that characteristic is being ignored, and that with respect to that constituent, the waste's toxicity or mobility is either not being reduced or not being minimized. Since this outcome would satisfy neither the statutory language nor its policy, EPA is requiring treatment. As with the California list wastes, EPA is applying this principle at the point of generation, since otherwise the treatment standard for the characteristic constituent could be ignored by removing the characteristic. EPA is consequently promulgating new requirements in § 268.9 (b) and (c) as proposed.

EPA is further promulgating provisions specifying that disposal of a waste which at the point of disposal exhibits a characteristic is prohibited unless the treatment standard for that characteristic component is above the characteristic level. This approach is again essentially the same as that which EPA adopted for the analogous situation involving California list wastes (see 52 FR 25767), and is needed to ensure that the statutory prohibition against disposal of characteristic hazardous wastes is not violated.

2. Revisions to Waste Identification Requirements

A consequence of the Agency's interpretation that the prohibition for characteristic wastes can apply concurrently to wastes that also are listed is a change in the initial determination that a generator must make pursuant to § 262.11. That section presently sets out an either/or scheme where if the generator determines that a waste is listed, the generator does not need to determine whether the waste exhibits a characteristic (40 CFR 262.11 (b) and (c)). For purposes of compliance with part 268, however, the generator would need to know if the waste exhibits a characteristic, even if the waste is listed, because further treatment of the waste is required if the treatment standard for the listed waste

does not address the characteristic property. Consequently, EPA is amending section 262.11 to indicate that generators must determine whether listed wastes also exhibit characteristics of hazardous waste for purposes of compliance with part 268.

In addition, §§ 261.21—261.24 indicate that wastes that exhibit the respective characteristics and are not listed have the designations D001–D017. However, as discussed above, generators (and other handlers) will need to know both the listed waste code and the characteristic waste code in the event a listed waste also exhibits a characteristic which is not addressed by the treatment standard for the listed waste. EPA is consequently amending the language in these sections to indicate that wastes that carry characteristic waste codes may also be listed wastes.

3. Wastes Subject to a Capacity Variance

RCRA section 3004(h)(4) states that during periods of national capacity variances and case-by-case extensions, hazardous wastes subject to those extensions that are disposed in landfills and surface impoundments may only be disposed of if the landfill or surface impoundment is in compliance with the minimum technological requirements of section 3004(o). EPA has interpreted this language to mean that the landfill or impoundment unit receiving such wastes must be in compliance with the minimum technological requirements, § 268.5(h)(2), and this interpretation was sustained in *Mobil Oil v. EPA*, 871 F. 2d 149 (D.C. Cir. 1989).

Under the present rule, it is possible for prohibited characteristic wastes subject to a national capacity variance to become nonhazardous. For example, certain D009 mercury wastes are subject to a two-year national capacity variance. If, during the period of the variance, such a waste was treated to be nonhazardous by a means other than retorting and was disposed of in a landfill or surface impoundment, arguably the landfill or impoundment unit would have to meet the minimum technological requirements.

EPA does not read the statute or the rules this way. Rather, section 3004(h)(4) only requires compliance "with the requirements of subsection (o)." Section 3004(o), in turn, only applies to units subject to Subtitle C. See also § 268.5(h)(2), which likewise imposes minimum technological requirements only on landfill and impoundment units that are permitted or that have interim status. Consequently, EPA does not

interpret these provisions as requiring subtitle D landfill and surface impoundment units receiving prohibited wastes during a national capacity variance to have to satisfy the minimum technological requirements.

Finally, for wastes that are subject to more than one treatment standard, the Agency is clarifying that during the period of a national capacity variance for one of the wastes, the treatment standards for any other waste codes that have not received such a variance must be met. For example, if a K048 nonwastewater also exhibits the characteristic for chromium, the waste has a six-month capacity extension as a K048 listed waste, but no capacity extension as a D007 characteristic waste. Therefore, at a minimum, the waste must be treated to meet the treatment standard for D007 (and any other applicable characteristic treatment standard) prior to land disposal. This requirement is consistent with the Agency's approach in previous rulemakings in which it stated that in setting the treatment standard, the Agency is making a more waste-specific determination; however, this determination is not effective until the capacity variance ends. Because capacity exists to treat the characteristic waste, the characteristic treatment standards still apply, and the K048 waste must meet the prohibitions for characteristic wastes. The K048 treatment standard would then become applicable when the national capacity variance expires. See 53 FR 31158. Furthermore, if such listed/characteristic wastes have been treated so that they no longer exhibit any characteristic and are to be disposed of on a surface impoundment or landfill, the unit must meet the minimum technology requirements set out in section 3004(o); as required for listed wastes during the period of a national capacity variance.

4. Use of TCLP v. EP Analytical Methods for Compliance

The Agency proposed two alternatives in the proposed rule, that treatment standards for characteristic wastes either be a numerical standard (typically lower than the characteristic level) or be established at "the characteristic level." See, e.g., 54 FR 48430/3. If the latter alternative were adopted, the Agency did not specify whether the characteristic level would be measured by the EP test or by the TCLP. The Agency did indicate in a somewhat different context, however, that it strongly prefers to use the TCLP to measure compliance wherever possible. Id. at 43432/3.

As stated in section III.D of today's preamble, EPA is establishing treatment standards for most characteristic wastes at the characteristic level. The Agency has determined that this level should be measured by the TCLP. This is the protocol that large quantity generators will use to assess the toxicity of their wastes starting on September 25, 1990 and small quantity generators will begin using on March 29, 1991. It is also the protocol used to measure the efficacy of stabilization or other immobilization treatment in most of the BDAT standards. Most of the data submitted in response to the Agency's proposal were based on the TCLP to measure treatment performance, and these data indicate (with a few exceptions) that treatment to the characteristic level, as measured by the TCLP, is achievable. (These data, incidentally, were available for reply comments, and the Agency received dozens of reply comments on the data.)

Furthermore, if EPA were to establish the EP as the protocol to measure compliance with metal standards, then regulated entities would have to subject many wastes to both the EP (for purposes of land disposal restriction compliance) and the TCLP (for waste identification purposes). The Agency prefers not to impose this type of duplicative burden. Accordingly, the Agency is adopting the TCLP as the means of measuring compliance with the metal standards for toxic characteristic Third Third wastes in this rule, with two exceptions. For lead characteristic nonwastewaters and all nonwastewaters containing arsenic as the primary hazardous constituent (i.e., D004, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136), the Agency is specifying that if a waste does not achieve the nonwastewater standard based on analysis of a TCLP extract but does achieve the standard based on analysis of an EP extract, the waste is in compliance with the standard. The Agency is taking this action because the performance data used to develop the treatment standards for these wastes were based on EP toxicity leachate data. A more detailed discussion is provided in section III.A of today's preamble.

5. Newly Identified TC Wastes

There is one final interpretive point dealing with the interplay of the EP and the new TCLP. EPA interprets the statute such that wastes that exhibit the toxicity characteristic by the TCLP but not the EP are not presently prohibited, even if the constituent causing the waste to exhibit the TCLP is also a constituent controlled by the EP. This is because such wastes are newly identified

pursuant to RCRA section 3004(g)(4); they were identified as hazardous after November 7, 1984.

6. Further Principles Governing Applicability

a. *Other Statutory Exemptions or Exclusions.* The issues in this rulemaking concerning when hazardous wastes become prohibited from land disposal does not change the status of other regulatory or statutory inclusions or exclusions to the definition of solid or hazardous waste found at 40 CFR 261.2-.6. These provisions can override the LDR point of generation evaluation to keep wastes from being prohibited and subject to a dilution prohibition or treatment standard. This result is consistent with EPA's existing regulation at 40 CFR 268.1.

EPA believes that different legal and policy considerations under exclusions from the statutory and regulatory definitions of solid waste and hazardous waste require an evaluation of the status of the waste at the point of disposal. Generally, these exclusions address the status of the waste without regard to a particular constituent concentration, and thus do not involve issues of treatment levels or dilution. EPA has not fully analyzed these exclusions and, in the absence of specific justification, will continue to provide exclusions from the land disposal restrictions for waste excluded from the definition of hazardous or solid waste under 40 CFR 261.2-.6.

For example, solid waste does not include solid or dissolved material in domestic sewage. RCRA section 1004(27). EPA regulations further provide that any mixture of domestic sewage and other waste that passes through a sewer system to a Publicly Owned Treatment Works (POTW) for treatment is not solid waste. 40 CFR 261.4(a)(1). Thus, even if a waste is hazardous at the point of generation, the domestic sewage exclusion would allow land disposal of the solid waste at the POTW without meeting treatment standards under section 3004(m) (assuming that there is no land disposal of the waste before it becomes subject to the domestic sewage exclusion).

b. *Restricted Wastes Versus Prohibited Wastes.* Consistent with the cradle-to-grave mandate of RCRA's land disposal restrictions, those who manage hazardous waste will need to assess what LDR prohibitions apply at different points in the waste management process. First, generators of restricted wastes must assess whether the waste is prohibited under the LDR. Restricted waste is defined by several conditions.

See 51 FR at 40619—40632 (November 7, 1986); 54 FR 36967, 36968 (Sept. 8, 1989).

As discussed above, however, certain statutory exemptions that would be evaluated at the point of land disposal may apply to restricted wastes. Moreover, during either a national capacity variance under section 3004(h)(2) or a case-by-case variance under section 3004(h)(3), disposal of certain restricted wastes into certain units would not be prohibited. Also, placement of waste in a "no migration" unit is not prohibited land disposal, nor is placement in an impoundment in compliance with 40 CFR 268.4. In addition, there are situations where waste is managed in a way which results in no land disposal. EPA outlined which LDR prohibitions attach to wastes managed under each one of the above scenarios in 54 FR 36967, 36968 (September 6, 1989).

c. Changes in Treatability Groups. The question of whether a given waste is going to prohibited land disposal is complicated by the fact that wastes may change form or treatability groups after undergoing treatment. For example, treatment of a wastewater often generates a nonwastewater sludge as well as a treated wastewater. Also, incineration of a nonwastewater can generate a nonwastewater (ash) as well as a wastewater (scrubber water). (A treatability group is defined both in terms of the applicable waste code and the form the waste is in.) The specific problem addressed here, which occurs most often with respect to characteristic wastes, is the effect that changes in treatability groups have on the initial status of a waste as prohibited or non-prohibited.

First, by way of background, the part 148 and 268 regulations generally divide the universe of wastes potentially subject to land disposal prohibitions into two broad categories: wastewaters and nonwastewaters. For purposes of the LDR program, "wastewaters" are generally defined to have less than 1% total organic carbon (TOC) and less than 1% total suspended solids. Any other waste stream is deemed a nonwastewater. (There are certain enumerated exceptions from certain wastes such as F001-F005 solvents, and K011, K013, and K014 acrylonitrile wastes. See generally § 268.2 in today's rule, incorporating the various regulatory definitions.) Part 268 provides for different treatment standards for these two broad categories of waste. The standards may also have different effective dates because of national capacity variances. Treatment standards for listed wastes apply to the

waste as generated as well as to all of the residual wastes that are generated in treating the original prohibited waste. See 53 FR 31138, 31145 (August 17, 1988). However, when EPA specifies a treatment method as the treatment standard, residues resulting from the required treatment method are no longer prohibited from land disposal (unless EPA should specify other requirements). 54 FR 26594, 26624, 26630 (June 23, 1989).¹⁷

A change in treatability group during the waste management process can affect whether the waste prior to the change in treatability groups is subject to certain LDR requirements. The following rules are important to understand this point. First, if a treatability group, and treatment residues in the same treatability group, is not going to prohibited land disposal, then neither the original waste nor the residue is subject to the treatment standards or to the dilution prohibition. As a corollary, waste *is* prohibited if the treatability group, or residues from the same treatability group is land disposed. This interpretation provides a clear line of demarcation, avoids the enormous difficulties of determining new points of generation every time a hazardous waste is altered in some respect, and avoids having an initial waste's status as prohibited determined in all cases by some later management of a residue derived from the initial waste.

d. Examples. Several examples will be useful to help clarify this point.

Example 1. Listed wastewater A is treated in a tank that yields two residue streams: nonwastewater residue B and wastewater residue C. The nonwastewater residue is land disposed and the wastewater residue is discharged pursuant to an NPDES permit without being land disposed.

Only nonwastewater residue B is going to prohibited land disposal. Moreover, residue B is a newly generated hazardous waste belonging to a different treatability group than the original waste. See 53 FR 31209; 52 FR 25667 col. 1 (July 8, 1987). The original hazardous wastewater A is a restricted waste, but not prohibited, and so is not subject to the dilution prohibition in 40 CFR 268.3 or any treatment standard under part 268. Wastewater residue C

also is a restricted waste (due to the "derived from rule" it carries the same hazardous waste code under 40 CFR part 261 as the original waste A), but it is not a prohibited waste because the wastewater treatability group is not going to prohibited land disposal.

Example 2. Listed nonwastewater D is treated to yield two nonwastewater residues E and F (which carry the same waste code as D based on the derived from rule). Residue E is incinerated and the ash is land disposed; residue F is directly reused as a substitute for a commercial chemical product. In this case, nonwastewaters D and E are subject to treatment standards and the dilution prohibition. EPA does not want impermissible dilution of nonwastewater D to be the reason that the nonwastewater residue E meets the BDAT level. Thus, since there is no change in treatability group between the original point of generation and land disposal for one residue of the original waste D the part 268 prohibitions apply. However, residue F is not a prohibited waste because the definition of solid waste excludes secondary materials that are directly reused as substitutes for commercial chemical products.

As illustrated by the above examples, a unit treatment operation can be a point of generation for certain treatability groups. To assess what prohibitions apply, one must first determine whether any residues of the listed waste go to prohibited land disposal. If no residues are land disposed then part 268 treatment requirements do not apply. If one or more residues are placed in prohibited land disposal, the dilution prohibition applies between the point of land disposal and the point that a given treatability group first exists. In example 1, that point is immediately after the tank treatment operation. In example 2, that point is the original point of generation for nonwastewater D.

The rules regarding treatability groups apply similarly to characteristic wastes. The fact that a waste loses its hazardous characteristic at some point prior to land disposal does not constitute a change in treatability group. The fact that the derived from rule does not apply to characteristic wastes is irrelevant because the derived from rule only affects hazardous waste status, not treatability group determination (which is a function of physical form). To determine if a characteristic waste is prohibited, the decision is still made based on whether the waste or any residue in the same treatability group is destined for land disposal. This approach is necessary to assure that this

¹⁷ A facility is not allowed to dilute or perform partial treatment on a waste in order to switch the applicability of a nonwastewater standard to a wastewater standard or vice versa. See 52 FR 21012 (June 4, 1987); but see 52 FR 25767 (June 8, 1987) noting special circumstances when California list wastes are involved. Dewatering technologies (such as filtration and centrifugation) that are designed to separate wastewater from nonwastewater are not prohibited.

level was met by treatment and not by dilution. The following example helps illustrate this decision rule.

Example 3. Wastewater J is EP toxic for lead. It is treated in a tank and generates a sludge K, that is non-hazardous. The treated wastewater L, which no longer exhibits a characteristic, is then sent to a surface impoundment for further treatment, after which it is discharged under an NPDES permit. The sludge is sent to a landfill.

The sludge K is not a restricted hazardous waste, notwithstanding that it derives from treatment of a characteristic hazardous waste. This is because it is a new treatability group which is not hazardous at point of generation. The status of wastewaters J and L is determined by the special rules for characteristic wastes managed in CWA systems; therefore, they are prohibited wastes but are not subject to a dilution prohibition. Since wastewater L meets the treatment standard when it is land disposed, the disposal is legal.

Example 4. Electroplating wastewater M which exhibits a hazardous characteristic, is treated in a tank to yield a treated wastewater N and a nonwastewater sludge O. The treated wastewater N, which no longer exhibits a hazardous characteristic, is discharged into a Class I injection well and the sludge is sent to a landfill.

In this example, neither wastewater M nor N is a prohibited waste due to the special rules for wastes managed in Class I injection wells subject to the SDWA. Sludge O is a newly generated waste that meets the listing description for EPA Hazardous Waste No. F006. Sludge O is a prohibited waste because this nonwastewater is destined for placement in a land disposal unit.

Example 5. An EP toxic wastewater sludge P is dewatered to yield a nonwastewater sludge Q which is EP toxic and now exceeds the California list level for lead. Also, a wastewater R is generated which exhibits a hazardous characteristic. The sludge Q is sent to a landfill and the wastewater R is mixed with domestic sewage and sent through a sewer system to a POTW.

Both sludges P and Q are prohibited wastes because Q is sent to land disposal and P is in the same treatability group as Q. Note that during a (hypothetical) national capacity variance for the lead characteristic treatment standard, Q must comply with the California list standard for lead. Wastewater R is a restricted waste, but not a prohibited waste because it is covered by a § 261.4 exclusion from the definition of solid waste.

In conclusion, it should be noted that the previous discussion applies in

determining when prohibitions attach. The issue of what administrative requirements apply by virtue of a waste being restricted is discussed elsewhere in this preamble.

F. Amended Tracking System for Characteristic Prohibited Wastes

EPA's decisions concerning characteristic wastes necessitate certain modifications of the tracking provisions contained in § 268.7. See 54 FR 48491 and 48492 (requesting comment on this point). This section of the preamble outlines the modifications the Agency is making to the existing rules, and clarifies certain points regarding the rules' applicability to listed wastes as well as to characteristic wastes. The Agency is also amending one of the certification provisions that presently fails to mention compliance with the prohibition on impermissible dilution.

A. Applicability of Tracking Requirements

1. Clarification of and Changes to Generally Applicable Recordkeeping Requirements. Section 268.7 applies to generators, treaters, storers, and disposers of restricted wastes. Most of the provisions contemplate that restricted wastes are being shipped off-site for treatment or disposal (see § 268.7 (a)(2) and (a)(3), and § 268.7 (b)(4) and (b)(5)). The first point the Agency wishes to address is the existing requirements that apply when restricted wastes are managed on-site. At a minimum, certain recordkeeping requirements are triggered. Section 268.7(a) states that generators must first determine whether their waste is restricted. Section 268.7(a)(6) indicates that generators must retain a copy of all demonstrations and other waste analysis or documentation for all wastes sent to either on-site or off-site treatment, storage, or disposal. The Agency interprets these two provisions to mean that ordinarily generators managing hazardous wastes on-site must determine if the waste is restricted, and keep some documentation of that determination plus some documentation of where the restricted waste was treated, stored or disposed—whether treatment, storage, or disposal occurs on-site or off-site. These recordkeeping requirements for on-site management are needed to implement the various prohibitions or to account for those restricted wastes that for some reason are not also prohibited. The Agency notes briefly that certain wastes are not subject to recordkeeping requirements at all by virtue of the exemptions from all of part 268 that are contained in sections 268.1 (b) and (e). (See 54 FR

38968 (September 8, 1989) discussing what a "restricted" waste is.)

The Agency is applying the existing § 268.7 (a) and (a)(6) requirements to characteristic wastes that are restricted under today's final rule. These requirements apply even when the hazardous characteristic is removed prior to disposal, or when the waste is excluded from the definition of hazardous or solid waste under § 261.2-.6 subsequent to the point of generation. For example, if a characteristic waste is not prohibited because it is discharged pursuant to a NPDES permit without land disposal, some record must still be kept indicating why the waste is not prohibited. (For example, a statement that there is no land disposal in the system prior to the § 261.4 exclusion should be kept in the facility's operating record.) The rationale for this is that the § 261.4(a)(1) exclusion for domestic sewage does not attach until the mixture passes through the sewer system to a POTW; in the interim, the waste is restricted. (See also section III.E.6 of today's final rule.) Finally, this information should already exist in any case, to justify the absence of subtitle C regulation.

B. Tracking (i.e. Notification/Certification) Provisions Applicable to Generators Shipping Wastes Off-Site

Under existing § 268.7(a), generators managing restricted wastes must determine whether the wastes meet applicable treatment standards on the point of generation, or are otherwise exempt from those standards. Separate tracking provisions apply to each of these situations. Section 268.7(a) (1), (2), and (3). In all cases, however, the generator must prepare a notice for each off-site shipment setting out the hazardous waste identification number, applicable treatment standard or prohibition level, manifest number, and available waste analysis data. If a generator's waste meets the treatment standard, the generator must prepare a certification to this effect. (EPA is thus using the terms "tracking document" and "notification and certification" synonymously in the discussion that follows.)

If a generator's characteristic waste has been treated to meet the treatment standard before it is sent off-site, EPA believes that the existing tracking scheme requires some modification. There are two principal reasons to make changes. Characteristic wastes that meet treatment standards will be sent (almost invariably) to subtitle D facilities. EPA is concerned that sending part 268 notifications and certifications

to subtitle D facilities could be counterproductive. These facilities are not familiar with subtitle C paperwork and could easily mistake the tracking forms (i.e. the notifications and certifications) for manifests and refuse to accept the shipment. Even if the forms are not mistaken for manifests, the subtitle D facilities could view the forms as describing hazardous wastes and refuse to accept the wastes. This could result in a situation where scarce subtitle C management capacity is used for non-hazardous wastes because subtitle D facilities are refusing the non-hazardous wastes.

These potential misunderstandings are probably solvable as subtitle D operators become more sophisticated and as EPA further implements its land disposal restriction training and guidance efforts. The Agency believes further, however, that under today's rule no important interest would be vindicated by requiring notifications and certifications to be sent to subtitle D facilities. When listed wastes are involved, the tracking document tells disposal facilities what standard the waste must meet before it can be land disposed. Treatment standards for most characteristic wastes are established at characteristic levels, however. Thus, these wastes can be land disposed in a subtitle D facility when they no longer exhibit a characteristic. Having a generator certify to an off-site subtitle D facility that the waste no longer exhibits a characteristic adds little or nothing to the information the disposal facility needs to know to dispose of the waste. That is, the disposal facility already must determine that the waste no longer exhibits a characteristic. Since under the present rule, sending the tracking forms to subtitle D facilities could normally have only the counterproductive effects discussed in the previous paragraph, EPA has determined that the tracking forms should not accompany shipments from generators to subtitle D facilities. (As noted below, the Agency is adopting the same approach for any shipments to subtitle D facilities, so that a treatment facility that has treated a characteristic waste to meet a treatment standard also would not send tracking documents to a subtitle D disposal facility.) EPA realizes that some of the treatment standards in today's rule, notably those for reactive cyanides and pesticides, and the standards for characteristic wastes that are treatment methods, would generally result in treatment below characteristic levels. In these cases, the tracking documents would add information useful to a subtitle D facility. EPA is concerned enough about

potential confusion and disruption of subtitle D disposal practices, however, that at this time the Agency believes it the better decision not to require tracking documents for this set of wastes to go to subtitle D facilities.

By deciding that tracking documents for prohibited characteristic wastes that no longer exhibit a characteristic should not go to subtitle D facilities, the Agency is not deciding that notifications and certifications should not be prepared for such wastes. The Agency's concern is where those notifications and certifications are sent. EPA believes, and is requiring, that the notifications and certifications be sent to the appropriate EPA Regional Administrator or his delegated representative, or to a state authorized to implement the land disposal restrictions. The person preparing the notification and certification must also include the identity and address of the facility where the treated waste is sent, including the address. This is the approach the Agency adopted in an analogous circumstance where sending notifications and certifications to the ultimate disposer would be counterproductive or otherwise be ill-advised. See § 268.7(b)(8) and 53 FR 31198 (Aug. 17, 1988) (notifications and certifications of persons treating hazardous wastes to produce hazardous waste-derived products that are to be used in a manner constituting disposal are to send the notifications and certifications to EPA or to an authorized state, not to the ultimate user of the hazardous waste-derived product). By requiring notifications and certifications to be prepared, EPA is also assuring that a record is kept that the characteristic waste has been treated to meet the standard and not impermissibly diluted. Generators (or treatment facilities, see below) would also have to certify that these requirements were satisfied. Thus, the key objectives of the notification and certification provisions are satisfied.

EPA is making some slight modifications in the notification form that would be sent to EPA (or to an authorized state). This is because the existing notification form refers to the waste's ID number and manifest number when shipped. Since wastes no longer exhibiting a characteristic have neither an ID number nor a manifest number, some small modifications are necessary. While the notification form would not contain hazardous waste codes, it must contain a complete and accurate description of the waste, including its former hazardous waste classification. In addition, although a manifest number

would not be included, the notifications must clearly identify the facility receiving the waste.

EPA is not amending the tracking requirements for those characteristic wastes that still exhibit a characteristic when they are sent off-site. All of the normal § 268.7(a)(1) notice requirements fit this situation (i.e. the waste has an ID number; it does have to have a manifest, etc.) and do not require any change. The tracking document also would be going to a subtitle C facility so that none of the counterproductive effects discussed above with respect to subtitle D facilities would occur. Thus, no changes to existing rules are required.

The following examples illustrate how the revised tracking requirements would apply to generators of characteristic wastes:

1. Generator A generates a D008 nonwastewater that is sent off-site to a treatment facility.

The generator would prepare a § 268.7(a)(1) notice which would set out the EPA hazardous waste number, treatment standards, manifest number, and any waste analysis data. Because the waste is still hazardous, no revised notice is necessary.

2. Generator B generates a D008 nonwastewater that is not a spent lead acid battery. The generator treats the waste on-site to meet the treatment standard and then sends it off-site for disposal in a subtitle D landfill.

Generator B would have to prepare a notice and certification to document that the waste has met the treatment standard and has not been diluted impermissibly. Rather than send the notification and certification to a subtitle D facility, the generator would send it instead to the EPA Regional Office or to an authorized state. Included on the notification would be the identity and location of the subtitle D facility where the waste has been sent.

C. Tracking Provisions Applicable to Treaters

EPA is adopting the same approach for treaters of characteristic wastes as it is for generators. Thus, tracking documents for shipments of characteristic wastes that meet a treatment standard, and therefore no longer exhibit a characteristic of hazardous waste, would be sent to EPA or an authorized state (along with information documenting the receiving facility's location), not to a subtitle D facility. The reasons are the same as those for generators discussed above. EPA is also making the same slight



adjustments in the notification requirement.

The following examples illustrate how the amended rules would apply to treaters:

1. Treater A receives a D007 nonwastewater that it treats to meet the treatment standard and sends to a subtitle D landfill. The treater also generates a wastewater in the course of treatment that does not exhibit a characteristic.

The treater must prepare a notice and certification which it would send to the EPA Regional Office or to an authorized state. The wastewater generated during treatment is not a prohibited waste because it is a new treatability group whose status as a non-prohibited waste is determined when it (i.e. the new treatability group) is generated. Therefore, part 268 does not apply to the wastewater.

2. Treater B receives a high TOC ignitable waste that it incinerates. The ash, which no longer exhibits a characteristic, is sent to a Subtitle D landfill.

The treater would prepare a notification and certification and send them to EPA or to an authorized state, as in the previous example. At least at this time, the Agency is not requiring that tracking documents be sent to subtitle D facilities, even when the treatment standard is a designated method.

D. Land Disposal Facilities

Under existing rules, subtitle C disposal facilities receiving prohibited wastes must keep copies of the notice and certification prepared by the generator and/or the treater, must test wastes (or waste extracts) at a frequency specified in their waste analysis plan (as modified in today's rule), and must dispose of certain types of wastes in minimum technology units. Section 268.7(c) (1), (2), and (3). These requirements do not fit well for the characteristic wastes prohibited in today's rule. The requirement of disposal in minimum technology units does not have any applicability at all. Moreover, if a land disposal facility is a subtitle D facility receiving non-hazardous waste, EPA does not believe that testing requirements are appropriate to implement today's rule. These facilities are already barred from accepting hazardous waste and so must ascertain if the wastes they are receiving exhibit a characteristic. Thus, since few of the treatment standards adopted today require treatment to levels below the characteristic, the Agency believes that existing controls to ensure against receipt of hazardous

waste will constitute sufficient corroborative testing by a disposal facility. The Agency is thus indicating that the requirements of § 268.7(c) do not apply to Subtitle D disposal facilities receiving wastes that no longer exhibit a characteristic.

E. Changes in Certification to Reflect Dilution Prohibition

EPA is also amending the certifications of compliance required of treaters and generators to state that the treatment standard was not achieved by a form of impermissible dilution. This requirement, of course, is already contained in § 268.3 and today's amendment simply includes a reference to this requirement in the certification. (The existing certification for treatment facilities in fact refers to the dilution prohibition, but does so in an overbroad manner by referring to all dilution, rather than only impermissible dilution. EPA is thus modifying this reference in today's rule.)

G. The Dilution Prohibition as it Applies to Centralized Treatment

1. Background

EPA discussed the issue of permissible and impermissible dilution of prohibited wastes at length in previous rulemakings. EPA's existing rules state that prohibited wastes cannot be diluted in order to circumvent a statutory or regulatory prohibition or effective date. 40 CFR 268.3.¹⁸ The rules also generally discourage aggregation of wastes not amenable to cotreatment by providing that when wastes with different standards for a common constituent are combined for purposes of treatment, the treatment residue must meet the lowest applicable treatment standard. 40 CFR 268.41(b).

In interpretive preamble discussions, the Agency explained that these rules are not intended to discourage legitimate centralized treatment, and that aggregation of wastes preceding legitimate centralized treatment is not considered to be impermissible dilution. See e.g., 52 FR 25766 (July 8, 1987) and other notices there cited. However, the Agency noted that centralized treatment of incompatible wastestreams was not legitimate treatment and constitutes impermissible dilution. *Id.* For example, it is impermissible dilution to aggregate a heavily concentrated organic solvent for which incineration is the appropriate treatment technology with less

concentrated solvent streams for which biological treatment is appropriate.¹⁹

In this rulemaking, EPA believes that it is a necessary and responsible action on the Agency's part to indicate how these existing rules apply when prohibited characteristic wastes are involved. Contrary to the views of some of the commenters, this is not a new issue unrelated to the general substance of the Third Third rulemaking. Absent discussion, the existing rules would still apply to prohibited characteristic wastes, but the regulated community would be unaware of how the Agency interpreted their application and would be potentially unable to determine how to conduct their operations in order to comply with the dilution prohibition. EPA also believes that further clarification of the dilution rules with respect to prohibited listed wastes is warranted.

2. Summary of Proposal

EPA's proposal dealt with two particular issues. The first was the question of what constitutes legitimate treatment as opposed to impermissible dilution. The Agency indicated that any dilution that failed to meet the section 3004(m) standard of substantially reducing the prohibited waste's toxicity or mobility would be impermissible, and further proposed to quantify this statutory standard by indicating that there must be some actual reduction in the prohibited waste's toxicity or mobility as a result of treatment. 54 FR 48494. To satisfy this test, the Agency indicated at a minimum that there would need to be actual reduction through treatment of at least one BDAT constituent for each prohibited waste that is treated. *Id.* EPA further proposed that any dilution of a prohibited waste to render it non-hazardous, in lieu of treating, would be considered impermissible. *Id.* at 48495. The Agency solicited comment, however, on whether dilution could be considered a legitimate form of treatment for certain prohibited characteristic wastes. *Id.* at 48496.

These proposals were the focus of many of the comments, most dealing with the implications for wastewater

¹⁸ Although section 268.3 is written in terms of "restricted" hazardous wastes, it applies equally to the narrower class of prohibited hazardous wastes. See 54 FR 38968 (Sept. 6, 1989) explaining the applicability of the dilution prohibition.

¹⁹ EPA notes that its authority to promulgate a dilution prohibition rests not only on the land disposal restriction statutory provisions and Congressional directives (see in particular section 3004(m) and related statutory requirements for EPA to establish pretreatment standards as a condition to land disposal; see also H. Rep. No. 198, 98th Cong. 1st Sess. 38 (1983) and S. Rep. No. 284, 98th Cong. 1st Sess. 17), but in addition, the more general authority in section 3004(a)(3) to establish treatment standards "as may be satisfactory to the Administrator" and "as may be necessary to protect human health and the environment".

treatment systems that include land-based treatment (often biological treatment ponds) or storage (for example, holding ponds for corrosive wastes that have been neutralized by dilution). Commenters also correctly viewed this issue as being intertwined (at proposal) with the implications of requiring treatment of characteristic wastes below the characteristic levels. More broadly still, the issue presents another aspect of the question of whether to determine if wastes are prohibited at the point of generation or at the point of disposal.

3. Today's Action

The existing rules on dilution and EPA's interpretive statements regarding those rules indicate that the dilution prohibition has a two-fold objective: (1) To ensure that prohibited wastes are actually treated; and (2) to ensure that prohibited wastes are treated by methods that are appropriate for that type of waste. EPA has acknowledged that prohibited wastes which are aggregated are not diluted impermissibly if they are treated legitimately in centralized treatment systems, irrespective of the dilution inherent in such a system. Thus, if "dilution" is a legitimate type of treatment, or a necessary pretreatment step in a legitimate treatment system, such dilution is permissible. Conversely, prohibited wastes that are "treated" by inappropriate methods, or sent to treatment systems that do not treat the wastes, are diluted impermissibly.

In applying these principles to characteristic wastes, EPA encountered two major difficulties: first, the interface with regulatory systems established pursuant to the Clean Water Act and Safe Drinking Water Act, and second, difficulties in being able to quantify the proposal in a meaningful way. In section III.D above, we have already discussed the potential difficulties of integrating a full-scale dilution prohibition with the Clean Water Act's NPDES and pretreatment regulations, and the Safe Drinking Water Act's UIC program. We explain below the attempts EPA made to quantify the proposed standard, and the obstacles the Agency encountered.

The Agency's proposal to require reduction of a BDAT constituent as a means of evaluating if impermissible dilution has occurred did not indicate how much reduction would be deemed adequate, and thus without further elaboration not only fails to provide clear guidance but also potentially fails to achieve the objective of assuring that wastes are treated by an appropriate treatment method. More importantly, quantifying the extent of removal

necessary to be considered legitimate treatment leads to a very complicated system given the number of prohibited wastes, treatability groups, treatment methods and treatment train configurations.

Given these problems and complications, EPA has decided that the most constructive course is to provide additional interpretive guidance on the existing dilution prohibition contained in § 268.3, and to explain more fully how those rules would apply in specific situations. We also explain again how we have determined to deal with the interface between RCRA and other wastewater regulatory programs.

a. *The existing dilution prohibition ordinarily would not apply to prohibited characteristic wastes generated and managed in treatment systems regulated by the CWA or SDWA.* As explained in a previous section, EPA has determined in most cases not to apply a dilution prohibition to characteristic wastes that are generated and managed in treatment systems regulated under the CWA or SDWA. EPA believes, however, that where the Agency has established a method as the treatment standard for a characteristic waste, and that where application of that method is consistent with and promoting of the objectives of the Clean Water Act or the Safe Drinking Water Act programs, then the method of treatment attaches to the waste at the point of generation, and dilution to change the treatability group to avoid application of the method is impermissible. For example, in this rule, this is true of the ignitable nonwastewaters containing greater than 10% TOC and the EP toxic pesticide wastewaters (DO12-17) if these wastes are managed in wastewater treatment systems regulated under the Clean Water Act. The treatment method for these wastes is incineration, fuel substitution, or some type of wastewater treatment technology that destroys organics. Not only are these wastes amenable to combustion treatment (or other treatment that destroys organics), but they typically contain high concentrations of toxic organic constituents whose destruction furthers the RCRA goal of decreasing waste toxicity and minimizing threats from land disposal.

Prohibiting dilution of these wastes (i.e., requiring application of a specified treatment method) is entirely consistent with the existing regulatory framework of CWA's NPDES/pretreatment programs. For example, the 10% TOC ignitable wastes are inappropriate for wastewater treatment as they would overwhelm the capacity of most

biological treatment systems. (As noted in the preamble section describing the DO01 treatment standards, EPA in fact developed the 10% TOC cutoff for ignitable wastes based on the outer limit of design capacity for biological treatment systems.) The Clean Water Act effluent limitations guidelines and the standards addressing these types of wastes already contemplate that these wastes will not be diluted, but rather will be treated in the appropriate manner.

The logic that forces this decision for these wastes in a NPDES/pretreatment Clean Water Act system is not equally persuasive in the case of wastes disposed of by injection. As noted in section III.D, Class I deep wells inject below the lowermost geological formation containing an underground source of drinking water. Deep wells are not currently injecting wastes that contain any of the pesticide constituents found in DO12-17 characteristic wastes. Additionally, there is not a design concern of overwhelming the biological treatment system in the deep well scenario. In this instance, it is illogical to force deep wells to utilize a specified method as there is little concomitant environmental or technical benefit through its utilization. Therefore, in today's final rule, the Agency is exempting deep wells from specified methods and the dilution prohibition as long as the characteristic is removed before disposal.

b. *Dilution is considered to be an acceptable method of treatment for non-toxic characteristic wastes.* Although EPA proposed that the dilution prohibition would cover all characteristic wastes, the Agency specifically noted that dilution might be an acceptable type of treatment for non-toxic characteristic wastes and solicited comment on the issue. 54 FR 48496. After considering the comments, the Agency has determined that for non-toxic hazardous characteristic wastes (i.e., wastes that exhibit a hazardous physical or chemical property), it should not matter how the non-toxic characteristic property is removed so long as it is removed. Thus, dilution is an acceptable treatment method for such wastes. (This issue is discussed in more detail in the sections on each particular characteristic waste.). The Agency realizes that this approach does not fully address the potential problem of toxic constituents that may be present in such wastes, nor encourages minimization or recovery of non-toxic characteristic hazardous wastes. EPA has determined that these potential problems should be addressed, if at all,

in other rulemakings (or potentially in a reauthorized statute) and are too difficult to resolve in this proceeding, given the extraordinary pressures and limited review time imposed by the May 8 statutory deadline.

EPA also notes that it considers high TOC ignitable nonwastewaters, reactive cyanide wastes, and reactive sulfide wastes to be toxic characteristic wastes. As noted above, the high TOC ignitables have been shown to frequently contain high concentrations of organic toxicants. Reactive cyanide and sulfide wastes obviously contain toxic constituents. Thus, dilution would not be an appropriate method of treatment for any of these.

c. Determining when types of treatment (including centralized treatment) involving dilution are permissible. The Agency is able to provide limited additional guidance today on the issue of when treatment methods involving dilution are permissible. The issue frequently arises when prohibited wastes are aggregated for purposes of treatment. First, if the wastes are all legitimately amenable to the same type of treatment, and this method of treatment is utilized for the aggregated wastes, the aggregation step is not impermissible dilution. Thus, it is permissible (and normally desirable) for prohibited organic-containing wastes that are suitable for combustion to be aggregated before combustion even though the concentration of organics in some of the wastes decreases. (See, for example, the discussion for wastes K048-52.) On the other hand, as noted above, aggregation of high TOC ignitable wastes with ignitable wastewaters for centralized biological treatment is not permissible. Biological treatment is inappropriate for the high TOC ignitable wastes, and the aggregation step merely dilutes the high TOC stream.

As noted above, EPA is unable to quantify across-the-board what types of treatment are appropriate for particular prohibited hazardous wastes (both listed and characteristic). Clearly, as stated at proposal, units would have to be doing some treatment (*i.e.*, removing toxicity or mobility of BDAT constituents). In addition, treatment units would have to be treating wastes that are amenable to treatment in that type of unit or by that type of treatment, or, in the case of centralized treatment units treating aggregated wastes, appropriately combining wastes for common treatment. An example of type of treatment that is inappropriate for treatment of certain prohibited wastes would be biological treatment systems

used to treat prohibited wastes having treatment standards for metals. In these systems, metal removal is incidental and nowhere as efficient as systems designed to treat metals; biological treatment systems are designed solely for organic treatment. (EPA notes, however, that since it is not applying dilution rules for most characteristic wastewaters, the above example would only apply in cases when a listed prohibited metal-bearing wastewater—a wastewater with treatment standards for metals—was being treated in a biological treatment unit. If this hypothetical biological treatment were a surface impoundment, EPA would not view it as satisfying the requirement of section 3005(j)(11) and § 268.4 that it be conducting "treatment." See discussion at 52 FR 25778-79 (July 8, 1987) where EPA determined in an analogous circumstance that impoundments which primarily evaporate hazardous constituents do not qualify as section 268.4 impoundments which may receive wastes that have not met the treatment standard.) The clearest objective indication that proper treatment for a prohibited waste is being conducted is if the treatment is the same type as that on which the treatment standard is based. Thus, any aggregation before such treatment would ordinarily not be considered to be impermissible dilution. However, other forms of treatment may also be appropriate. Such determinations will be made on a case-by-case basis.

d. Dilution to remove a characteristic. EPA proposed that prohibited hazardous wastes could not be diluted by impermissible means to render them non-hazardous, even though the waste resulting from dilution would not have to be managed in a subtitle C unit. 54 FR 48495. Although this possibility exists for all prohibited wastes—both those that are listed (*i.e.*, dilution to achieve delisting levels) and those that exhibit characteristics—the issue arises most often with respect to characteristic prohibited wastes.

EPA is finalizing this approach in the final rule, modified, however, by a number of principles discussed above. Thus, since it is permissible to dilute prohibited non-toxic ignitable, reactive, and corrosive wastes, it is permissible to remove the characteristic from such wastes by this means. Second, dilution of prohibited characteristic wastewaters is normally permissible because the Agency does not wish to disrupt existing regulatory programs developed under other statutes for such wastewaters. These two modifications address the

concerns raised by many of the commenters.

For other situations, however, dilution to remove a prohibited waste's characteristic (or to render it delistable) is used "as a substitute for adequate treatment to achieve compliance with [a treatment standard]", and so falls within the express terms of the § 268.3 dilution prohibition. Furthermore, as the Agency explained in detail in the proposal, if the dilution prohibition were not to apply in such circumstances, the authority Congress granted the Agency to establish treatment standards for characteristic wastes would be essentially meaningless. Thus, EPA adheres to the position that the act of impermissibly diluting a prohibited waste so that it no longer exhibits a characteristic (or is rendered delistable) is illegal.

5. Examples

a. Facility A generates an EP toxic wastewater that it mixes in tanks with other wastewater so that the characteristic is removed. After mixing, the aggregated wastewaters are discharged to waters of the United States.

The dilution prohibition does not apply because the wastewater is not a prohibited waste; it is not being land disposed. In addition, the Agency has determined not to apply the dilution prohibition rules to characteristic wastewaters (with the exception of those subject to certain treatment methods that are managed in Clean Water Act facilities).

b. Facility B generates a wastewater that is corrosive and EP toxic for a pesticide. It is mixed in tanks with other wastewaters generated at the same facility so that both characteristics are removed. The aggregated mixture is then injected into a Class I UIC well. While a restricted waste at the point of generation, these wastes are not prohibited because they are injected below the characteristic level in a Class I injection well. See § 268.1(c)(3).

c. Facility C generates a wastewater that is a listed hazardous waste that contains metals for which EPA has established treatment standards. It aggregates this waste with organic wastewaters that are generated on-site so that the metal levels in the aggregated wastewaters are below the treatment standard. The aggregated mixture is then sent to a surface impoundment for biological treatment and then discharged to waters of the United States.

The dilution prohibition would be violated. EPA does not consider

biological treatment to be an appropriate mode of treating metal-bearing toxic wastes (i.e., wastes for which there are treatment standards for inorganic hazardous constituents). Any metal removal is incidental because the treatment technology is not designed to remove metals. In addition, removals are at a rate that is considerably less efficient than could be achieved by chemical precipitation or other forms of wastewater treatment. Thus, in the example, dilution would be used as a substitute for treatment of the listed waste and would therefore be illegal dilution and not treatment. (See 54 FR 38938 (Sept. 6, 1989) (dilution prohibition applies to wastes managed in section 258.4 impoundments).)

d. Facility D generates an EP toxic nonwastewater that it stabilizes to meet the treatment standard. The waste's volume increases 400 per cent as a result of stabilization.

Although there are too few facts in this example to give a definitive answer, normally this large an increase in waste volume would indicate that the treatment standard is being achieved as a result of dilution rather than treatment, and therefore would be impermissible.

H. Applicability of Today's Final Rule to Mineral Processing Wastes

Section 3001(b)(3)(A)(ii) of RCRA excludes from the hazardous waste regulations (pending completion of studies by the Agency) solid wastes from the extraction, beneficiation and processing of ores and minerals. On September 1, 1989, EPA published a final rule (54 FR 36592) that narrowed the scope of this exclusion for 25 enumerated wastes that meet the exclusion criteria of "high volume/low hazard," as specified in the September 1 rule. EPA determined that five specific mineral processing wastes clearly remain within the scope of the exclusion, and 20 additional specified mineral processing wastes remain within the exclusion pending collection of further volume and hazard data. All previously excluded mineral processing wastes, other than these 25 specified wastes, that exhibit one or more of the characteristics of hazardous waste will no longer be excluded from the hazardous waste regulations when the final rule became effective on March 1, 1990. On January 23, 1990 (see 55 FR 2322-2354), EPA published another final rule removing an additional five of these wastes from the exclusion based on additional volume and/or hazard data. This final rule becomes effective on July 23, 1990.

EPA believes that these previously excluded wastes are "newly identified" for the purpose of determining applicability of the land disposal prohibitions. Although technically the wastes are not being identified by a new characteristic, they are being brought into the Subtitle C system after the November 8, 1984 enactment of HSWA. A permissible interpretation of RCRA section 3004(g)(4), which is ambiguous as to whether it applies to wastes first brought into the Subtitle C system after 1984 due to regulatory re-interpretation, is that wastes brought into the system after the 1984 RCRA amendments may be prohibited from land disposal under a different schedule than those wastes that were hazardous on the date of enactment of HSWA, and also are not subject to the statutory hard hammer. The policy reasons for preferring this interpretation are those that prompted Congress to establish a separate prohibition schedule for other newly identified and listed wastes: the need to study such wastes separately, and prioritization of hammer dates. Consequently, because these wastes are considered to be newly identified, the Agency must develop treatment standards for them within six months of their being identified as hazardous wastes (RCRA section 3004(g)(4)(C)).

However, as stated above, these wastes are hazardous because they exhibit one or more of the characteristics of hazardous waste. Today's rule promulgates treatment standards for characteristic wastes. A question, therefore, is whether the treatment standards for characteristics should apply to these mineral processing wastes recently determined not to fall within the Bevill exclusion. Put another way, although as newly identified wastes they are not subject to the hard hammer, EPA has the choice of whether to apply the treatment standards for characteristic wastes to them at this time.

The Agency has not yet performed the technical analyses necessary to determine if the treatment standards promulgated today as BDAT for EP toxic hazardous wastes or other characteristic hazardous wastes can be achieved in treating the various mineral processing wastes. Therefore, EPA has determined that these newly identified mineral processing wastes are *not* subject to the BDAT standards promulgated today for characteristic hazardous wastes. The Agency plans to study the mineral processing wastes in the future to determine BDAT for these newly identified hazardous wastes.

There are circumstances when newly identified mineral processing wastes can, however, be subject to existing hazardous waste prohibitions. In particular, if the mineral processing waste is mixed with other prohibited wastes (i.e., any prohibited solvent, dioxin, First or Second Third hazardous waste), it becomes subject to the prohibition for the prohibited waste with which it is mixed. EPA also solicited comment on applicability of California list prohibitions, but has determined that these prohibitions will not apply. See section III.F for a discussion of this issue.

Whether any of these prohibitions would have immediate regulatory effect would be determined by the authorization status of the State in which the waste is managed. Because the final rules removing wastes from the scope of the Bevill exclusion are not being adopted pursuant to HSWA, they do not take effect immediately in authorized States. Thus, in these States, these mineral processing wastes would only be hazardous wastes if they are included within the scope of the State's authorized program. If they are not, they would not be hazardous wastes until an amended State's program including them is authorized. Only after authorization would the land disposal prohibitions apply in that State. These mineral processing wastes would be hazardous wastes in unauthorized States as soon as the rule removing them from the exclusion becomes effective. At that time, any land disposal prohibitions that apply to them also would take effect.

The Agency, in the proposed rule, solicited comment on whether the BDAT treatment standards proposed for the EP toxic metals are appropriate for the newly identified mineral processing wastes. Of the comments received, almost all supported EPA's position that the mineral processing wastes are sufficiently different from other characteristic wastes to warrant additional analysis, and that the statutory hammer and the California list prohibitions apply only to those wastes regulated as hazardous at the time of the HSWA enactment.

Several commenters argued against the Agency's position on mineral processing wastes. One commenter stated that since EPA has extensive information available from the listing process, that should be sufficient to develop BDAT treatment standards. However, data collected and analyzed for the purpose of listing a waste as hazardous are different from those required to perform BDAT analyses. In addition, most of the analyses

performed have been to determine if the mineral processing wastes fall within the scope of the Bevill Amendment (*i.e.*, high volume/low hazard). Thus, the Agency does not agree that it has sufficient data to determine BDAT standards for mineral processing wastes.

Another commenter argued that these wastes were improperly excluded from regulation in the first place by an illegal interpretation of the Bevill Amendment in 1990, so should not be considered newly identified at this time. The Agency disagrees with the commenter that mineral processing wastes cannot be considered newly identified wastes. These wastes have become subject to the subtitle C regulations subsequent to the enactment of HSWA, and thus need not be subject to the hard hammer, nor must treatment standards for characteristic hazardous wastes be applied to them in this rulemaking. Certainly, there is no indication in either the statute or the legislative history that in creating a 66-month deadline for characteristic wastes, Congress expected the Agency to address wastes within the scope of the Bevill Amendment at the time of HSWA's promulgation.

I. Generator Notification Requirements

The generator notification requirements set forth in 40 CFR 268.7 specify that when the generator has determined, either through testing or through knowledge of the waste, that the waste is restricted and does not meet the applicable treatment standards, the generator must, with each shipment of waste, notify the treatment facility in writing of the applicable treatment standards and prohibition levels. This notice must include the EPA Hazardous Waste Number, the corresponding treatment standards and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d), the manifest number associated with the shipment of waste, and waste analysis data, where available (40 CFR 268.7(a)(1)). If the generator has determined that the waste being shipped is restricted, but can be land disposed without further treatment, the generator must submit to the land disposal facility the same information, as well as a certification stating that the waste meets the applicable treatment standards (40 CFR 268.7(a)(2)). (EPA reiterates that such determination must, of course, be accurate. Thus, failure to accurately determine a waste's status as restricted is a violation of § 268.7 (a)(1) or (a)(2), as well as a potential violation of other provisions.)

The Agency had received, prior to the Third Third proposed rule, a number of

questions on whether the actual treatment standards (*i.e.*, the actual number or method) must be placed on the generator notification form, or if it is sufficient to reference the appropriate treatment standards by citation of the applicable part of 40 CFR 268.41, .42, or .43. EPA's interpretation has been that all applicable treatment standards must be listed completely on the generator notification form sent to the treatment, storage or disposal facility. A number of these pre-proposal commenters had indicated that they believe the current regulations can be interpreted to allow referencing, rather than listing the specific treatment standards as part of the generator notification. The commenters argued that referencing the standards serves the same purpose as listing the specific treatment standards. Furthermore, they stated that the notification forms are becoming longer, more complicated, and unwieldy as new wastes and corresponding treatment standards are added to the list of wastes restricted from land disposal, and thus listing each treatment standard on the notification form imposes an unnecessary burden on generators.

As proposed in the Third Third notice on November 22, 1989 (54 FR 48496), the Agency today is amending 40 CFR 268.7 to allow referencing the Code of Federal Regulations (CFR) rather than listing each treatment standard. EPA solicited comment in the Third Third proposed rule on this action to determine if the regulated community anticipated any problems with referencing of the CFR, and to determine the effect this action would have on hazardous waste generators. The comments EPA received on the proposal were overwhelmingly in favor of allowing referencing the CFR. Commenters stated that this action will significantly reduce the paperwork involved in handling the waste shipments, reduce transcription errors, and in no way cause harm to the environment.

Although EPA today is allowing such references to the CFR, the following information also must be included in the reference: the EPA Hazardous Waste No., the subcategory of the waste code (*e.g.*, D003, reactive cyanide subcategory), the treatability group(s) of the waste(s) (*e.g.*, wastewater or non-wastewater), and the CFR sections and paragraphs where the applicable treatment standards appear. In addition, where treatment standards are expressed as specified technologies in § 268.42, the 5-letter treatment code found in Table I of § 268.42 (*e.g.*, INCIN, WETOX) must be listed. Omissions or inaccuracies in listing any of these items

will be considered a violation. In addition, the Agency emphasizes that the change to 40 CFR 268.7 allows referencing of the CFR in lieu of only the individual treatment standards; all other § 268.7 information is still required in the notification.

EPA notes that these revised notification requirements also apply to treatment and storage facilities, with the following exceptions. These changes do not apply to generators, or treatment or storage facilities that ship spent solvents (F001-F005), multi-source leachate (F039) or California list wastes off-site to a disposal facility. These waste categories each contain a number of individual constituents or waste groups (*e.g.*, the waste code for multi-source leachate (F039) contains 230 constituents). Therefore, referencing only the CFR section in lieu of the treatment standards would not provide the disposal facility with meaningful information regarding which constituents might reasonably be expected to be present in the waste. The same is true for California list wastes and spent solvents. For each of these wastes, therefore, all applicable waste groups and individual constituents actually must be listed on the notification.

In addition, some pre-proposal commenters raised concerns about notification requirements with regard to shipments subject to the March 24, 1986 small quantity generator (SQG) rule. This rule, specifically 40 CFR 262.20(e), exempts SQGs (100-1000 kg/mo.) with recycling tolling agreements (as defined in 40 CFR 262.20(e)) from the full Part 262 manifesting requirements. EPA received a number of comments supporting the proposed approach, and today is amending § 268.7 to allow a one-time notification and certification for SQG shipments subject to tolling agreements. Such agreements, as well as the one-time notifications and certifications, must be maintained by the generator for three years after termination or expiration of the agreement in keeping with the provisions of 40 CFR 262.20(e)(2).

The Agency is promulgating this amendment because it believes the subsequent handler of the waste under the contractual tolling arrangement has sufficient notification and knowledge of the nature of the wastes being handled. Tolling agreements provide for the collection and reclamation of a specified waste and for redelivery of regenerated material at a specified frequency. The Agency believes that since the same waste is picked up at regular intervals, one notice will suffice for the duration of

the agreement to apprise the subsequent handler of the land disposal restrictions applicable to the waste.

J. Waste Analysis Plans and Treatment/Disposal Facility Testing Requirements

In the proposed rule, EPA noted that §§ 268.7 (b) and (c) currently require treatment and disposal facilities to test their wastes in order to ensure that they are in compliance with applicable treatment standards and prohibition levels. EPA also noted that these provisions require such testing to be performed according to the frequency specified in the facility's § 264.13 or § 265.13 Waste Analysis Plan (WAP). Although §§ 264.13 and 265.13 require that waste analyses contain enough information to allow the owner/operator to comply with the 40 CFR 268 requirements, the Agency noted that a comment found in both of these sections has created implementation problems. The comment states, "the owner or operator of an off-site (treatment, storage, or disposal) facility may arrange for the generator of the hazardous waste to supply part or all of the (waste analysis) information." This language has been construed erroneously as precluding EPA (or an authorized State) from requiring the owner/operator to conduct a detailed chemical and physical analysis of the waste where the generator has supplied the owner/operator with such waste analysis information. Although EPA stated in the proposal that it has authority to require owner/operators to test their wastes in such cases, the Agency stated its preference for removing any ambiguities and modifying the regulations in order to clarify EPA's intent.

The Agency noted in the proposal its belief that ordinarily, treatment and disposal facilities should do some corroborative testing to ensure compliance with LDR treatment standards and prohibitions. Although there are certainly situations where test data submitted by the generator, or the knowledge of the generator, may constitute an essential part of the necessary information, EPA's proposal was premised on a need to ensure that the LDR requirements are met *prior* to disposal. The Agency also noted that such corroborative testing provides records that may be useful in ascertaining compliance with LDR requirements. Thus, EPA stated that treatment and disposal facilities normally should do periodic independent corroborative testing of prohibited wastes, even if the generator also tests the waste or otherwise

certifies that it is eligible for land disposal.

Given this context, the Agency proposed two approaches for specifying the circumstances under which EPA could require corroborative testing. The first approach would allow off-site facilities to arrange for the generator and/or treater of wastes to supply all or part of the waste analysis information only if an EPA-approved WAP affirmatively allows the generator and/or treater to supply this information. Since interim status facilities do not have their WAPs approved until their permit applications are reviewed by EPA (or the authorized State), such facilities would no longer be able to rely upon generator data under this approach. Under the second approach, the Regional Administrator or his designate would determine the owner/operator's testing frequency, but such facilities would be required to conduct waste analyses at least once a year. Since such an approach would be self-implementing, no revisions to existing permits would be necessary.

Numerous commenters pointed out the advantages and disadvantages of both approaches. The primary issues raised by commenters related to the flexibility and resources associated with the proposed approaches. Several commenters supported the flexibility that the first approach would provide. Individual facility circumstances can be considered, which the commenter, believed would result in appropriate testing frequencies. The Agency agrees with the commenters and continues to believe that the frequency of testing is best determined on a case-by-case basis by the permit writer. This is because the range of variables (e.g., variety of wastes managed, different types of waste matrices, number of processes involved) is too broad to justify a single national testing frequency. However, evaluating the appropriate testing frequencies for every treatment and disposal facility can be very resource-intensive, a task that likely would take several years to complete. Some commenters expressed a preference for specific minimum testing frequencies, in part to establish a baseline level from which to depart. As stated above, a required testing frequency is difficult to specify for all facilities, and would be excessive and redundant in some situations while not being protective enough in others. To address this problem, the Agency is developing guidance to help identify what testing frequency, based on site-specific considerations, is reasonable and

appropriate for treatment and disposal facilities.

Several commenters stated that corroborative testing by treatment and disposal facilities is unnecessary where generators supply such waste analysis data. Some of these commenters felt that testing should be required only where the generator does not supply testing data (i.e., where the generator supplies waste characterization data based only on his knowledge of the waste or waste generation process). EPA disagrees with the commenters, and notes that the D.C. Circuit, in upholding EPA's § 268.7 testing framework, has expressed its support for treatment and disposal facility corroborative testing requirements:

[I]t is the treatment facility's job to transform waste otherwise deemed too dangerous to permit into landfills into acceptable form. It is therefore not irrational for the EPA to introduce a backup, arguably "redundant" testing stage for these wastes requiring treatment and even to consider this a "critical" stage in the process.

886 F.2d at 370.

The court also noted that such corroborative testing is necessary for disposal facilities:

[J]ust prior to land disposal, waste must be vigorously tested to confirm that it is what others have represented it to be and that it may permissibly be land disposed.

Id.

Given these concerns, the Agency today is promulgating an approach that combines elements of both the proposed approaches. EPA is revising the comment in §§ 264.13 and 265.13 to implement this approach.

Under the final approach, treatment and disposal facilities may generally rely on information provided to them by generators or treaters of the waste. However, treatment and disposal facilities must conduct periodic detailed physical and chemical analysis on their waste streams to assure that the appropriate part 268 treatment standards are being met. Specifically, today's final rule amends the comment in §§ 264.13 and 265.13 to make it clear that the restricted waste testing requirement (or other frequency approved by the Agency) is not superseded by the ability of the facility to rely on information supplied by the generator or treater. Also, with today's change, § 264.13 more clearly specifies that EPA may, through the permit, require the owner or generator of a treatment or disposal facility to conduct periodic chemical and physical analysis prior to treatment or other management of wastes.

Interim status facilities are subject to the testing requirement for restricted wastes. Interim status waste analysis plans are developed by the facility and maintained on-site, in accordance with self-implementing procedures of § 265.13. Therefore, interim status facility owners or operators should ensure that their plan conforms with today's new requirement. For example, if the facility's plan specifies total reliance on generator or treater-provided information, then the plan will likely need to change to require appropriate testing (See discussion below regarding general Agency waste testing considerations). Also, interim status facilities should update their pending permit applications promptly to ensure that the applications reflect the most current information and today's revised regulatory requirements.

If a permitted facility wants to amend its WAP to better address restricted waste testing requirements, then it would follow the permit modification procedures in § 270.42. Under those modification procedures, a change to indicate a different testing frequency would most likely be a Class 2 modification (see appendix I to § 270.42, item B(1)).

EPA believes that there will be sufficient time to incorporate appropriate waste analysis requirements into the development of permits for the approximately 1000 interim status treatment and storage facilities expected to receive RCRA permits in the next several years. WAPs for permitted storage and treatment facilities (including incinerators) will be examined no later than at permit reissuance. Reevaluation of land disposal facility permits will occur no later than the five year permit review required by § 270.50(d), so WAP changes can be accomplished at that time. It should also be noted that for permitted facilities, EPA may address selected WAPs earlier than the above timeframes by using its general authority to reopen permits when new standards or regulations have been promulgated (§ 270.41(a)(3)).

For both permitted and interim status facilities, the Agency retains its authority (particularly where a revised WAP has not been Agency-approved) to determine that, based on an inspection or other information, the testing frequencies and/or protocols are inadequate at a particular facility. In such cases, EPA (or an authorized State) may take a number of actions, including, but not limited to, terminating or modifying a facility's permit or pursuing an enforcement action.

In order to aid permit writers and the regulated community in determining the appropriate testing frequencies at both stages in time, the Agency expects to issue guidance soon which will further address these issues.

K. Testing of Wastes Treated in 90-Day Tanks or Containers

As noted in the November 22, 1989 proposal, treatment of prohibited wastes conducted in so-called 90-day tanks (or containers) regulated under § 262.34 is not presently subject to a waste analysis plan requirement. 54 FR 48497. Thus, there is no regulatory vehicle for determining testing frequency in such circumstances. In contrast, under § 268.7(b), treatment facilities treating prohibited hazardous wastes must test the treatment residues that they generate at a frequency determined by their waste analysis plan in order to ascertain compliance with the applicable treatment standards. All treatment facilities operating pursuant to interim status or a full permit must have a waste analysis plan.

Therefore, in order to close this regulatory gap, EPA proposed that generators treating prohibited wastes in § 262.34 tanks and containers must prepare a plan justifying the frequency of testing they choose to adopt (54 FR 48497). EPA disagrees with several commenters who contended that sufficient regulatory mechanisms are already in place for these units. Most importantly, there is no regulation at all addressing testing frequency. Since a substantial volume of hazardous waste is treated in these units, the issue of testing frequency is viewed by the Agency as important for ensuring the integrity of the section 3004(m) treatment standards. Furthermore, today's imposition of a waste analysis plan requirement—addressing, among other issues, testing frequency—on persons treating in 90-day tanks is consistent with the Agency's determination in the Solvents and Dioxins final rule that generators who also treat must assume the same responsibilities as off-site treaters. See 51 FR 40597. Put another way, EPA believes that persons treating prohibited wastes should ordinarily have the same recordkeeping and documentation responsibilities whether the treatment occurs off-site or in 90-day tanks.

Therefore, in today's final rule, the Agency is promulgating the proposed action with several modifications in § 268.7(a)(4). In addition to the modifications (and in accordance with majority of comments), the Agency is clarifying that only generators treating wastes to comply with the applicable

BDAT treatment standards (as opposed to wastes treated partially but receiving further off-site treatment before meeting the treatment standard) are subject to the new requirement to prepare a waste analysis plan. Specifically, generators treating prohibited wastes in § 262.34 tanks and containers to meet the applicable BDAT treatment standard must prepare a plan detailing the frequency of testing that is to be conducted. The plan is to be justified on detailed chemical and physical analysis of a representative sample of the prohibited waste(s) being treated, and must contain all information necessary to treat the waste(s) in accordance with requirements of part 268 (see §§ 264.13 and 265.13, from which these substantive requirements are drawn), including the selected testing frequency. Examples of factors EPA would expect to be included in the plan are: discussion of the number of prohibited wastes treated, their variability, and the variability of the treatment process. See section III.J of today's preamble for more detailed information on factors to include in the plan.

EPA does not believe however, that it needs to require waste analysis plans from 90-day generators who treat partially, but do not treat to achieve the treatment standard. Such a requirement would duplicate waste analysis plans of the ultimate treatment facility. The requirement that EPA is adopting today is meant to close an outright regulatory gap which exists only when the 90-day generator is the sole treater.

The plan will be self-implementing in the sense that there is no requirement of prior approval from any regulatory entity. There is, however, a requirement that the plan be retained as a facility record, where it serves as the means of justifying to enforcement officials why the frequency of testing selected by the facility is reasonable. Furthermore, as suggested by several commenters, this plan should be filed with the EPA Regional office or State within 30 days prior to the activity by some mechanism that can verify delivery (e.g., return receipt requested, Federal Express, or messenger). This provision will allow the Agency or State an opportunity to review the testing plan established. EPA notes, however, that it reserves the right at any subsequent time to disapprove of the testing plan. This review mechanism should ease one commenter's concerns about these plans being self-implementing and not subject to regulatory review.

L. Clarification of "P" and "U" Solid Wastes

1. Residues Remaining in Containers or Inner Liners

In the November 22, 1989 proposal, EPA proposed several amendments to clarify the existing language of 40 CFR 261.33. The first amendment involved 40 CFR 261.33(c), a provision that lists residues remaining in containers or in an inner liner that have held commercial chemical products listed in 40 CFR 261.33(e). EPA believes that this language was partially in error as it does not include residues remaining in containers or in an inner liner contaminated with the 40 CFR 261.33(f) materials. All of the other provisions in 40 CFR 261.33 refer to both 40 CFR 261.33 (e) and (f) wastes, and there is no reason that 40 CFR 261.33(c) should not as well. The omission results in fact from an oversight, and is not based on any choice by the Agency.

Many commenters misunderstood the Agency's intent by this clarification. It was not our intent to subject "U" wastes (i.e., non-acute hazardous wastes) to the triple-rinsing requirements of 40 CFR 261.7(b)(3) as this section applies solely to acute hazardous wastes. In 40 CFR 261.33(c), there is not a corresponding reference, however, that residues remaining in containers or in an inner liner contaminated with "U" wastes are subject to regulation, unless empty as defined in 40 CFR 261.7(b)(1). This omission could be read as allowing the disposal of full containers of "U" listed wastes. While this would clearly be an incorrect reading, today's final action corrects this omission.

2. Spill Residues

In addition, EPA proposed a clarifying amendment to 40 CFR 261.33(d) to be codified in 40 CFR 261.2 (b) and (c) to state that residues of spills of commercial chemical products listed in 40 CFR 261.33 (e) and (f) will be considered solid wastes if they are not recycled within 90 days of the spill. 54 FR 43493-94. The Agency's rationale was that although such spilled materials may be considered to be "abandoned" under the existing regulatory language, it might be more appropriate to establish a specific time period after which such spills became solid wastes. The Agency noted further that it ordinarily views spilled commercial chemicals as solid wastes because the nature of a spill constitutes disposal, and because of the difficulty of recycling spill residues in such matrices as soil or groundwater. *Id.* In these instances, not only are spill residues of commercial chemical products unlike other 40 CFR 261.33

material (e.g., off-specification products), but the Agency believes that marginal claims of recyclability could be asserted to avoid proper cleanup of spills. *Id.*

While comments on this issue were mixed, a number of commenters made the point that this issue was inappropriate for determination in the Third Third rulemaking because it is not directly related to the Land Disposal Restrictions program. Given that these comments have merit and considering the number of issues that must be decided under the pressing timetable imposed by the statute, the Agency will not go forward with the quantified standard that it proposed.

Furthermore, the Agency believes that this issue can be addressed by interpretation of existing regulations. Under 40 CFR 261.33, mere assertion of intent to recycle a spill residue of a commercial chemical product does not automatically immunize the spill area from RCRA subtitle C jurisdiction. The generator has the burden of proving that the spilled material is not a solid waste, and a generalized assertion does not satisfy the burden. See 40 CFR 261.2(f). Objective considerations that could be pointed to to satisfy this burden include whether the generator has begun to recycle the spill residue, the length of time the spill residue has existed, the value of the spilled material, whether it is technically feasible or technically practical to recycle the spill residue, and whether there is any past history of the company recycling this type of residue. EPA repeats that assertion of intent to recycle does not satisfy the generator's burden of proof. Rather, there must be objective indicators of intent, and the indicators must be strong given that a spill of hazardous material to soil or groundwater is normally a simple act of disposal.

3. De Minimis Exception to the Mixture Rule

In the context of the Third Third proposal, several commenters requested clarification of the scope of the mixture rule exemption to the definition of hazardous waste under 40 CFR 261.3(a)(2)(iv). This provision exempts mixtures which contain small amounts of listed spent solvents ("F-listed solvents") or other *de minimis* losses of commercial chemical wastes ("P and U wastes") from manufacturing operations when these listed wastes are mixed with other wastewater "the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act (including wastewater at facilities that have eliminated the

discharge of wastewater)." ²⁰

Commenters raised the issue of whether disposal of such mixtures via Class I UIC wells allows the facility to claim this exemption. In particular, commenters expressed concern that recent EPA statements regarding the scope of this exemption imply that large volumes of wastewater will require treatment of the P and U wastes within the wastewater stream before injection of a Class I well, and that capacity for treatment of such wastestreams is not currently available.

Before responding to these comments, some background information is in order. RCRA subtitle C generally regulates as hazardous all mixtures of listed hazardous wastes and other solid wastes. One exception from this rule is for mixtures that "consist[] of wastewater the discharge of which is subject to regulation under either section 402 or 307(b) of the Clean Water Act (including wastewater at facilities which have eliminated the discharge of wastewater) and: [contain specific amounts of listed solvents or *de minimis* losses of discarded chemical products]." 40 CFR 261.3(a)(2)(iv). This exception to the mixture rule was established by regulation on November 17, 1981. See 46 FR 56582. A specific level for spent solvents is established by the regulation (either 1 ppm or 25 ppm). The regulation sets a worst-case maximum concentration of solvent within the wastewater stream; the actual concentration will almost certainly be less. Conversely, there is no set regulatory concentration for *de minimis* loss levels of P and U wastes that are listed in 40 CFR 261.33(e) and (f).

In the 1981 interim final rule, EPA did not exempt all *de minimis* mixtures generated at all facilities. Rather, EPA limited the exemption as follows: "[The exemption] applies only to wastewater mixtures managed in wastewater treatment systems whose discharge is subject to regulation under * * * the [CWA]. This requirement will help to prevent indiscriminate discharge of wastes into wastewater treatment systems because to do so would jeopardize the generator's ability to comply with its [CWA] discharge requirements. * * * (T)he Agency

²⁰ The exemption also covers mixtures of small amounts of listed hazardous wastes in wastewaters resulting from laboratory operations. 40 CFR 261.3(a)(2)(iv)(E). Also, there is similar, but not identical, language contained in a final rule that provided interpretations of certain terms and provisions of standards for hazardous waste tank systems (53 FR 34079, September 2, 1988). Today's notice is not changing the applicability of the September 2, 1988 final rule with respect to hazardous waste tank systems.

means to include all facilities which generate wastewater which is discharged into surface water or into a POTW(.) The Agency also means to include those facilities (known as 'zero dischargers') that have eliminated the discharge of wastewater as a result of, or by exceeding (*i.e.*, doing better than), NPDES or pretreatment program requirements.' 46 FR 56584 (Nov. 17, 1981).

Furthermore, the applicability of the mixture rule exemption for P and U wastes was limited to the introduction of these wastes into wastewaters "in the normal handling of these materials, either as raw products used in the manufacturing process or as intermediate or chemical products used in or produced by the manufacturing process." [emphasis added] 46 FR 56586.

Certain commenters assert that the mixture rule exemption currently applies to wastewater disposed of in a UIC well. Specifically, these commenters argue first that all injection wells dispose of wastewater "the discharge of which is subject to regulation [under the CWA]." Second, commenters argue that UIC wells *per se* constitute a method for facilities to "eliminate . . . the discharge of wastewater." Commenters further suggest that wastewater disposal via UIC wells should be exempted as consistent with the purposes for the exemption expressed by EPA, *i.e.*, that such wastewater mixed with *de minimis* levels of listed wastes are adequately regulated by another statute. These commenters express their belief that disposal of such mixtures down UIC wells would be adequately controlled under the UIC regulations, and that injection was the environmentally sound method of disposal for these wastewaters.

EPA does not agree completely with the commenters' analysis of the scope of the mixture rule exemption. First, injection of a fluid in a UIC well is not a "discharge" within the meaning of the CWA. Injection wells can, in appropriate instances, constitute a practice which has "eliminated the discharge of wastewater," but these instances must be evaluated on a case-by-case basis. As the regulation states, the issue is whether the "discharge" is subject to section 402 or 307(b) of the CWA, not whether the facility is "subject to regulation" under section 402. A UIC well, whether or not the state adopts its regulations under 402(d) addressing such a well, is not a CWA discharge point. Thus, facilities with wells for injection of wastewater do not fall within the mixture rule exemption

simply because they have an injection well on site.

UIC wells may, however, be "zero discharge" facilities, *i.e.*, those which have eliminated their discharge. To qualify as such a facility, it must satisfy the definition of a "zero discharge" facility outlined in the November 17, 1981 regulation. To repeat the language from the 1981 preamble discussing that provision, "(t)he Agency . . . means to include those facilities (known as 'zero dischargers') that have eliminated the discharge of wastewater as a result of, or by exceeding, NPDES or pretreatment program requirements." 46 FR 56584 (Nov. 17, 1981) [emphasis added]. Thus, a UIC well will certainly qualify as a zero discharge facility if the facility injects the wastewater to comply with NPDES permit conditions or an applicable CWA effluent guideline. A well at a facility which is not "subject to [CWA] regulation" under an NPDES permit or an effluent guideline is not within the scope of the language of the mixture rule exemption. EPA notes that this interpretation is fully consistent with its 1981 preamble, and thus does not constitute a "change" in interpretation, as suggested by certain commenters.

EPA notes, that, as a practical matter, the facilities concerned about the scope of the mixture rule exemption are likely unaffected by today's clarification. Most of these facilities are, in fact, in an industry category (organic chemicals) whose facilities are "subject to regulation" under section 402 by virtue of the effluent guideline for that category. See 40 CFR part 414 (1989). Thus, EPA does not believe that there will be a problem with treatment capacity for P and U wastes, because most wastewaters containing *de minimis* amounts of P and U wastes now being injected are not hazardous waste now being injected are not hazardous waste and will be unaffected by today's rule. Nonetheless, EPA wishes to caution such facilities that the mixture rule exemption does not constitute a license to mix collected volumes of E, P, or U wastes into a treated wastewater stream and then inject such a stream. As EPA clearly stated in 1981, the exemption is designed to cover situations where "various spills or incidental losses" of solvents or commercial chemicals are "reasonably and efficiently managed by being discharged into a plant's wastewater treatment system." 46 FR 56584. EPA clearly did not assume that facilities would attempt to avoid treatment of such wastes.

M. Storage Prohibition

In the proposed rule, EPA recognized that there are concerns with its existing interpretation of the statutory storage prohibition set out in section 3004(j) of RCRA. Section 3004(j) provides that storage of prohibited hazardous waste is itself prohibited "unless such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal." Principal concerns are that some storage may be prohibited even where it is not being used with the intent to circumvent the land disposal prohibitions, and whether the storage prohibition should only apply if storage is used as surrogate disposal.

To fully evaluate these concerns, the Agency requested comment on an alternative interpretation of 40 CFR 268.50. Under the alternative approach, storage of prohibited wastes in tanks or containers pending the utilization of proper treatment, recovery or disposal capacity would not be prohibited. EPA provided two examples of allowable storage under this alternative approach:

- (1) Where a generator is storing wastes in tanks for six weeks because of a backup at an incinerator which the generator has a contract to use; and
- (2) Where a treatment facility treats a prohibited waste to a level that does not meet the treatment standard and then stores the waste before treating it again to meet the standard.

EPA recognized in the proposal that under the alternative approach, the phrase "utilization of proper treatment, recovery or disposal capacity" needed to be further defined. The Agency also sought further comment on how a temporal element might be added to the phrase "pending the utilization . . ." in order to define the limits of the proposed approach. Commenters were also asked to address other potential situations where they believed that an overly literal reading of 3004(j) may have consequences they believe Congress did not intend.

Many of the commenters supported the proposed broadening of the allowable bases for storing prohibited wastes. However, the commenters did not offer specific workable suggestions for defining terms such as "pending" and "proper", as EPA noted was necessary. Without objective criteria for defining the limits of allowable storage, EPA believes that the proposed reinterpretation will be very difficult to implement and enforce. For example, does it matter how far in the future—five years, two years, six months—

proper treatment might be utilized? Must there be a contract with a treatment company? What if it is contingent, or contains option provisions? Thus, the Agency is instead retaining its longstanding interpretation of the storage prohibition and is not finalizing the proposed alternative approach.

Under the existing approach, both RCRA 3004(j) and 40 CFR 268.50 provide that storage of prohibited hazardous wastes is itself prohibited "unless such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal." Storage of prohibited wastes is only allowed in non-land based storage units (i.e., tanks and containers), since land-based storage is a type of land disposal.

Two major principles underlie the storage prohibition: (1) the need to reduce the risks created by long-term storage; and (2) the goal of the Land Disposal Restrictions, and HSWA generally, to encourage the expeditious use of alternative treatment technologies. Cf. *Hazardous Waste Treatment Council v. EPA*, 886 F.2d. 355 (D.C. Cir. Sept. 15, 1989) ("*HWTC III*") where the court said:

Congress believed that permitting storage of large quantities of waste as a means of forestalling treatment would involve health threats equally serious to those posed by land disposal, and therefore opted in large part for a "treat as you go" regulatory regime. 886 F.2d. at 357.

Mechanisms such as national capacity variances and case-by-case extensions are intended to address situations where there is a lack of treatment capacity.

No firm time limit is established pursuant to § 268.50. Generators and owners or operators can store as long as necessary. The legislative history makes it clear that the intent of RCRA 3004(j) and § 268.50 is to prohibit use of long-term storage to circumvent treatment requirements imposed by the Land Disposal Restrictions. 129 Cong. Rec. H8139 (daily ed. October 6, 1983). However, if prohibited wastes are stored beyond one year, the owner/operator has the burden of proving (in the event of an enforcement action) that such storage is for the allowable reason: prior to one year, EPA maintains the burden of proving that storage has occurred for the wrong reason.

Finally, EPA reemphasizes that intent is not a critical factor in determining liability. In order to successfully enforce this provision, the Agency need not demonstrate that those storing prohibited wastes have a particular state of mind. Rather, objective factors

such as the type and amount of waste in storage and the time in storage still may be relied upon as the key factors in interpreting this provision. In determining whether storage is lawful, the Agency will continue to evaluate these factors in light of its "treat as you go" approach noted in *HWTC III*. EPA notes, however, that the intent of these storing prohibited wastes may be relevant in the Agency's determination regarding what type of relief, if any, to seek in a civil or criminal enforcement action.

1. Storage of Radioactive Mixed Waste

Several commenters urged the Agency to modify its existing interpretation of the section 3004(j) storage prohibition as it relates to radioactive mixed waste. Mixed waste contains both a hazardous waste component subject to RCRA hazardous waste management standards and a radioactive waste component regulated under the Atomic Energy Act (AEA). The commenters asserted that there is little or no available permitted treatment or disposal capacity for commercially generated mixed waste, and that many of these mixed wastes contain spent solvents or California list wastes that are not eligible for the national capacity variance which EPA is granting for mixed waste containing first, second, and third-third wastes. The commenters emphasized that generators have no practical option but to store their prohibited mixed waste on-site, pending the availability of treatment and disposal capacity. The commenters stated that the Agency should not interpret such storage as "surrogate disposal" that violates section 3004(j), since this interpretation would result in a requirement allowing no possibility of compliance by generators. The commenters further asserted that interpreting section 3004(j) in this manner could give rise to an inconsistency with the AEA, within the meaning of RCRA section 1006(a).

EPA is aware of the difficulties posed by the applicability of the section 3004(j) storage prohibition to mixed wastes under circumstances where there is no treatment or disposal capacity. These issues and their effects on certain low-level waste generators (e.g., hospitals, research institutions, universities), were also discussed at length in a recent report developed by the Office of Technology Assessment (OTA). (See "Partnerships Under Pressure, Managing Commercial Low-level Radioactive Waste," OTA, November 1989).

EPA acknowledges that the current shortage of treatment or disposal capacity, and the requirements and

deadlines under other statutory programs, are factors which are affecting the management of mixed waste. EPA will further evaluate the legal, policy, and factual issues relevant to this matter. Since this issue is not material to the requirements which EPA must promulgate in order to meet the May 8, 1990 Third Third rule statutory deadline, EPA will resolve this matter separately from this rulemaking. The Agency expects to issue its policy on the mixed waste storage issue during the next 90 days.

N. Case-by-Case Extensions

Under RCRA Section 3004(h)(3), EPA can grant case-by-case extensions of the prohibition effective dates for up to one year beyond the applicable deadlines; extensions are renewable once for up to one additional year. On November 7, 1986, EPA published a final rule (51 FR 40572) establishing the regulatory framework to implement the land disposal restrictions program, including the procedures for submitting case-by-case petitions.

To obtain a case-by-case extension, the statute requires that the applicant make the following demonstrations:

(1) A binding contractual commitment has been made to construct or otherwise provide alternative treatment, recovery, or disposal capacity that protects human health and the environment.²¹

(2) Due to circumstances beyond his or her control, such alternative capacity cannot reasonably be made available by the applicable effective date.

(3) If a surface impoundment or landfill is used by the applicant to manage the waste during the extension period, the unit must meet the requirements of section 3004(o). EPA has interpreted these statutory provisions to also require the following (see 40 CFR 268.5(a)):

(1) A good-faith effort must be made to locate and contract with treatment, recovery, or disposal facilities nationwide to manage the waste in accordance with restrictions by the applicable effective date.

(2) The capacity being constructed or otherwise provided will be sufficient to manage the entire quantity of waste that is the subject of the petition.

²¹ Section 3004(h)(3) refers to "such alternative capacity," referring back to Section 3004(h)(2), which speaks of "alternative treatment, recovery, or disposal capacity which protects human health and the environment." For disposal capacity, EPA interprets this language to mean a no-migration unit. See Sections 3004 (d)(1), (e)(1), and (g)(5). For treatment and recovery capacity, the reference refers to capacity that satisfies the Section 3004(m) standard.

(3) A detailed schedule for obtaining required operating and constructing permits, or an outline of how and when alternative capacity will be available.

(4) Adequate capacity is available to manage the waste during the extension period, documenting in the petition the location of all sites at which the waste will be managed.

After an applicant has been granted a case-by-case extension, the applicant must notify the Administrator as soon as he or she has knowledge of any change in the demonstrations made in the petition. In addition, the applicant must submit progress reports, at specified intervals, that describe the progress being made towards obtaining adequate alternative capacity, identify any delay or possible delay in developing the capacity, and describe the mitigating actions being taken in response to the event. See 40 CFR 268.5 (f) and (g).

The Agency has received a number of inquiries on whether a proposed no-migration petition or proposed treatability variance would satisfy the first statutory requirement. That is, could a proposed no-migration variance or a proposed treatability variance constitute the "alternative treatment, recovery, or disposal capacity." If so, and if the Agency were to grant a case-by-case extension, this could provide petitioners with additional time while their no-migration petition or treatability variance is being considered for final approval.

First, it should be noted that the amount of time required to process no-migration and treatability variances (for other than injected wastes) is expected to be 12-18 months due to the complexity of the technical demonstrations that must be made, and their subsequent evaluation. On the other hand, the case-by-case petitions generally can be processed in about 6-8 months because the required demonstrations are more straightforward. This could give the petitioner about 6 months of relief. Some petitioners believe that there are a number of legitimate circumstances where the few extra months gained would make the difference between closing a facility which ultimately will be granted a valid variance request, and keeping it in operation.

In response to these inquiries, EPA is taking this opportunity to clarify that the statutory requirement to obtain a "binding contractual commitment to construct or otherwise provide alternative treatment, recovery, or disposal capacity" may be satisfied by a Federal Register notice wherein the Agency proposes to grant either a no-migration extension or a treatability

variance. The Agency believes that EPA's proposing to grant either a treatability variance petition or a no-migration petition is sufficient demonstration that the petitioner has made a good faith effort to commit to obtaining alternative protective disposal capacity; any further commitment is solely contingent on EPA's action at this point. In addition, the Agency's action in proposing to grant the variance petition serves as a partial imprimatur that the alternative capacity under consideration will prove to be protective. However, the mere filing of a variance petition provides no such guarantee (most of the no-migration petitions for surface units filed to date, for example, have proven technically deficient), and thus cannot be deemed to satisfy the statutory requirement.

Of course, should EPA then grant a case-by-case extension, that grant would be conditional: if EPA denies the no-migration petition or the treatability variance, then the basis for the case-by-case extension may no longer exist, and the variance will be terminated unless there is additional basis for the variance. In addition, when the no-migration or treatability variance is granted, the case-by-case extension automatically expires (since it is no longer needed).

Because significant time and resources would have been expended on the case-by-case petition review unnecessarily if the no-migration petition or treatability variance is ultimately denied, EPA will begin review of a case-by-case extension petition *only* after receiving a clear indication that the Agency has the intention of proposing to grant the no-migration petition or treatability variance (and will not propose to grant a case-by-case extension unless the Agency has actually proposed to grant the variance). Conversely, when the clear indication is that the no-migration petition or treatability variance will be denied, EPA will not review the case-by-case petition, and the petitioner will be notified at the same time he or she is notified of the status of the other petition.

O. Applicability of California List Prohibitions after May 8, 1990

In the November 22, 1989 proposal, EPA discussed two issues relating to California list wastes. 54 FR 48498. The first issue is the question of continued applicability of California list prohibitions to wastes which are granted a national capacity variance in today's rulemaking. The second issue is whether California list prohibitions apply to wastes that are first identified

and listed after the date of the HSWA amendments. 54 FR 48498-99.

EPA discussed the relationship of California list prohibitions to scheduled wastes subject to a capacity variance (either national or case-by-case) in the preamble to the First Third rule. 53 FR 31188. The Agency established in the First Third rule that although specific prohibitions and treatment standards take precedence over California list prohibitions, during the period of a capacity variance the California list prohibitions continue to apply. EPA included this discussion in the Third Third proposal not to reopen the issue but to put persons on notice that the same reading applies to Third Third wastes, including characteristic wastes. In fact, the few commenters on the issue indicated that they agreed with and were aware of the Agency's position.

The Agency did solicit comment, however, on whether it would be permissible to reevaluate whether the California list prohibitions for acid corrosive wastes would apply during the period of a national capacity variance for Third Third acid corrosive wastes (which are identical substances). Several commenters suggested that the prohibition for California list corrosives should not apply to Third Third corrosives that are granted national capacity variances in today's rulemaking. The Agency disagrees with this assertion and believes that not applying the more generally applicable California list prohibitions as an interim prohibition is contrary to the literal statutory language and enunciations of Congressional intent in the legislative history. See S. Rep. No. 284, 98th Cong. 1st Sess. 17. Also, given the fact that these wastes have been restricted since July 8, 1987, it is illogical that the Agency would grant these wastes a capacity extension in today's rulemaking. Therefore, a corrosive waste that is injected underground is at a minimum subject to the California list prohibitions on August 8, 1990.

The other issue on which EPA solicited comment is whether newly identified or listed wastes could be covered by California list prohibitions. Most of the comments supported the Agency's tentative conclusion that the statutory language does not compel a reading that California list prohibitions apply, and further supported the view that California list prohibitions should not apply. EPA is adopting that reading in today's rule. As the Agency noted at proposal, there would be massive dislocations in the regulated community if California list prohibitions were to apply to newly identified and listed

wastes. For example, if wastes identified by the new Toxicity Characteristic were HOCs, thus triggering immediate California list prohibitions, there would be immediate prohibitions of these wastes rather than the more phased schedule specified in section 3004(g)(4). EPA does not believe this result is desirable. In addition, the Agency believes that the better reading of the statute is that the California list prohibitions were not meant to apply to wastes that are newly identified or listed. Consequently, EPA is determining today that wastes that are newly identified and listed²² are prohibited only when the Agency takes specific action with regard to them pursuant to section 3004(g)(4).

Since the California list prohibitions are superseded by more specific treatment standards (with the caveat that the prohibitions continue to apply during capacity variance periods as discussed above) with the promulgation of the Third Third final rule, almost all of the California list prohibitions will be superseded by more specific prohibitions and treatment standards.²³ The California list prohibitions remain applicable for (1) liquid hazardous wastes that contain over 50 ppm PCBs; (2) HOC-containing wastes identified as hazardous by a characteristic property that does not involve HOCs, as, for example, an ignitable waste that also contains greater than 1000 ppm HOCs (but not an EP toxic waste that exhibits the characteristic because it contains one of the six chlorinated organic pesticides covered by the EP toxicity characteristic); and (3) liquid hazardous wastes that exhibit a characteristic and also contain over 134 mg/l of nickel and/or 130 mg/l of thallium.

Finally, EPA proposed that it would delete the provision specifying burning in boilers and furnaces as a specified method of treatment for California list HOCs (existing § 268.42(a)(2)) because there are virtually no situations to which the provision could apply. 54 FR 48499. There was virtually no comment on this point, and EPA is finalizing this action as proposed for the reasons stated at proposal.

²² Newly identified means either newly subject to an existing characteristic (e.g., such as those wastes removed from the Bevill exclusion) or subject to a new characteristic. Newly listed wastes may still be subject to any preexisting applicable characteristic standards or California list prohibitions stemming from the characteristic.

²³ See 52 FR 29993 (August 12, 1987) and 52 FR 25773 (July 8, 1987); see also 40 CFR 268.32(h) (HOC prohibition superseded by treatment standard and effective date for a particular HOC).

IV. State Authority

A. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under sections 3008, 3013, and 7003 of RCRA, although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR part 271.

Prior to HSWA, a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim.

With one exception, today's final rule is promulgated pursuant to sections 3004 (d) through (k), and (m), of RCRA (42 U.S.C. 6924 (d) through (k), and (m)). Therefore, it will be added to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions in Table 1, as discussed in the following section. Table 2 in 40 CFR 271.1(j) will also be modified to indicate that this rule is a self-implementing provision of HSWA.

The exception is the clarifying amendment to § 261.33(c). This clarification is not effective in authorized States since the requirements are not imposed pursuant to HSWA.

Thus, these requirements will be applicable only in those States that do not have interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

B. Effect on State Authorizations

As noted above, EPA will implement today's final rule in authorized States until their programs are modified to adopt these rules and the modification is approved by EPA. Because the rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under RCRA section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that HSWA interim authorization will expire on January 1, 1993 (see 40 CFR 271.24(c)).

Section 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes and must subsequently submit the modification to EPA for approval. The deadline by which the State must modify its program to adopt these regulations is July 1, 1991, in accordance with section 271.21(e). These deadlines can be extended in certain cases (see section 271.21(e)(3)). Once EPA approves the modification, the State requirements become subtitle C RCRA requirements.

States with authorized RCRA programs may already have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after the effective date of these regulations are not required to include

standards equivalent to these regulations in their application. However, the State must modify its program by the deadline set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these regulations must include standards equivalent to these regulations in their application. The requirements a state must meet when submitting its final authorization application are set forth in 40 CFR 271.3.

The regulations being promulgated today need not affect the State's Underground Injection Control (UIC) primacy status. A State currently authorized to administer the UIC program under the Safe Drinking Water Act (SDWA) could continue to do so without seeking authority to administer these amendments. However, a State which wished to implement Part 148 and receive authorization to grant exemptions from the land disposal restrictions would have to demonstrate that it had the requisite authority to administer sections 3004(f) and (g) of RCRA. The conditions under which such an authorization may take place are summarized below and are discussed in a July 15, 1985 final rule (50 FR 28728).

C. State Implementation

The following four aspects of the framework established in the November 7, 1986, rule (51 FR 40572) affect State implementation of today's rule and impact State actions on the regulated community:

1. Under part 268, subpart C, EPA is promulgating land disposal restrictions for all generators, treaters, storers, and disposers of certain types of hazardous waste. In order to retain authorization, States must adopt the regulations under this Subpart since State requirements can be no less stringent than Federal requirements.

2. Also under part 268, EPA is granting two-year national variances from the effective dates of the land disposal restrictions based on an analysis of available alternative treatment, recovery, or disposal capacity. Under § 268.5, case-by-case extensions of up to one year (renewable for one additional year) may be granted for specific applicants lacking adequate capacity.

The Administrator of EPA is solely responsible for granting variances to the effective dates because these determinations must be made on a national basis. In addition, it is clear that RCRA section 3004(h)(3) intends for the Administrator to grant case-by-case extensions after consulting the affected States, on the basis of national concerns which only the Administrator can

evaluate. Therefore, States cannot be authorized for this aspect of the program.

3. Under § 268.44, the Agency may grant waste-specific variances from treatment standards in cases where it can be demonstrated that the physical and/or chemical properties of the wastes differ significantly from wastes analyzed in developing the treatment standards, and the wastes cannot be treated to specified levels or treated by specified methods.

The Agency is solely responsible for granting such variances since the result of such an action may be the establishment of a new waste treatability group. All wastes meeting the criteria of these new waste treatability groups may also be subject to the treatment standard established by the variance. Granting such variances may have national impacts; therefore, this aspect of the program is not delegated to the States at this time.

4. Under § 268.6, EPA may grant petitions of specific duration to allow land disposal of certain hazardous wastes where it can be demonstrated that there will be no migration of hazardous constituents for as long as the waste remains hazardous. States which have the authority to impose restrictions may be authorized under RCRA section 3006 to grant petitions for exemptions from the restrictions. ~~Decisions on site-specific petitions do~~ not require the national perspective required to restrict wastes or grant extensions. EPA will be handling "no migration" petitions for surface disposal facilities at Headquarters, though the States may be authorized to grant these petitions in the future. The Agency expects to gain valuable experience and information from review of "no migration" petitions which may affect future land disposal restrictions rulemakings. In accordance with RCRA section 3004(i), EPA will publish notice of the Agency's final decision on petitions in the Federal Register.

V. Effect Of the Land Disposal Restrictions Program on Other Environmental Programs

A. Discharges Regulated Under the Clean Water Act

As a result of the land disposal restrictions program, some generators might switch from land disposal of restricted Third Third wastes to discharge to publicly-owned treatment works (POTWs) in order to avoid incurring the costs of alternative treatment. In shifting from land disposal to discharge to POTWs, an increase in human and environmental risks could

occur. Also as a result of the land disposal restrictions, hazardous waste generators might illegally discharge their wastes to surface waters without treatment, which could cause damage to the local ecosystem and potentially pose health risks from direct exposure or bioaccumulation.

Some generators might treat their wastes prior to discharging to a POTW, but the treatment step itself could increase risks to the environment. For example, if incineration were the pretreatment step, metals and other hazardous constituents present in air scrubber waters could be discharged to surface waters. However, the amount of Third Third waste shifted to POTWs would be limited by such factors as the physical form of the waste, the degree of pretreatment required prior to discharge, and State and local regulations.

B. Discharges Regulated Under the Marine Protection, Research, and Sanctuaries Act

There could be a potential demand for some of the hazardous wastes included in today's rulemaking to be shifted from land disposal to ocean dumping and ocean-based incineration. If the cost of ocean-based disposal plus transportation were lower than the cost of land-based treatment, disposal, and transportation, this option could seem to be an attractive alternative. In addition, ocean-based disposal could seem attractive to the regulated community if land-based treatment were not available.

However, the Ocean Dumping Ban Act of 1988 has restricted ocean dumping of sewage sludge and industrial wastes to existing, authorized dumpers until December 31, 1991, after which "... it shall be unlawful for any person to dump (sewage sludge or industrial wastes) into ocean waters. ...". Therefore, the Ocean Dumping Ban Act has made moot any economic or other incentive to ocean dump industrial hazardous wastes, including the wastes subject to this regulation.

C. Wellhead Protection Regulated under the Safe Drinking Water Act (SDWA)

Section 1428 of the SDWA contains requirements for the development and implementation of state Wellhead Protection (WHP) Programs to protect wells and wellfields which are used, or may be used to provide drinking water to public water systems. Under section 1428, each state must adopt and submit to EPA for approval a WHP program that, at a minimum:

- (1) Specifies the duties of state agencies, local governments, and public water systems

in the development and implementation of the WHP program:

(2) For each wellhead, determines the wellhead protection area (WHPA), as defined in section 1428(e) of SDWA, based on all reasonably available hydrogeologic information on ground-water flow, recharge, and discharge and other information the state deems necessary to adequately determine the WHPA;

(3) Identifies within each WHPA all potential human sources of contaminants which may have any adverse health effects;

(4) Describes provisions for technical assistance, financial assistance, implementation of control measures, and education, training, and demonstration projects to protect the water supply within WHPAs from such contaminants;

(5) Includes contingency plans for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield contamination by such contaminants;

(6) Requires that state and local governments and public water systems consider all potential sources of human contamination within the expected wellhead area of a new water well which serves a public water system; and

(7) Requires public participation in developing the WHP program.

SDWA required all states to submit a WHP program to EPA by June 19, 1989, for EPA review and approval. EPA has received 29 state submittals for review. SDWA requires that all Federal agencies having jurisdiction over any potential source of contaminants identified by a state program under this section shall comply with all the requirements of the state program.

Any private or public entity subject to the land disposal restrictions regulations must also be in compliance with the appropriate state's wellhead protection program. The Agency reiterates that the land disposal of hazardous wastes must comply not only with the land disposal restrictions and other RCRA regulations, but with other environmental programs, such as the Wellhead Protection Program under the Safe Drinking Water Act.

D. Air Emissions Regulated Under the Clean Air Act (CAA)

There are two air emission concerns with respect to the land disposal restrictions. The first is a cross-media concern about air emissions that occur as a result of waste treatment such as incineration of metal-bearing wastes causing metal emissions to the atmosphere. Another concern is with air emissions from the land disposal of the treatment residue. Air emissions control programs are under development using both the CAA and RCRA to address these concerns as discussed below.

Specific cross-media air emission concerns have been identified for

treatment technologies applicable to Third Third wastes, but EPA believes that existing Clean Air Act controls adequately address the potential problems. Retorting of mercury sulfide wastes can result in air emissions of both elemental mercury and sulfur dioxide (SO₂). The Agency has promulgated a National Emission Standard for Hazardous Air Pollutants (NESHAP) for mercury emissions under section 112 of the CAA (40 CFR part 61, subpart E). There are no industry-specific national CAA control standards for SO₂ emissions from retorting mercury sulfide wastes. There are, however, regulations for the prevention of significant deterioration (PSD) of air quality that would address not only these SO₂ emissions but also any mercury emissions that are not regulated by the NESHAP.

The NESHAP limits mercury emissions to the atmosphere from mercury processing facilities, mercury cell chlor-alkali plants, and plants that incinerate and/or dry wastewater treatment plant sludges. In all these cases, the NESHAP limits mercury emissions across the entire processing facility to the extent necessary to protect human health. The NESHAP would not apply to a dedicated mercury sulfide waste retorting facility that is not located in an ore processing or a mercury cell chlor-alkali plant. EPA is addressing problems of potential mercury emissions by requiring that retorters either be subject to the NESHAP or operate with the PSDs on which the NESHAP was based.

Under section 165(a) of the CAA, all new major stationary sources and major modifications to existing sources of air pollution must obtain a PSD permit. If the mercury or SO₂ emissions from the retorting process were to come from a major stationary source or a major modification subject to the PSD regulations and would be emitted in significant amounts (greater than 0.1 tons per year of mercury or 40 tons per year of SO₂), then such emissions would be subject to best available control technology (BACT) requirements. An air quality analysis for mercury and SO₂ would also be required under PSD. Moreover, an air quality analysis must be conducted to demonstrate that the SO₂ emissions would neither cause nor contribute to violations of any national ambient air quality standard (NAAQS) or PSD increment for SO₂. Facilities that are located in areas that have failed to meet any NAAQS for SO₂ (i.e., designated nonattachment areas) and emit more than 100 tons per year of SO₂, must not only apply emission controls that meet the lowest achievable

emission rate but also offset their remaining SO₂ emissions by acquiring federally enforceable emission reductions from other nearby SO₂ emissions sources.

The Agency is also concerned whether incineration of wastes containing brominated organics or organo-nitrogen compounds may adversely affect air quality. The presence of bromine complicates the evaluation of incineration of these wastes. A detailed discussion of the Agency's approach for brominated organics is contained in section III.A.5.b of today's preamble. A discussion of potential nitrogen oxide emissions from organo-nitrogen wastes is contained in section III.A.5.c.

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under § 3004(n) of RCRA to address air emissions from hazardous waste management units other than incinerators. The first phase addresses organic air emissions as a class from two types of emission sources. The first source category is process equipment (pumps, valves, etc.) that contact hazardous waste that contain greater than 10 percent organic compounds, including such as distillation units and incinerators. The second source category is certain vents on various treatment technologies, such as air or steam strippers. These standards were proposed in the Federal Register on February 5, 1987 (52 FR 3748) and are expected to be promulgated this spring.

The second phase of standards development under section 3004(n) of RCRA addresses organic air emissions as a class from tanks, containers, and surface impoundments. Treatment technologies that occur in tanks or containers that are not controlled by the Phase I standards would be controlled by these standards. Wastes that would be prohibited from land disposal may continue to be managed in a surface impoundment as long as the treatment residuals that do not meet the applicable treatment standards are removed from the impoundment within one year of entry into the impoundment. These standards will control air emissions from the management of wastes in the surface impoundment. These standards are expected to be proposed in the Federal Register this spring.

In the third phase of the section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in

the first two phases as necessary to address residual risks.

In addition to the section 3004(n) standards, general standards to control both organic and metal emissions from the combustion of hazardous waste in incinerators and other types of combustion devices are under various stages of development.

In certain cases, waste treatment may occur in treatment technologies that are not required to obtain RCRA permits. Guidance for the control of air emissions from these sources, such as exempt biological treatment tanks and recycling units, is being developed under the CAA.

None of the regulatory efforts discussed above address air emissions from the land disposal of treatment residue in landfills, land treatment units, or waste piles because the Agency presently presumes that these units will only receive wastes that have been treated to meet the BDAT requirements. The Agency is considering whether to propose regulations in a separate rulemaking to limit air emissions from land disposal units seeking to land dispose of wastes under a no migration variance.

E. Clean Up Actions Under the Comprehensive Environmental Response, Compensation, and Liability Act

The land disposal restrictions may have significant effects on the selection and implementation of response actions that are taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). There are three primary areas in which these effects may occur.

One area that may be affected by the land disposal restrictions is in the selection of treatment standards at the remedial action site. The cleanup standards set at CERCLA sites are risk-based, while treatment standards developed under the land disposal restrictions program are technology-based. Therefore, the technology-based treatment standards may be more stringent than the risk-based cleanup standards developed based on the CERCLA selection of remedy criteria, and vice versa. Another matter that may be affected is the treatment of soil and debris contaminated with wastes restricted from land disposal. Contaminated soil and debris are a primary type of waste that must be remediated at most CERCLA sites. In many cases, the soil matrix is different from that of the industrial wastes for which treatment standards are set. CERCLA site managers must either comply with the treatment standards or

request and be granted a variance from the treatment standard (§ 268.44) or a "no-migration" variance (§ 268.6).

Finally, even though the hazardous substances at a CERCLA remediation site may have been disposed prior to the effective date of RCRA, if the action involves removal of restricted wastes after the prohibition effective date, the land disposal restrictions are legally applicable (51 FR 40577, November 7, 1986). See also *Chemical Waste Management v. EPA*, 869 F. 2d at 1535-37 (D.C. Cir. 1989). For example, if a waste is excavated from a unit, treated, and redispersed, EPA has indicated that "placement" (see RCRA section 3004(k)) of the waste in a land disposal unit has occurred, and the applicable treatment standards must be met (see 53 FR 51444 and 51445, December 21, 1988). However, if the waste is capped in place, removal or "placement" has not occurred, and the treatment standards are not legally applicable.

F. Applicability of Treatment Standards to Wastes from Pesticides Regulated Under the Federal Insecticide, Fungicide, and Rodenticide Act

A number of generators of pesticide waste that have heretofore been comparatively unaware of the land disposal restrictions may be regulated under today's rulemaking. This will require that the Agency develop guidance materials and provide training on how to comply with the requirements of the land disposal restrictions.

Generators of significant quantities of pesticide P and U wastes are farmers and commercial pesticide applicators. The provisions of 40 CFR 262.70 and 268.1 exempt farmers from regulation under the land disposal restrictions program; however, no such exemption exists for commercial applicators. Such generators of hazardous wastes have traditionally land disposed their pesticide wastes. With promulgation of today's final rule, these generators must comply with the requirements of the land disposal restrictions if they dispose a restricted hazardous waste.

G. Regulatory Overlap of Polychlorinated Biphenyls (PCBs) Under the Toxic Substance Control Act (TSCA) and RCRA.

Certain P and U listed wastes contain PCBs. The PCB component of such a waste mixture is regulated primarily under TSCA (although it may also be a California list waste, and subject to RCRA regulation (both substantive and administrative as well)), while the listed P or U component of the waste is regulated under RCRA. Such a mixture of listed/PCB waste must meet the

applicable requirements under both statutes. Such a waste must go to an incinerator permitted under both TSCA and RCRA. Any ash residual from incineration must meet the treatment standard for the listed waste component prior to land disposal.

VI. Regulatory Requirements

A. Regulatory Impact Analysis—Surface Disposed Wastes

In accordance with Executive Order No. 12291, the Agency has reviewed the costs and benefits of today's final rule and has determined that today's final rule constitutes a "major regulation" because it results in an annual cost to the economy in excess of \$100 million. As a result of this determination, the Agency has conducted a regulatory impact analysis (RIA) in support of today's final rule. The complete RIA document, *Regulatory Impact Analysis of the Land Disposal Restrictions for Third Third Scheduled Wastes Final Rule* (April 24, 1990), is available for review in the public docket for today's final rule. The complete document was also submitted to the Office of Management and Budget for review, as required by Executive Order No. 12291.

This section of the preamble summarizes the results of the regulatory impact analysis of the final rule, as detailed in the RIA document, as well as comments received on the regulatory impact analysis for the proposed rule. Section VI.A.1 below describes the universe of wastes and facilities affected by today's rule. Section VI.A.2 below summarizes the analysis of human health and environmental benefits attributable to today's rule. Section VI.A.3 summarizes the economic cost and impact analysis performed for today's rule.

The Agency analyzed benefits, costs, and economic impacts using the same approach and methodology that was used for the August 17, 1988, First Third final rule (53 FR 31138).²⁴ The effects of the final rule were estimated by comparing post-regulatory management practices and conditions with those occurring under baseline conditions. Two post-regulatory scenarios were examined. Under the first scenario, the "subtitle C" scenario, all treatment residuals would be disposed of in subtitle C units. For the second, "subtitle D," scenario, all characteristic waste treatment residuals would be disposed of in Subtitle D units. The baseline was

²⁴ For detailed information on the cost methodology, see *Regulatory Impact Analysis of the Land Disposal Restrictions on First Third Wastes: Final Report*, August 1988, ICF Incorporated.

defined as continued land disposal of wastes in units meeting minimum technological requirements.

The Agency adjusted reported waste management practices to reflect compliance with the land disposal restriction rules covering solvents and dioxins, California list wastes, and First and Second Third scheduled wastes. In making these adjustments, EPA assumed that facilities would comply with these other rules by the least costly methods allowable. However, though First Third soft hammer wastes were examined under the First Third rule Second Third soft hammer wastes are included in today's analysis. Thus, all First Third, Second Third, and Third Third wastes have been addressed in the land disposal restrictions rules collectively.

1. Overview of Affected Wastes, Facilities, and Management

The universe of waste and facilities examined for the RIA was developed from EPA's "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities" (hereafter, the TSDR survey) and EPA's 1984 "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA in 1981" (hereafter, the RIA Mail survey). Data from these surveys have been updated as part of the capacity analysis accompanying this rulemaking (see discussion in Section 3B). The data used for the final regulatory analysis reflect this updated data base and are consistent with the data used for the capacity analysis accompanying the proposed rule.

As with past land disposal restrictions RIAs, the TSDR and RIA Mail surveys provide an overview of the number of facilities treating, storing, and disposing of waste; the quantities and types of waste (by RCRA waste code) managed at each facility; and the current practice or method of treatment. The adjusted information contained in the two surveys is accepted as the baseline (i.e., pre-Third Third rule) practice for this RIA.

Several commenters noted that the quantities of waste estimated do not include non-hazardous waste that may have been affected by the Agency's proposed dilution prohibition. In today's rule, however, the Agency is allowing facilities that discharge their characteristic wastes under a NPDES permit or dispose of it in a UIC well to dilute. The Agency is also allowing facilities that generate non-toxic characteristic wastes (with the exception of high TOC ignitable

nonwastewaters, reactive cyanide wastes, and reactive sulfide wastes) to dilute their wastes in order to achieve treatment standards. However, characteristic wastes discharged pursuant to an NPDES permit, with a specified method, cannot be rendered nonhazardous through dilution alone. The Agency believes, therefore, that it has accurately analyzed the impact of today's rule.

Quantity of Affected Waste. Today's rule affects approximately 277 million gallons of waste per year as shown in Table VI-1. An additional 44 million gallons (per year) of multisource leachate may also be affected by today's rule.

TABLE VI-1.—THIRD THIRD RULE QUANTITY BY WASTE TYPE

(in million gallons per year)

	Vol.	Per- cent
Ignitable (D001), corrosive (D002), and reactive wastes (D003).....	42	15
EP toxic wastes (D004-D016) and mixtures.....	122	44
Listed wastes.....	2	1
Mixtures of wastes.....	32	12
CBI wastes.....	79	29
Total.....	277	100

Characteristic wastes constitute the largest volume of wastes covered by the final rule. In addition to the 59 percent identified as D001-D016, the waste mixtures category is dominated by characteristic wastes. Table VI-2 gives the volumes of the most affected characteristic wastes.

TABLE VI-2.—PREDOMINANT CHARACTERISTIC WASTES BY VOLUME

(in million gallons per year)

D008 (EP Toxic for lead).....	53
D007 (EP Toxic for chromium).....	41
D002 (Corrosive).....	17
D001 (Ignitable).....	17
Mixtures of D006 and D008.....	9
D006 (Cadmium).....	8
D003 (Reactive).....	7

Affected Facilities. A total of 110 waste management facilities and nearly 1,700 waste generators are affected by today's final rule. Table VI-3 provides a breakdown of affected facilities and their volumes managed.

TABLE VI-3.—THIRD THIRD RULE VOLUMES BY FACILITY TYPE

(in million gallons per year)

Facilities	Volume	Per- cent	No. of facilities
Commercial Facilities.....	212	77	37
Non-Commercial Facilities.....	65	23	73
Generators.....	NA	NA	1,686
Total.....	277	100	1,796

The affected facilities represent a wide variety of industries in 22 major industrial groups. A further examination of the TSDR survey data reveals the following information about the range of industries with large volumes of Third Third wastes.

The volume of commercial process waste, which accounts for 77 percent of the total waste volume, is distributed across the following SIC groups:

- Electric, Gas, & Sanitary Services (SIC 49)..... 43 percent
- Services Not Elsewhere Classified (SIC 89)..... 8 percent
- Chemicals & Allied Products (SIC 28)..... 7 percent
- CBI Facilities..... 32 percent

The volume of noncommercial process waste, which accounts for 23 percent of the total waste volume, is distributed across the following Standard Industrial Code (SIC) groups:

- Non-classifiable Establishments (SIC 99)..... 52 percent
- Primary Metals Industries (SIC 33)..... 13 percent
- Petroleum Refining & Related Industries (SIC 29)..... 10 percent
- Chemicals & Allied Products (SIC 28)..... 6 percent
- CBI Facilities..... 16 percent

Waste Management Practices. Based on the TSDR survey, the RIA examined five land disposal baseline management practices: disposal in landfills, disposal by land treatment, disposal in surface impoundments, treatment in waste piles, and storage in waste piles. Table VI-4 provides a breakdown of these baseline management practices by volume and number of facilities. As shown, approximately half of the waste volume covered by the final rule is currently managed in landfills. Landfills are also the most prevalent baseline practice, occurring at just over one half of the affected facilities.

TABLE VI-4.—THIRD THIRD RULE
BASELINE MANAGEMENT PRACTICES
[in million gallons per year]

Baseline practice	Volume	Percent
Facilities:		
Landfill.....	212	77
Land treatment.....	6	2
Storage waste piles.....	28	10
Treatment waste piles.....	27	10
Disposal surface impoundments.....	3	1
Total *	277	100

* Excludes estimated 44 million gallons of multi-source leachate.

The quantity of multisource leachate is not well characterized at present. However, the RIA estimates that over 150 million gallons of leachate are generated (annually) creating up to 44 million gallons of leachate residue subject to the land disposal restrictions.

Treatment practices in compliance with today's final rule significantly redistribute the quantities of waste among management practices. Most important, while 277 million gallons of waste per year are land disposed under baseline management practices (of which 212 million gallons are landfilled), 206 million gallons of waste per year would be disposed of in landfills under the subtitle C scenario as a result of today's final rule and 208 million gallons of waste per year under the subtitle D scenario. Thus, the final rule results in a 26 percent reduction in the volume of Third Third wastes being land disposed under the Subtitle C scenario, and a 25 percent reduction under the subtitle D scenario. Many of the wastes covered by the final rule are treated by chemical precipitation or stabilization.

2. Benefits of the Final Rule

The final rule would result in several benefits including reduced human health risks, improved safety at facilities, and reduced ecological effects. As with previous land disposal restrictions, the Agency quantified the human health benefits and conducted a qualitative analysis of the other benefits.

Human Health Benefits. The quantitative benefits analysis estimated that over a 70-year lifetime, the final rule reduces cancer cases by 316 and reduces the number of people exposed to at least one noncarcinogen above health based criteria by about 5,400. These results are the same for both scenarios.

In general, the majority of cancer cases averted is due to reduced inhalation exposure to benzene, acrylonitrile, phenanthrene, fluoroanthene, dichloromethane and

other carcinogenic constituents in D001 ignitable wastes and mixtures of ignitable and reactive wastes. The majority noncarcinogenic benefits is due to reduced ingestion of cadmium (D006), chromium (D007), lead (D008), as well as mixtures with these metals or mercury and D001 ignitable waste containing pentachlorobenzene and methanol.

It is important to note that these human health benefits are highly sensitive to the facility (and population) and waste characterizations used for the analysis. In fact, the majority of human health benefits is due to a limited number of waste streams at a few facilities. For example, over 4,000 of the non-cancer "benefits" result from the reduction of a highly concentrated chromium waste that leaches to ground water used as a drinking water source for a populous Northeastern community. And nearly 1,000 non-cancer "benefits" are attributable to reducing high concentration air releases of pentachlorobenzene and methanol in a land application and a landfill unit. Similarly, over 200 of the cancer cases averted result from reducing air releases of phenanthrene and fluoroanthene in land application units at two facilities.

What these examples reveal is the relationship between human health benefits and the attributes of a facility. Given any data base, the facilities with highly concentrated waste in densely populated areas will significantly drive the human health benefits results. Therefore, we believe that the data gives a true representation of reality by the inclusion of these few driving facilities.

The Agency has not estimated benefits attributable to treating multisource leachate residue because of a lack of characterization and facility data. However, the Agency, by way of a screening analysis, developed a hypothetical characterization of multisource leachate residue and simulated releases at several well-defined facilities. While the results are extremely sensitive to the assumptions and hypothetical characterization, they showed the possibility of roughly 200 cancer and 200 non-cancer cases avoided. Again, these results are highly uncertain because of the lack of sufficient data, but they do suggest that the benefits associated with the treatment of multisource leachate residues may be significant.

The Agency believes that the overall benefit estimates are uncertain and may overstate or underestimate the human health benefits of the proposed rule. The RCRA Risk-Cost Analysis model does not contain enough data to model all of

the constituents found in the Third Third wastes. As a result, benefits of regulating wastes with one or more of these missing constituents may be underestimated. This underestimate is most likely to occur for wastes containing pesticides, the sole hazardous constituent of D012-D017, and about 16 "P" wastes.

Human health benefits may also be underestimated because the benefits model only includes exposure via drinking water or air. Not estimated are the deleterious effects from consuming of contaminated food, such as fish caught downstream of releases, recreation exposure, due to contact with polluted rivers, lakes, or streams, and the averting of public benefits due to the destruction of these recreational areas.

At the same time, benefits may be overestimated due to conservative exposure assumptions. Exposure scenarios are based on drinking 2 liters/day for seventy years of contaminated water or inhalation of 20 cubic meters/day of air for seventy years.

Safety Benefits. In addition to adverse human health effects, ignitable (D001) and reactive (D003) wastes may pose a general safety hazard. In the past, land disposal of these wastes has only been allowed if the waste either is deactivated or precautions are taken to prevent accidental ignition or reaction. Until the ignitable or reactive wastes are deactivated, there is some continuing risk that the precautions may fail, resulting in fires, explosions, or release of toxic gases. The final rule requires deactivation of the approximately 24 million gallons of D001 and D003 being land disposed, thereby eliminating the safety risk. However, this benefit is not significant due to the popular practice of deactivation currently employed by facilities.

Environmental Benefits. The final rule results in an overall reduction in toxic releases to the environment, thereby reducing adverse effects to ecosystems. The resulting improvement in ecological health is extremely difficult to quantify due to uncertainty in estimating exposure levels and species populations. However, the sensitivity of certain species to hazardous constituents of wastes covered by the final rule suggests a very high potential for ecological effects.

As an example, aquatic species are at least two orders of magnitude more sensitive than humans to arsenic (D004), mercury (D009), silver (D011), lindane (D013), methoxychlor (D014), and toxaphene (D015). Therefore, aquatic ecosystems may be at some risk even when there is no human health risk.

Another way to look at the potential for ecological effects is to consider the proximity of land disposal facilities to waterbodies. A recent Agency study on ecological risks showed that for a sample of 52 National Priorities List sites, almost 90 percent of the sites posed a threat to freshwater ecosystems due to their proximity to waterbodies.²⁵ Wastes removed from some of these sites may be subject to the treatment standards promulgated in this rule. Thus, the final rule reduces ecological risk associated with Third Third wastes managed at these sites.

3. Costs

The final rule results in an annual incremental cost of approximately \$353 million under the Subtitle D scenario and \$440 million under the Subtitle C scenario, and affects over 1,700 facilities in 22 industrial sectors. Table VI-5 summarizes the estimated incremental costs associated with today's final rule by waste type.

TABLE VI-5.—THIRD THIRD RULE VOLUMES AND INCREMENTAL COST

[Million gallons/yr and million \$/yr]

Waste type	Volume	Cost (in dollars)	
		Subtitle D	Subtitle C
D001, D002, C003	42	\$61	\$67
D004-D016	122	123	166
Listed waste	2	15	15
Mixtures	32	93	102
CBI facilities	79	61	90
Total	277	\$353	\$440

As expected, based on volumes, the largest incremental cost is attributed to the management of D008 (lead) waste. Although the listed wastes are a small volume and have the lowest total cost, expensive treatment technologies such as incineration result in a much higher cost per volume treated. Conversely, the corrosive wastes and mixtures with corrosive wastes are relatively inexpensive to neutralize, resulting in a low cost per volume treated.

Five characteristic wastes contribute about 45 percent of the incremental cost of the rule as shown in table VI-6. EP toxic wastes for lead (D008) and ignitable wastes (D001) are the two single wastes that incur the most incremental cost.

²⁵ Summary of Ecological Risks. Assessment Methods and Risk Management Decision in Superfund and RCRA (EPA-270-07-89-046) June 1989

TABLE VI-6.—WASTES INCURRING THE MOST INCREMENTAL COST

[In million dollars/year]

Waste stream	Costs	
	Subtitle D	Subtitle C
D003	57	85
D001	46	47
D007	34	38
D009	16	17
D004/D006/D007/D008	16	16
D003	9	12
D007/D008	12	12
D001/D002/D007/D008	11	11
D002	6	9

The cost of treating D002 corrosive wastes attributed to the final rule may be overestimated by as much as \$5 million because some of these wastes may be treated due to the California List Land Disposal Restrictions rule (52 FR 25760). That rule established a performance standard prohibiting land disposal of wastes with a pH less than 2, while the final rule establishes a technology-based standard of deactivation (i.e., neutralization). The Agency does not have data on how facilities are meeting the California List standard. Without specific data about the post-California List practices, the entire cost of neutralizing D002 acidic wastes were attributed to this final rule.

4. Economic Impacts

Tables VI-7 and VI-8 summarize the cost and economic impact of the final rule under subtitle D and subtitle C, respectively. Compliance costs are the tax-adjusted revenue requirements needed to fund the incremental costs discussed above. Significantly affected facilities are those that either need to increase costs by more than 5 percent or their compliance costs exceed 5 percent of their cash from operations.

TABLE VI-7.—SUMMARY OF ECONOMIC IMPACT BY TYPE OF FACILITY—SUBTITLE D

Economic impact	Noncommercial	Com	Generator	Total
Compliance cost (\$M/yr)	24	329	235	259
Affected facs.	73	37	1,686	1,796
Significantly affected	3	NA	429	432
Estimated closures	0	NA	14	14
Affected industry groups	12	9	16	22

TABLE VI-8.—SUMMARY OF ECONOMIC IMPACT BY TYPE OF FACILITY—SUBTITLE C

Economic impact	Noncommercial	Com	Generator	Total
Compliance cost (\$M/yr)	30	410	299	329
Affected facs.	73	37	1,686	1,796
Significantly affected	4	NA	552	556
Estimated closures	0	NA	14	14
Affected industry groups	12	9	16	22

The economic analysis estimates that the final rule does not have a significant effect on industry. The effects of the final rule are distributed over a wide range of industries in 22 major industrial groups rather than concentrated in a few industries.

Generators are the type of facilities that incur the largest economic impact. The analysis estimates that 91 percent of the compliance cost are borne by generators under both subtitle C and subtitle D scenarios. Also, 33 percent of the affected generators are significantly affected under subtitle C scenario, and 25 percent are significantly affected under subtitle D scenario.

The analysis estimates that 14 facilities would close as a result of the final rule. By comparison, the First Third rule was estimated to result in almost 200 closures. These 14 potential closures represent less than 4 percent of the 429 significantly affected generators under subtitle D scenario and less than 3 percent of the 552 significantly affected generators under subtitle C scenario.

The TSDR survey identified only 2 small businesses that currently land dispose Third Third waste. Neither is significantly affected under the final rule.

B. Regulatory Flexibility Analysis—Surface Disposed Waste

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, whenever an Agency is required to publish a notice of rulemaking, it must prepare and make available for public comment a Regulatory Flexibility Analysis (RFA) that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). This analysis is unnecessary, however, if the Agency's Administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities.

EPA evaluated the economic effect of the final rule on small entities, here defined as firms employing fewer than 50 persons. Because of data limitations, the Agency was unable to include generators of large quantities of Third Third wastes. The small business population therefore included only two groups: all noncommercial TSDFs employing fewer than 50 persons and all small quantity generators (SQGs) that were also small businesses. As a result, the effect of the final rule on small businesses is underestimated. However, the Agency would not expect the conclusions of the small business analysis to change significantly if the generator data were available.

According to EPA's guidelines for conducting an RFA, if over 20 percent of the population of small businesses, small organizations, or small government jurisdictions is likely to experience financial distress based on the costs of the rule, then the Agency is required to consider that the rule will have a significant effect on a substantial number of small entities and to perform a formal RFA. EPA has examined the final rule's effects on small entities as required by the Regulatory Flexibility Act.

The economic analysis identified only 2 small businesses affected by the final rule. Neither of the 2 would be significantly affected. The Administrator therefore certifies that part 268 does not have significant economic effects on a substantial number of small entities. As a result of this finding, the Agency has not prepared a formal RFA.

C. Regulatory Impact Analysis— Underground Injected Wastes

The Agency has completed a separate regulatory impact analysis for underground injected wastes affected by today's final rule. The completed RIA document, Regulatory Impact Analysis of Proposed Hazardous Waste Disposal Restrictions For Class I Injection of Third Thirds List Wastes, is available in the public docket for the final rule.

There are 85 injection facilities, of the total number of Class I injection facilities, injecting approximately 6 billion gallons of Third Third wastes annually, including over 4.7 billion gallons of characteristic wastes. These Class I hazardous injection facilities are required to either treat wastes, or file "no migration" petitions as outlined in 40 CFR part 148 (See 53 FR 28118 preamble for a more thorough discussion of the no migration petition review process). The additional facilities affected by today's rulemaking substantially contribute to overall compliance costs already incurred by

Class I injection well owners and operators managing hazardous wastes regulated by previous rulemaking.

The Agency analyzed costs and benefits for today's rule by using the same approach and methodology developed in the Regulatory Impact Analysis of the Underground Injection Control Program: Proposed Hazardous Waste Disposal Injection Restrictions used for the July 26, 1988 final rule (53 FR 28118) and subsequent rulemaking. An analysis was performed to assess the economic effect of associated compliance costs for the additional volumes of injected wastes attributable to today's final rule.

Total compliance costs for injected wastes are estimated at \$54 million annually. Alternative treatment costs are estimated at \$53.7 million annually, and no migration petition costs are annualized at \$0.3 million. The RIA estimates that 17 facilities will eventually treat their wastes, and therefore be significantly affected economically by today's final rule. All of these costs will be incurred by Class I hazardous injection well owners and operators.

The benefits to human health and the environment in the RIA are generally defined as the reduced human health risk resulting from fewer instances of ground-water contamination. In general, potential health risks from Class I hazardous waste injection wells are extremely low. However, the RIA references a few isolated cases where risks to human health and the environment may be greater, but are still too low to quantify. These cases involve possible grout seal failure around the protective casing of an injection well, and the occurrence of unplugged bore holes around the injection well site. Of studies conducted to describe Class I well problems, only six wells, or less than two percent of all Class I wells, were reported to have experienced malfunctions that contributed to any contamination of the surface or an underground source of drinking water. No health-related problems attributed to Class I injection were reported.

D. Regulatory Flexibility Analysis— Underground Injection Wastes

Owners and operators of hazardous waste injection wells are generally major chemical, petrochemical, and other manufacturing companies. The Agency is not aware of any small entities of injection wells that would be affected by part 148 of today's final rule. The Administrator therefore certifies that part 148 and part 268 will not have significant economic effects on a substantial number of small entities. As

a result of this finding, the Agency has not prepared a formal RFA.

E. Paperwork Reduction Act

All information collection requirements in this final rule were promulgated in previous land disposal restrictions rulemakings (including those for the Underground Injection Control Program) and approved by the Office of Management and Budget (OMB) at that time. Since there are no new information collection requirements being promulgated today, an Information Collection Request has not been prepared.

F. Review of Supporting Documents

The primary source of information on current land disposal practices and industries affected by this rule was EPA's 1986 "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities" (the TSDR Survey). The average quantity of waste contributed by generator facilities was obtained from EPA's "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA in 1981" (April 1984).

Waste stream characterization data and engineering costs of waste management were based on the following EPA documents:

- "Characterization of Waste Streams Listed in 40 CFR Section 261 Waste Profiles," Vols. I and II (August 1985);
 - "Characterization of Constituents from Selected Waste Streams Listed in 40 CFR Section 261," Vols. I and II (August 1985);
 - RCRA background and listing documents for 40 CFR Section 261;
 - RCRA Section 3007 industry studies;
 - "RCRA Risk-Cost Analysis Model, Appendix A: Waste Stream Data Base" (March 1984);
 - Source assessment documents for various industries; and
 - "1986-1987 Survey of Selected Firms in the Commercial Hazardous Waste Management Industry: Final Report" (March 1988).
- Financial information for the economic impact analysis was obtained from the 1982 Census of Manufacturers and 1984 Annual Survey of Manufacturers. Producer price indices were used to restate 1984 dollars in 1990 terms.

List of Subjects in 40 CFR Parts 148, 261, 262, 264, 265, 268, 270, 271, and 302

Administrative practice and procedure, Confidential business information, Designated facility, Environmental protection, Hazardous

materials, Hazardous materials transportation, Hazardous waste, Intergovernmental relations, Labeling, Manifests, Packaging and containers, Penalties, Recycling, Reportable Quantities, Reporting and recordkeeping requirements, Waste treatment and disposal, Water pollution control, Water supply.

Dated: May 8, 1990.

F. Henry Habicht,
Acting Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

PART 148—HAZARDOUS WASTE INJECTION RESTRICTIONS

1. The authority citation for part 148 continues to read as follows:

Authority: Section 3004, Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq.

2. Section 148.1 is amended by adding paragraph (d) to read as follows:

§ 148.1 Purpose, scope, and applicability.

(d) Wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited under this part, are not prohibited if the wastes:

(1) Are disposed into a nonhazardous or hazardous injection well defined under 40 CFR 144.6(a); and

(2) Do not exhibit any prohibited characteristic of hazardous waste identified in subpart C of part 261 at the point of injection.

3. Section 148.14 is amended by redesignating paragraphs (d), (e), (f), and (g) as paragraphs (e), (g), (h), and (i); by revising the introductory text of newly redesignated paragraph (j); and by adding new paragraphs (d), (f), and (i) to read as follows:

§ 148.14 Waste specific prohibitions—first third wastes.

(d) Effective August 8, 1990, the wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Number F006 (wastewaters) and F019; the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K004, K008, K015 (nonwastewaters), K017, K021 (wastewaters), K022 (wastewaters), K031, K035, K046 (reactive nonwastewaters and all wastewaters), K060 (wastewaters), K061 (wastewaters), K069 (calcium sulfate nonwastewaters and all wastewaters), K073, K083, K084, K085, K086 (all but solvent washes), K101 (high arsenic nonwastewaters), K102 (high arsenic

nonwastewaters), and K106; and the wastes specified in 40 CFR part 261.33 as EPA Hazardous Waste Numbers P001, P004, P005, P010, P011, P012, P015, P016, P018, P020, P036, P037, P048, P050, P058, P059, P068, P069, P070, P081, P082, P084, P087, P092, P102, P105, P108, P110, P115, P120, P122, P123, U007, U009, U010, U012, U016, U018, U019, U022, U029, U031, U036, U037, U041, U043, U044, U046, U050, U051, U053, U061, U063, U064, U066, U067, U074, U077, U078, U086, U089, U103, U105, U108, U115, U122, U124, U129, U130, U133, U134, U137, U151, U154, U155, U157, U158, U159, U171, U177, U180, U185, U188, U192, U200, U209, U210, U211, U219, U220, U228, U227, U228, U237, U238, U248, and U249 are prohibited from underground injection at off-site injection facilities.

(f) Effective November 8, 1990, the wastes specified in paragraph (d) of this section are prohibited from underground injection at on-site injection facilities.

(i) Effective May 8, 1992, the wastes specified in 40 CFR 261.32 and 261.33 as EPA Hazardous Waste Numbers K011 (wastewaters), K013 (wastewaters), and K014 are prohibited from underground injection.

(j) The requirements of paragraphs (a) through (i) of this section do not apply:

4. Section 148.15 is amended by redesignating paragraphs (d) and (e) as paragraphs (e) and (g); by revising the introductory text of newly redesignated paragraph (g); and by adding new paragraphs (d) and (f) to read as follows:

§ 148.15 Waste specific prohibitions—second third wastes.

(d) Effective August 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Number K025 (wastewaters), K029 (wastewaters), K041, K042, K095 (wastewaters), K096 (wastewaters), K097, K098, and K105; and the wastes specified in 40 CFR part 261.33 as P002, P003, P007, P008, P014, P026, P027, P049, P054, P057, P060, P066, P067, P072, P107, P112, P113, P114, U002, U003, U005, U008, U011, U014, U015, U020, U021, U023, U025, U026, U032, U035, U047, U049, U057, U059, U060, U062, U070, U073, U080, U083, U092, U093, U094, U095, U097, U098, U099, U101, U106, U109, U110, U111, U114, U116, U119, U127, U128, U131, U135, U138, U140, U142, U143, U144, U146, U147, U149, U150, U161, U162, U163, U164, U165, U168, U169, U170, U172, U173, U174, U176, U178, U179, U189,

U193, U196, U203, U205, U206, U208, U213, U214, U215, U216, U217, U218, U239, and U244 are prohibited from underground injection at off-site injection facilities.

(f) Effective November 8, 1990, the wastes specified in paragraph (d) of this section are prohibited from underground injection at on-site injection facilities.

(g) The requirements of paragraphs (a) through (f) of this section do not apply:

5. Section 148.16 is amended by redesignating paragraph (c) as paragraph (g); by revising the introductory text of newly redesignated paragraph (g); and by adding new paragraphs (c), (d), (e), and (f) to read as follows:

§ 148.16 Waste specific prohibitions—third third wastes.

(c) Effective August 8, 1990, the wastes identified in 40 CFR 261.31 as EPA Hazardous Waste Number F029 (multi-source leachate); the wastes specified in 40 CFR 261.32 EPA Hazardous Waste Numbers K002, K003, K005 (wastewaters), K006, K007 (wastewaters), K023, K026, K032, K033, K034, K093, K094 and K100 (wastewaters); the wastes specified in 40 CFR 261.33 as P006, P009, P017, P022, P023, P024, P028, P031, P033, P034, P038, P042, P045, P046, P047, P051, P056, P064, P065, P073, P075, P076, P077, P078, P088, P093, P095, P096, P099, P101, P103, P109, P116, P118, P119, U001, U004, U006, U017, U024, U027, U030, U033, U038, U034, U038, U039, U042, U045, U048, U052, U055, U056, U068, U071, U072, U075, U076, U079, U081, U082, U084, U085, U087, U088, U090, U091, U096, U112, U113, U117, U118, U120, U121, U123, U125, U126, U132, U136, U139, U141, U145, U148, U152, U153, U156, U160, U168, U167, U181, U182, U183, U184, U186, U187, U191, U194, U197, U201, U202, U204, U207, U222, U225, U234, U236, U240, U243, and U247; and the wastes identified in 40 CFR 261.21, 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D001, D004, D005, D006, D008, D009 (wastewaters), D010, D011, D012, D013, D014, D015, D016, D017 are prohibited from underground injection at off-site injection facilities.

(d) Effective August 8, 1990, mixed radioactive/hazardous waste in 40 CFR 268.10, 268.11, and 268.12, that are mixed radioactive and hazardous wastes, are prohibited from underground injection.

(e) Effective November 8, 1990, the wastes specified in paragraph (c) of this section are prohibited from underground

injection at on-site injection facilities. These effective dates do not apply to the wastes listed in 40 CFR 148.12(b) which are prohibited from underground injection on August 8, 1990.

(f) Effective May 8, 1992, the wastes identified in 40 CFR 261.22, 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D002 (wastewaters and nonwastewaters), D003 (wastewaters and nonwastewaters), D007 (wastewaters and nonwastewaters), and D009 (nonwastewaters) are prohibited from underground injection. These effective dates do not apply to the wastes listed in 40 CFR 148.12(b) which are prohibited from underground injection on August 8, 1990.

(g) The requirements of paragraphs (a) through (f) of this section do not apply:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

Subpart C—Characteristics of Hazardous Waste

2. In § 261.20, paragraph (b) is revised to read as follows:

§ 261.20 General.

(b) A hazardous waste which is identified by a characteristic in this subpart is assigned every EPA Hazardous Waste Number that is applicable as set forth in this subpart. This number must be in complying with the notification requirements of section 3010 of the Act and all applicable recordkeeping and reporting requirements under parts 262 through 265, 268, and 270 of this chapter.

3. In § 261.21, paragraph (b) is revised to read as follows:

§ 261.21 Characteristic of Ignitability.

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

4. In § 261.22, paragraph (b) is revised to read as follows:

§ 261.22 Characteristic of corrosivity.

(b) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

5. In § 261.23, paragraph (b) is revised to read as follows:

§ 261.23 Characteristic of reactivity.

(b) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

6. In § 261.24, paragraph (b) introductory text is revised to read as follows:

§ 261.24 Toxicity characteristic.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

Subpart D—Lists of Hazardous Wastes

7. Section 261.31 is amended by adding the following waste code in alphanumeric order.

§ 261.31 Hazardous wastes from non-specific sources.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
F039.....	Leachate resulting from the treatment, storage, or disposal of wastes classified by more than one waste code under Subpart D, or from a mixture of wastes classified under Subparts C and D of this part. (Leachate resulting from the management of one or more of the following EPA Hazardous Wastes and no other hazardous wastes retains its hazardous waste code(s): F020, F021, F022, F023, F026, F027, and/or F028.).	(T).

8. Paragraph (c) of § 261.33 is revised to read as follows: (the comment paragraph remains):

§ 261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.

(c) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section, unless the container is empty as defined in § 261.7(b) of this chapter.

9. Appendix VII is amended by adding the following waste stream in alphanumeric order to read as follows:

Appendix VII—Basis for Listing Hazardous Waste

EPA hazardous waste No.	Hazardous constituents for which listed
F039.....	All constituents for which treatment standards are specified for multi-source leachate (wastewaters and nonwastewaters) under 40 CFR 268.43(a), Table CCW.

PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

1. The authority citation for part 262 continues to read as follows:

Authority: 42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937.

Subpart A—General

2. Paragraph (c) introductory text of § 262.11 is revised to read as follows:

§ 262.11 Hazardous waste determination.

(c) For purposes of compliance with 40 CFR part 268, or if the waste is not listed in subpart D of this part, the generator must then determine whether the waste is identified in subpart C of 40 CFR part 261 by either:

Subpart C—Pre-Transport Requirements

3. Paragraph (a)(4) of § 262.34 is revised to read as follows:

§ 262.34 Accumulation time.

(a) * * *

(4) The generator complies with the requirements for owners or operators in subparts C and D in 40 CFR part 265, with § 265.16, and with 40 CFR 268.7(a)(4).

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

Subpart B—General Facility Standards

2. In § 264.13, the comment following Paragraph (a)(2) is revised to read as follows:

§ 264.13 General waste analysis.

- (a) * * *
- (2) * * *

[Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part of the information required by paragraph (a)(1) of this section, except as otherwise specified in 40 CFR 268.7 (b) and (c). If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this section.]

* * *

Subpart K—Surface Impoundments

3. The introductory text of § 264.229 is revised to read as follows:

§ 264.229 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste and impoundment satisfy all applicable requirements of 40 CFR part 268, and:

* * *

Subpart L—Waste Piles

4. The introductory text of § 264.256 is revised to read as follows:

§ 264.256 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a waste pile unless the waste and waste pile satisfy all applicable requirements of 40 CFR part 268, and:

* * *

Subpart M—Land Treatment

5. The introductory text of § 264.281 is revised to read as follows:

§ 264.281 Special requirements for ignitable or reactive waste.

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste and the treatment zone meet all applicable requirements of 40 CFR part 268, and:

* * *

Subpart N—Landfills

6. In § 264.312, paragraphs (a) introductory text and (b) are revised to read as follows:

§ 264.312 Special requirements for ignitable or reactive waste.

(a) Except as provided in paragraph (b) of this section, and in § 264.316, ignitable or reactive waste must not be placed in a landfill, unless the waste and landfill meet all applicable requirements of part 268, and:

* * *

(b) Except for prohibited wastes which remain subject to treatment standards in subpart D of part 268, ignitable wastes in containers may be landfilled without meeting the requirements of paragraph (a) of this section, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

7. In § 264.316, paragraph (f) is added to read as follows:

§ 264.316 Disposal of small containers of hazardous waste in overpacked drums (lab packs).

(f) Such disposal is in compliance with the requirements of Part 268. Persons who incinerate lab packs according to the requirements in 40 CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in paragraph (b) of this section.

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

Subpart A—General

2. Section 265.1(e) is revised to read as follows:

§ 265.1 Purpose, scope, and applicability.

(e) The requirements of this part apply to owners or operators of all facilities which treat, store or dispose of hazardous waste referred to in 40 CFR part 268, and the 40 CFR part 268 standards are considered material conditions or requirements of the part 265 interim status standards.

Subpart B—General Facility Standards

3. The comment at the end of paragraph (a) of § 265.13 is revised to read as follows:

§ 265.13 General waste analysis.

- (a) * * *
- (2) * * *

Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part of the information required by paragraph (a)(1) of this section, except as otherwise specified in 40 CFR 268.7 (b) and (c). If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this section.]

* * *

Subpart K—Surface Impoundments

4. The introductory text of § 265.229 is revised to read as follows:

§ 265.229 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste and impoundment satisfy all applicable requirements of 40 CFR part 268, and:

* * *

Subpart L—Waste Piles

5. Paragraph (a) introductory text of § 265.256 is revised to read as follows:

§ 265.256 Special requirements for ignitable or reactive waste.

(a) Ignitable or reactive waste must not be placed in a pile unless the waste and pile satisfy all applicable requirements of 40 CFR part 268, and:

* * *

Subpart M—Land Treatment

6. The introductory text of § 265.281 is revised to read as follows:

§ 265.281 Special requirements for ignitable or reactive waste.

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste and treatment zone meet all applicable requirements of 40 CFR part 268, and:

Subpart N—Landfills

7. Paragraphs (a) introductory text and (b) of § 265.312 are revised to read as follows:

§ 265.312 Special requirements for ignitable or reactive waste.

(a) Except as provided in paragraph (b) of this section, and in § 265.316, ignitable or reactive waste must not be placed in a landfill, unless the waste and landfill meets all applicable requirements of 40 CFR part 268, and:

(b) Except for prohibited wastes which remain subject to treatment standards in subpart D of part 268, ignitable wastes in containers may be landfilled without meeting the requirements of paragraph (a) of this section, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

8. In § 265.316, paragraph (f) is added to read as follows:

§ 265.316 Disposal of small containers of hazardous waste in overpacked drums (lab packs).

(f) Such disposal is in compliance with the requirements of 40 CFR part 268. Persons who incinerate lab packs according to the requirements in 40 CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in paragraph (b) of this section.

PART 268—LAND DISPOSAL RESTRICTIONS

1. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

Subpart A—General

2. In § 268.1, paragraph (c)(3) is added, and paragraph (c)(5) is removed, to read as follows:

§ 268.1 Purpose, scope, and applicability.

(c) * * *

(3) Wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal under this part, are not prohibited from land disposal if the wastes:

- (i) Are disposed into a nonhazardous or hazardous injection well as defined in 40 CFR 144.6(a); and
- (ii) Do not exhibit any prohibited characteristic of hazardous waste at the point of injection.

3. Section 268.2 is revised to read as follows:

§ 268.2 Definitions applicable in this part.

When used in this part the following terms have the meanings given below:

(a) *Halogenated organic compounds* or *HOCs* means those compounds having a carbon-halogen bond which are listed under appendix III to this part.

(b) *Hazardous constituent or constituents* means those constituents listed in appendix VIII to part 261 of this chapter.

(c) *Land disposal* means placement in or on the land and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes.

(d) *Nonwastewaters* are wastes that do not meet the criteria for wastewaters in paragraph (g)(6) of this section.

(e) *Polychlorinated biphenyls* or *PCBs* are halogenated organic compounds defined in accordance with 40 CFR 761.3.

(f) *Wastewaters* are wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS), with the following exceptions:

(1) *F001, F002, F003, F004, F005 solvent-water mixtures* that contain less than 1% by weight TOC or less than 1% by weight total F001, F002, F003, F004, F005 solvent constituents listed in § 268.41, Table CCWE.

(2) *K011, K013, K014 wastewaters* (as generated) that contain less than 5% by weight TOC and less than 1% by weight TSS.

(3) *K103 and K104 wastewaters* contain less than 4% by weight TOC and less than 1% by weight TSS.

(g) *Inorganic Solid Debris* are nonfriable inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require cutting, or crushing and grinding in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials:

- (1) Metal slags (either dross or scoria).
- (2) Glassified slag.
- (3) Glass.
- (4) Concrete (excluding cementitious or pozzolanic stabilized hazardous wastes).
- (5) Masonry and refractory bricks.
- (6) Metal cans, containers, drums, or tanks.
- (7) Metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment.
- (8) Scrap metal as defined in 40 CFR 261.1(c)(6).

4. Section 268.3 is revised to read as follows:

§ 268.3 Dilution prohibited as a substitute for treatment.

(a) Except as provided in paragraph (b) of this section, no generator, transporter, handler, or owner or operator of a treatment, storage, or disposal facility shall in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for adequate treatment to achieve compliance with subpart D of this part, to circumvent the effective date of a prohibition in subpart C of this part, to otherwise avoid a prohibition in subpart C of this part, or to circumvent a land disposal prohibition imposed by RCRA section 3004.

(b) Dilution of wastes that are hazardous only because they exhibit a characteristic in a treatment system which treats wastes subsequently discharged to a water of the United States pursuant to a permit issued under section 402 of the Clean Water Act (CWA) or which treats wastes for purposes of pretreatment requirements under section 307 of the CWA is not impermissible dilution for purposes of this section unless a method has been specified as the treatment standard in § 268.42.

5. In § 268.7, paragraphs (a)(1)(ii), (a)(2)(i)(B), (a)(3)(ii), and (a)(4) are revised; new paragraphs (a)(7), (a)(8), and (a)(9) are added; paragraph (b)(4)(ii) is revised; the certification in paragraph (b)(5)(i) is revised; new paragraph (b)(5)(iii) is added; paragraph (b)(7) is removed and paragraph (b)(8) is redesignated as paragraph (b)(7); the

introductory text to paragraph (c) is revised; and paragraphs (c)(3) and (c)(4) are removed, to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) * * *

(1) * * *

(ii) The corresponding treatment standards for wastes F001-F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (e.g., INCIN, WETOX) also must be listed on the notification.

(2) * * *

(i) * * *

(B) The corresponding treatment standards for wastes F001-F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (e.g., INCIN, WETOX) also must be listed on the notification.

(3) * * *

(ii) The corresponding treatment standards for wastes F001-F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (e.g., INCIN, WETOX) also must be listed on the notification.

(4) If a generator is managing a prohibited waste in tanks or containers regulated under 40 CFR 262.34, and is treating such waste in such tanks or containers to meet applicable treatment

standards under Subpart D of this part, the generator must develop and follow a written waste analysis plan which describes the procedures the generator will carry out to comply with the treatment standards. The plan must be kept on-site in the generator's records, and the following requirements must be met:

(i) The waste analysis plan must be based on a detailed chemical and physical analysis of a representative sample of the prohibited waste(s) being treated, and contain all information necessary to treat the waste(s) in accordance with the requirements of this Part, including the selected testing frequency.

(ii) Such plan must be filed with the EPA Regional Administrator (or his designated representative) or State authorized to implement Part 268 requirements a minimum of 30 days prior to the treatment activity, with delivery verified.

(iii) Wastes shipped off-site pursuant to this paragraph must comply with the notification requirements of § 268.7(a)(2).

(7) If a generator is managing a lab pack that contains wastes identified in Appendix IV of this part and wishes to use the alternative treatment standard under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator must also comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification, which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(8) If a generator is managing a lab pack that contains organic wastes specified in Appendix V of this Part and wishes to use the alternate treatment standards under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator also must comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar

with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to Part 268 or solid wastes not subject to regulation under 40 CFR Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(9) Small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e) must comply with the applicable notification and certification requirements of paragraph (a) of this section for the initial shipment of the waste subject to the agreement. Such generators must retain on-site a copy of the notification and certification, together with the tolling agreement, for at least three years after termination or expiration of the agreement. The three-year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

(b) * * *

(4) * * *

(ii) The corresponding treatment standards for wastes F001-F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (e.g., INCIN, WETOX) also must be listed on the notification.

(5) * * *

(i) * * *

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR part 268, subpart D, and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

(iii) For wastes with treatment standards expressed as concentrations in the waste pursuant to § 268.43, if compliance with the treatment standards in subpart D of this part is

based in part or in whole on the analytical detection limit alternative specified in § 268.43(c), the certification also must state the following:

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR part 264, subpart O) or 40 CFR part 265, subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

(c) Except where the owner or operator is disposing of any waste that is a recyclable material used in a manner constituting disposal pursuant to 40 CFR 268.20(b), the owner or operator of any land disposal facility disposing any waste subject to restrictions under this part must:

6. Paragraph (a) of § 268.8 is revised to read as follows:

§ 268.8 Landfill and surface impoundment disposal restrictions.

(a) Prior to May 8, 1990, wastes which are otherwise prohibited from land disposal under § 268.33(f) of this part may be disposed in a landfill or surface impoundment which is in compliance with the requirements of § 268.5(h)(2) provided that the requirements of this section are met. As of May 8, 1990, this section is no longer in effect.

7. Section 268.9 is added to subpart A to read as follows:

§ 268.9 Special rules regarding wastes that exhibit a characteristic.

(a) The initial generator of a solid waste must determine each waste code applicable to the waste in order to determine the applicable treatment standards under subpart D of this part. For purposes of part 268, the waste will carry a waste code designation for any applicable listing under 40 CFR part 261, subpart D, and also one or more waste code designations under 40 CFR part 261, subpart C where the waste exhibits the relevant characteristic.

(b) Where a prohibited waste is both listed under 40 CFR part 261, subpart D and exhibits a characteristic under 40

CFR part 261, subpart C, the treatment standard for the waste code listed in 40 CFR part 261, subpart D will operate in lieu of the standard for the waste code under 40 CFR part 261, subpart C, provided that the treatment standard for the listed waste includes a treatment standard for the constituent that causes the waste to exhibit the characteristic. Otherwise, the waste must meet the treatment standards for all applicable listed and characteristic waste codes.

(c) In addition to any applicable standards determined from the initial point of generation, no prohibited waste which exhibits a characteristic under 40 CFR part 261, subpart C may be land disposed unless the waste complies with the treatment standards under subpart D of this part.

(d) Wastes that exhibit a characteristic are also subject to § 268.7 requirements, except that once the waste is no longer hazardous, for each shipment of such wastes to a subtitle D facility the initial generator or the treatment facility need not send a § 268.7 notification to such facility. In such circumstances, a notification and certification must be sent to the appropriate EPA Regional Administrator (or his delegated representative) or State authorized to implement part 268 requirements.

(1) The notification must include the following information:

(i) The name and address of the subtitle D facility receiving the waste shipment;

(ii) A description of the waste as initially generated, including the applicable EPA Hazardous Waste Number(s) and treatability group(s);

(iii) The treatment standards applicable to the waste at the initial point of generation.

(2) The certification must be signed by an authorized representative and must state the language found in § 268.7(b)(5)(i).

Subpart C—Prohibitions on Land Disposal

8. Section 268.35 is added to read as follows:

§ 268.35 Waste specific prohibitions—Third Third wastes.

(a) Effective August 8, 1990, the following wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Numbers F006 (wastewaters), F019, and F039 (wastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K002; K003; K004 (wastewaters); K005 (wastewaters); K006; K008 (wastewaters); K011 (wastewaters); K013 (wastewaters), K014

(wastewaters); K017; K021 (wastewaters); K022 (wastewaters); K025 (wastewaters); K026; K029 (wastewaters); K031 (wastewaters); K032; K033; K034; K035; K041; K042; K046 (wastewaters); K048 (wastewaters); K049 (wastewaters); K050 (wastewaters); K051 (wastewaters); K052 (wastewaters); K060 (wastewaters); K061 (wastewaters); K069 (wastewaters); K073; K083 (wastewaters); K084 (wastewaters); K085; K095 (wastewaters); K096 (wastewaters); K097; K098; K100 (wastewaters); K101 (wastewaters); K102 (wastewaters); K105; and K106 (wastewaters); the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Numbers P001; P002; P003; P004; P005; P006; P007; P008; P009; P010 (wastewaters); P011 (wastewaters); P012 (wastewaters); P014; P015; P016; P017; P018 (wastewaters); P020; P022; P023; P024; P027; P028; P031; P033; P034; P036 (wastewaters); P037; P038 (wastewaters); P042; P045; P046; P047; P048; P049; P050; P051; P054; P056; P057; P058; P059; P060; P064; P065 (wastewaters); P066; P067; P068; P069; P070; P072; P073; P075; P076; P077; P078; P081; P082; P084; P088; P092 (wastewaters); P093; P095; P096; P101; P102; P103; P105; P108; P109; P110; P112; P113; P114; P115; P116; P118; P119; P120; P122; and P123; and the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Numbers U001; U002; U003; U004; U005; U006; U007; U008; U009; U010; U011; U012; U014; U015; U016; U017; U018; U019; U020; U021; U022; U023; U024; U025; U026; U027; U029; U030; U031; U032; U033; U034; U035; U036; U037; U038; U039; U041; U042; U043; U044; U045; U046; U047; U048; U049; U050; U051; U052; U053; U055; U056; U057; U059; U060; U061; U062; U063; U064; U066; U067; U068; U070; U071; U072; U073; U074; U075; U076; U077; U078; U079; U080; U081; U082; U083; U084; U085; U086; U089; U090; U091; U092; U093; U094; U095; U096; U097; U098; U099; U101; U103; U105; U106; U108; U109; U110; U111; U112; U113; U114; U115; U116; U117; U118; U119; U120 (wastewaters); U121; U122; U123; U124; U125; U126; U127; U128; U129; U130; U131; U132; U133; U134; U135; U136 (wastewaters); U137; U138; U140; U141; U142; U143; U144; U145; U146; U147; U148; U149; U150; U151 (wastewaters); U152; U153; U154; U155; U156; U157; U158; U159; U160; U161; U162; U163; U164; U165; U166; U167; U168; U169; U170; U171; U172; U173; U174; U176; U177; U178; U179; U180; U181; U182; U183; U184; U185; U186; U187; U188; U189; U191; U192; U193;

U194; U196; U197; U200; U201; U202; U203; U204; U205; U206; U207; U209; U209; U210; U211; U213; U214; U215; U216; U217; U218; U219; U220; U222; U225; U226; U227; U228; U234; U236; U237; U238; U239; U240; U243; U244; U246; U247; U248; U249; and the following wastes identified as hazardous based on a characteristic alone: D001; D002; D003; D004 (wastewaters); D005; D006; D007; D008 (except for lead materials stored before secondary smelting); D009 (wastewaters); D010; D011; D012; D013; D014; D015; D016; and D017 are prohibited from land disposal.

(b) Effective November 8, 1990, the following wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K048 (nonwastewaters), K049 (nonwastewaters), K050 (nonwastewaters), K051 (nonwastewaters), and K052 (nonwastewaters) are prohibited from land disposal.

(c) Effective May 8, 1992, the following waste specified in 40 CFR 261.31 as EPA Hazardous Waste Numbers F039 (nonwastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K031 (nonwastewaters); K084 (nonwastewaters); K101 (nonwastewaters); K102 (nonwastewaters); K108 (nonwastewaters); the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Numbers P010 (nonwastewaters); P011 (nonwastewaters); P012 (nonwastewaters); P036 (nonwastewaters); P038 (nonwastewaters); P065 (nonwastewaters); P087 (nonwastewaters); and P092 (nonwastewaters); the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Numbers U136 (nonwastewaters); and U151 (nonwastewaters); and the following wastes identified as hazardous based on a characteristic alone: D004 (nonwastewaters); D008 (lead materials stored before secondary smelting); and D009 (nonwastewaters); inorganic solids debris as defined in 40 CFR 268.2(a)(7) (which also applies to chromium refractory bricks carrying the EPA Hazardous Waste Numbers K048-K052); and RCRA hazardous wastes that contain naturally occurring radioactive materials are prohibited from land disposal.

(d) Effective May 8, 1992, hazardous wastes listed in 40 CFR 268.12 that are mixed radioactive/hazardous wastes are prohibited from land disposal.

(e) Effective May 8, 1992, the wastes specified in this section having a treatment standard in subpart D of this part based on incineration, mercury

retorting, or vitrification, and which are contaminated soil or debris, are prohibited from land disposal.

(f) Between May 8, 1990 and August 8, 1990, the wastes included in paragraph (a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(g) Between May 8, 1990 and November 8, 1990, wastes included in paragraph (b) of this section may be disposed of in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(h) Between May 8, 1990, and May 8, 1992, wastes included in paragraphs (c), (d), and (e) of this section may be disposed of in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(i) The requirements of paragraphs (a), (b), (c), (d), and (e) of this section do not apply if:

(1) The wastes meet the applicable standards specified in subpart D of this part;

(2) Persons have been granted an exemption from a prohibition pursuant to a petition under § 268.8, with respect to those wastes and units covered by the petition;

(3) The wastes meet the applicable alternate standards established pursuant to a petition granted under § 268.44;

(4) Persons have been granted an extension to the effective date of a prohibition pursuant to § 268.5, with respect to these wastes covered by the extension.

(j) To determine whether a hazardous waste listed in § 268.10, 268.11, and 268.12 exceeds the applicable treatment standards specified in §§ 268.41 and 268.43, the initial generator must test a representative sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentrations in the waste extract or the waste, or the generator may use knowledge of the waste. If the waste contains constituents in excess of the applicable subpart D levels, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.

9. Section 263.40 is amended by revising paragraphs (a) and (c) to read as follows:

§ 268.40 Applicability of treatment standards.

(a) A restricted waste identified in § 268.41 may be land disposed only if an extract of the waste or of the treatment

residue of the waste developed using the test method in appendix I of this part does not exceed the value shown in Table CCWE of § 268.41 for any hazardous constituent listed in Table CCWE for that waste, with the following exceptions: D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136. Wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136 may be land disposed only if an extract of the waste or of the treatment residue of the waste developed using either the test method in Appendix I of this part or the test method in appendix II of part 261 does not exceed the value shown in Table CCW of § 268.41 for any hazardous constituent listed in Table CCWE for that waste.

(c) Except as otherwise specified in § 268.43(c), a restricted waste identified in § 268.43 may be land disposed only if the constituent concentrations in the waste or treatment residue of the waste do not exceed the value shown in Table CCW of § 268.43 for any hazardous constituents listed in Table CCW for that waste.

10. Section 263.41 is amended by revising paragraph (a) and Table CCWE—Constituent Concentrations in Waste Extract, to read as follows:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) Table CCWE identifies the restricted wastes and the concentrations of their associated constituents which may not be exceeded by the extract of a waste or waste treatment residual developed using the test method in Appendix I of this part for the allowable land disposal of such wastes, with the exception of wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136. Table CCWE identifies the restricted wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136 and the concentrations of their associated constituents which may not be exceeded by the extract of a waste or waste treatment residual developed using the test method in Appendix I of this part or appendix II of 40 CFR part 261 for the allowable land disposal of such wastes. (Appendix II of this part provides Agency guidance on treatment methods that have been shown to achieve the Table CCWE levels for the respective wastes. Appendix II of this part is not a regulatory requirement but is provided to assist generators and owners/operators in their selection of appropriate treatment methods.) Compliance with these concentrations is required based upon grab samples.

TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
D004.....	Table CCW in 268.43.....	Arsenic.....	7440-38-2	NA	5.0#
D005.....	Table CCW in 268.43.....	Barium.....	7440-39-3	NA	100
D005.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	1.0
D007.....	Table CCW in 268.43.....	Chromium (Total).....	7440-47-32	NA	5.0
D008.....	Table CCW in 268.43.....	Lead.....	7439-92-1	NA	5.0
D009 (Low Mercury Subcategory—less than 260 mg/kg Mercury).	Table 2 in 268.42 and Table CCW in 268.43.....	Mercury.....	7439-97-6	NA	0.20
D010.....	Table CCW in 268.43.....	Selenium.....	7782-49-2	NA	5.7
D011.....	Table CCW in 268.43.....	Silver.....	7440-22-4	NA	5.0
F001-F005 spent solvents.....	Table 2 in 268.42 and Table CCW in 268.43.....	Acetone.....	67-64-1	0.05	0.59
		n-Butyl alcohol.....	71-36-3	5.0	5.0
		Carbon disulfide.....	75-15-0	1.05	4.81
		Carbon tetrachloride.....	56-23-5	0.05	0.96
		Chlorobenzene.....	108-90-7	0.15	0.05
		Cresols (and cresylic acid).....		2.82	0.75
		Cyclohexanone.....	108-94-1	0.125	0.75
		1,2-Dichlorobenzene.....	95-50-1	0.65	0.125
		Ethyl acetate.....	141-78-6	0.05	0.75
		Ethylbenzene.....	100-41-4	0.05	0.053
		Ethyl ether.....	60-29-7	0.05	0.75
		Isobutanol.....	78-83-1	5.0	5.0
		Methanol.....	67-56-1	0.25	0.75
		Methylene chloride.....	75-9-2	0.20	0.96
		Methyl ethyl ketone.....	78-93-3	0.05	0.75
		Methyl isobutyl ketone.....	108-10-1	0.05	0.33
		Nitrobenzene.....	98-95-3	0.66	0.125
		Pyridine.....	110-86-1	1.12	0.33
		Tetrachloroethylene.....	127-18-4	0.079	0.05
		Toluene.....	108-88-3	1.12	0.33
		1,1,1-Trichloroethane.....	71-55-6	1.05	0.41
		1,1,2-Trichloro-1,2,2-Tetrifluoroethane.....	76-13-1	1.05	0.96
		Trichloroethylene.....	79-01-6	0.062	0.091
		Trichlorofluoromethane.....	75-69-4	0.05	0.96
		Xylene.....		0.05	0.15
F006.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F007.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F008.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F009.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F011.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F012.....	Table CCW in 268.43.....	Cadmium.....	7440-43-9	NA	0.066
		Chromium (Total).....	7440-47-32	NA	5.2
		Lead.....	7439-92-1	NA	0.51
		Nickel.....	7440-02-0	NA	0.32
		Silver.....	7440-22-4	NA	0.072
F019.....	Table CCW in 268.43.....	Chromium (Total).....	7440-47-32	NA	5.2
F020-F023 and F026-F028 dioxin containing wastes.*		HxCDD-All Hexachlorodibenzo-p-dioxins.....		<1 ppb	<1 ppb
		HxCDF-All Hexachlorodibenzofurans.....		<1 ppb	<1 ppb
		PeCDD-All Pentachlorodibenzo-p-dioxins.....		<1 ppb	<1 ppb
		PeCDF-All Pentachlorodibenzofurans.....		<1 ppb	<1 ppb
		TCDD-All Tetrachlorodibenzo-p-dioxins.....		<1 ppb	<1 ppb
		TCDF-All Tetrachlorodibenzofurans.....		<1 ppb	<1 ppb
		2,4,5-Trichlorophenol.....	95-95-4	<0.05 ppm	<0.05 ppm
		2,4,6-Trichlorophenol.....	88-08-2	<0.05 ppm	<0.05 ppm

TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewater concentration (mg/l)	Non-wastewater concentration (mg/l)
F024	Table CCW in 268.43	2,3,4,6-Tetrachlorophenol	58-90-2	<0.05 ppm	<0.05 ppm
		Pentachlorophenol	87-66-5	<0.01 ppm	<0.01 ppm
		Chromium (Total)	7440-47-32	NA	0.073
		Lead	7439-92-1	NA	0.021
F039	Table CCW in 268.43	Nickel	7440-02-0	NA	0.089
		Antimony	7440-36-0	NA	0.23
		Arsenic	7440-38-2	NA	5.0
		Barium	7440-39-3	NA	52
		Cadmium	7440-43-9	NA	0.068
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Mercury	7439-97-6	NA	0.025
		Nickel	7440-02-0	NA	0.22
		Selenium	7782-49-2	NA	5.7
		Silver	7440-22-4	NA	0.072
		Lead	7439-92-1	NA	0.51
		Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K001	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
K002	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K003	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
K004	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K005	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
K006 (anhydrous)	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K006 (hydrated)	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
K007	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K008	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
K015	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K021	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
K022	Table CCW in 268.43	Lead	7439-92-1	NA	0.2
K028	Table CCW in 268.43	Antimony	7440-36-0	NA	0.23#
		Chromium (Total)	7440-47-32	NA	5.2
		Nickel	7440-02-0	NA	0.32
		Chromium (Total)	7440-47-32	NA	0.073
K031	Table CCW in 268.43	Lead	7439-92-1	NA	0.021
K046	Table CCW in 268.43	Nickel	7440-02-0	NA	0.088
K048	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K049	Table CCW in 268.43	Lead	7439-92-1	NA	0.18
K050	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
K051	Table CCW in 268.43	Nickel	7440-02-0	NA	0.20
K052	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
K061 (Low Zinc Subcategory—less than 15% Total Zinc).	Table CCW in 268.43	Nickel	7440-02-0	NA	0.20
K062	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.14
K063 (Calcium Sulfate Subcategory)	Table 2 in 268.42 and Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.24
		Nickel	7440-02-0	NA	0.32
		Chromium (Total)	7440-47-32	NA	0.094
K071 (Low Mercury Subcategory—less than 16 mg/kg Mercury).	Table CCW in 268.43	Lead	7439-92-1	NA	0.37
K083	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K084	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.068
K086	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
K087	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K100	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K101	Table CCW in 268.43	Nickel	7440-02-0	NA	0.20
K102	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.025
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43	Mercury	7439-97-6	NA	0.025
K108 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43	Mercury	7439-97-6	NA	0.025

TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
K115	Table CCW	Nickel	7440-02-0	NA	0.32

#—These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.

*—These waste codes are not subcategorized into wastewaters and nonwastewaters.

NA—Not Applicable.

TABLE CCWE.—CONSTITUENT CONCENTRATIONS FOR WASTE EXTRACTS

Waste code	See also	Commercial chemical name	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
P010	Table CCW in 268.43	Arsenic acid	Arsenic	7440-38-2	NA	5.6
P011	Table CCW in 268.43	Arsenic pentoxide	Arsenic	7440-38-2	NA	5.6
P012	Table CCW in 268.43	Arsenic trioxide	Arsenic	7440-38-2	NA	5.6
P013	Table CCW in 268.43	Barium cyanide	Barium	7440-39-3	NA	52
P036	Table CCW in 268.43	Dichlorophenylarsine	Arsenic	7440-38-2	NA	5.6
P038	Table CCW in 268.43	Diethylarsine	Arsenic	7440-38-2	NA	5.6
P065 (Low Mercury Subcategory—less than 260 mg/kg Mercury-residues from RMERC)	Table 2 in 268.42 and Table CCW in 268.43	Mercury fulminate	Mercury	7439-97-6	NA	0.20
P065 (Low Mercury Subcategory—less than 260 mg/kg Mercury-incinerator residues (and are not residues from RMERC))	Table 2 in 268.42 and Table CCW in 268.43	Mercury fulminate	Mercury	7439-97-6	NA	0.025
P073	Table CCW in 268.43	Nickel carbonyl	Nickel	7440-02-0	NA	0.32
P074	Table CCW in 268.43	Nickel cyanide	Nickel	7440-02-0	NA	0.32
P092 (Low Mercury Subcategory—less than 260 mg/kg Mercury residues from RMERC)	Table 2 in 268.42 and Table CCW in 268.43	Phenyl mercury acetate	Mercury	7439-97-6	NA	0.20
P092 (Low Mercury Subcategory—less than 260 mg/kg Mercury-incinerator residues (and are not residues from RMERC))	Table 2 in 268.42 and Table CCW in 268.43	Phenyl mercury acetate	Mercury	7439-97-6	NA	0.025
P099	Table CCW in 268.43	Potassium silver cyanide	Silver	7440-22-4	NA	0.072
P103	Table CCW in 268.43	Selenourea	Selenium	7782-49-2	NA	5.7
P104	Table CCW in 268.43	Silver cyanide	Silver	7440-22-4	NA	0.072
P110	Table CCW in 268.43	Tetraethyl lead	Lead	7439-92-1	NA	0.51
P114	Table CCW in 268.43	Thallium selenite	Selenium	7782-49-2	NA	5.7
U032	Table CCW in 268.43	Calcium chromate	Chromium (Total)	7440-47-32	NA	0.094
U051	Table CCW in 268.43	Creosote	Lead	7439-92-1	NA	0.51
U136	Table CCW in 268.43	Cacodylic acid	Arsenic	7440-38-2	NA	5.6
U144	Table CCW in 268.43	Lead acetate	Lead	7439-92-1	NA	0.51
U145	Table CCW in 268.43	Lead phosphate	Lead	7439-92-1	NA	0.51
U146	Table CCW in 268.43	Lead subacetate	Lead	7439-92-1	NA	0.51
U151 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC)	Table CCW in 268.43 and in Table 2 in 268.42	Mercury	Mercury	7439-97-6	NA	0.20
U151 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC)	Table CCW in 268.43 and Table 2 in 268.42	Mercury	Mercury	7439-97-6	NA	0.025
U204	Table CCW in 268.43	Selenium dioxide	Selenium	7782-49-2	NA	5.7
U205	Table CCW in 268.43	Selenium sulfide	Selenium	7782-49-2	NA	5.7

—These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.

*—These waste codes are not subcategorized into wastewaters and nonwastewaters.

NA—Not Applicable.

Section 268.42 is amended by revising paragraphs (a) introductory text and (a)(2), by removing paragraphs (a)(3) and (a)(4), by revising paragraph (b), and by adding paragraphs (c), (d), and (e) to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) The following wastes in paragraphs (a)(1) and (a)(2) of this section and in Table 2 and Table 3 of this section must be treated using the technology or technologies specified in

paragraphs (a)(1) and (a)(2) and Table 1 of this section.

(2) Nonliquid hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg and liquid HOC-containing

wastes that are prohibited under § 268.32(e)(1) of this part must be incinerated in accordance with the requirements of 40 CFR part 264, subpart

O or 40 CFR part 265, subpart O. These treatment standards do not apply where the waste is subject to a part 268, subpart C treatment standard for

specific HOC (such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a)).

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS

Technology code	Description of technology-based standard
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)—venting can be accomplished through physical release utilizing valves/piping; physical penetration of the container; and/or penetration through delamination.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-metallic inorganics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CAREN	Carbon adsorption (granulated or powdered) of non-metallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for the adsorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations of reagents: (1) Hypochlorite (e.g., bleach); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permanganates; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically includes what is commonly referred to as alkaline chlorination.
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combinations of reagents: (1) Sulfur dioxide; (2) sodium, potassium, or alkali salts of sulfites, disulfites, metabisulfites, and polyethylene glycols (e.g., NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.
IMERC:	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O.
LLEX	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organics (e.g. resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.
NEUTR	Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.
NLDBR	No land disposal based on recycling.
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfides, sulfates, chlorides, fluorides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) Lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium); (2) caustic (i.e., sodium and/or potassium hydroxides); (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional flocculating, coagulation, or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; reworking for direct reuse of resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) Distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequently condensing the volatilized mercury for recovery. The retorting or roasting unit (or facility) must be subject to one or more of the following: (a) A National Emissions Standard for Hazardous Air Pollutants (NESHAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of Section 302 of the Clean Air Act) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystallization; (6) ultrafiltration; and/or (6) simple precipitation (i.e., crystallization)—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
ROORG	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals); Note: This does not preclude the use of other physical phase separation techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHPA	Thermal recovery of metals or inorganics from nonwastewaters in units defined in 40 CFR 260.10, paragraphs (1), (6), (7), (11), and (12), under the definition of "industrial furnaces".

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS—Continued

Technology code	Description of technology-based standard
RZINC	Resmelting in for the purpose of recovery of zinc high temperature metal recovery units.
STABL	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)—this does not preclude the addition of reagents (e.g., iron salts, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extracted wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

NOTE 1: When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in § 268.42, Table 2 by indicating the five letter technology code that must be applied first, then the designation "fb." (an abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

NOTE 2: When more than one technology (or treatment train) are specified as *alternative* treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "OR". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
D001		Ignitable Liquids based on 261.21(a)(1)—Wastewaters.	NA	DEACT	NA
D001		Ignitable Liquids based on 261.21(a)(1)—Low TOC Ignitable Liquids Subcategory—Less than 10% total organic carbon.	NA	NA	DEACT.
D001		Ignitable Liquids based on 261.21(a)(1)—High TOC Ignitable Liquids Subcategory—Greater than or equal to 10% total organic carbon.	NA	NA	FSUBS; RORGS; or INCIN.
D001		Ignitable compressed gases based on 261.21(a)(3).	NA	NA	DEACT**.
D001		Ignitable reactives 261.21(a)(2).	NA	NA	DEACT.
D001		Oxidizers based on 261.21(a)(4).	NA	DEACT	DEACT.
D002		Acid subcategory based on 261.22(a)(1).	NA	DEACT	DEACT.
D002		Alkaline subcategory based on 261.22(a)(1).	NA	DEACT	DEACT.
D002		Other corrosives based on 261.22(a)(2).	NA	DEACT	DEACT.
D003		Reactive sulfides based on 261.23(a)(5).	NA	DEACT	DEACT.
D003		Explosives based on 261.23(a) (6), (7), and (8).	NA	DEACT	DEACT.
D003		Water reactives based on 261.23(a) (2), (3), and (4).	NA	NA	DEACT.
D003		Other reactives based on 261.23(a)(1).	NA	DEACT	DEACT.
D006		Cadmium containing batteries.	7440-43-9	NA	RTHRM.
D008		Lead acid batteries (Note: This standard only applies to lead acid batteries that are identified as RCRA hazardous wastes and that are not excluded elsewhere from regulation under the land disposal restrictions of 40 CFR 268 or exempted under other EPA regulations (see 40 CFR 268.60)).	7439-92-1	NA	RLEAD.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—contains mercury and organics (and are not incinerator residues)).	7439-97-6	NA	IMERC; or RMERC.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—inorganics (including incinerator residues and residues from RMERC)).	7439-97-6	NA	RMERC.
D012	Table CCW in 268.43.	Endrin.	72-20-8	BIODG; or INCIN	NA.
D013	Table CCW in 268.43.	Lindane.	58-89-9	CARBN; or INCIN	NA.
D014	Table CCW in 268.43.	Methoxychlor.	72-43-5	WETOX; or INCIN	NA.
D015	Table CCW in 268.43.	Toxaphene.	8001-35-1	BIODG; or INCIN	NA.
D016	Table CCW in 268.43.	2,4-D.	94-75-7	CHOXD; BIODG; or INCIN	NA.
D017	Table CCW in 268.43.	2,4,5-TP.	93-72-1	CHOXD; or INCIN	NA.
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Nitropropane.	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Ethoxyethanol.....	110-80-5	BIODG; or INCIN	INCIN.
F024	Table CCWE in 268.41 and Table CCW in 268.43.		NA	INCIN	INCIN.
K025		Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	NA	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN.
K026		Stripping still tails from the production of methyl ethyl pyridines.	NA	INCIN	INCIN.
K027		Centrifuge and distillation residues from toluene diisocyanate production.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K039		Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K044		Wastewater treatment sludges from the manufacturing and processing of explosives.	NA	DEACT	DEACT.
K045		Spent carbon from the treatment of wastewater containing explosives.	NA	DEACT	DEACT.
K047		Pink/red water from TNT operations.	NA	DEACT	DEACT.
K061	Table CCW in 268.43.	Emission control dust/sludge from the primary production of steel in electric furnaces (High Zinc Subcategory—greater than or equal to 15% total Zinc).	NA	NA	NLO2R.
K069	Table CCWE in 268.41 and Table CCW in 268.43.	Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory.	NA	NA	RLEAD.
K106	Table CCWE in 268.41 and Table CCW in 268.43.	Wastewater treatment sludge from the mercury cell process in chlorine production: (High Mercury Subcategory—greater than or equal to 260 mg/kg total mercury).	NA	NA	RMERC.
K113		Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K114		Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K115		Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K116		Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	NA	CARBN; or INCIN	FSUBS; or INCIN.
P001		Warfarin (>0.3%).	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P002		1-Acetyl-2-thiourea.....	591-08-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P003		Acrolein.....	107-02-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P005		Allyl alcohol.....	107-18-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P006		Aluminum phosphide.....	20859-73-8	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
P007		5-Aminoethyl 3-isoxazolid.	2763-96-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P008		4-Aminopyridine.....	504-24-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P009		Ammonium picrate.....	131-74-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P014		Thiophenol (Benzene thiol).....	108-98-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P015		Beryllium dust.....	7440-41-7	NA	RMETL; or RTHRM.
P016		Bis(chloromethyl)ether.....	542-88-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P017		Bromoacetone.....	598-31-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P018		Brucine.....	357-57-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P022	Table CCW in 268.43.	Carbon disulfide.....	75-15-0	NA	INCIN.
P023		Chloroacetaldehyde.....	107-20-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P026		1-(o-Chlorophenyl) thiourea.....	5344-82-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P027		3-Chloropropionitrile.....	542-76-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P028		Bensyl chloride.....	100-44-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
P031		Cyanogen	460-19-5	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
P033		Cyanogen chloride	506-77-4	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
P034		2-Cyclohexyl-4,6-dinitrophenol	131-89-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P040		0,0-Diethyl 0-pyrazinyl phosphorothioate	297-97-2	CARBN; or INCIN	FSUBS; or INCIN.
P041		Diethyl-p-nitrophenyl phosphate	311-45-5	CARBN; or INCIN	FSUBS; or INCIN.
P042		Epinephrine	51-43-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P043		Diisopropylfluorophosphate (DFP)	55-91-4	CARBN; or INCIN	FSUBS; or INCIN.
P044		Dimethoate	60-51-5	CARBN; or INCIN	FSUBS; or INCIN.
P045		Thiofanox	39196-18-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P046		alpha, alpha-Dimethylphenethylamine	122-09-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P047		4,6-Dinitro-o-cresol salts	534-52-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P049		2,4-Dithiobiuret	541-53-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P054		Aziridine	151-56-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P056	Table CCW in 268.43	Fluorine	7782-41-4	NA	ADGAS fb NEUTR.
P057		Fluoroacetamide	640-19-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P058		Fluoroacetic acid, sodium salt	62-74-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P062		Hexaethyltetraphosphate	757-58-4	CARBN; or INCIN	FSUBS; or INCIN.
P064		Isocyanic acid, ethyl ester	624-83-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P065	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury fulminate: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—either incinerator residues or residues from RMERC).	628-86-4	NA	RMERC.
P065	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury fulminate: (All nonwastewaters that are not incinerator residues from RMERC; regardless of Mercury Content).	628-86-4	NA	IMERC.
P066		Methomyl	16752-77-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P067		2-Methylaziridine	75-55-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P068		Methyl hydrazine	60-34-4	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P069		Methylfalconitrile	75-86-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P070		Aldicarb	116-06-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P072		1-Naphthyl-2-thiourea	86-88-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P075		Nicotine and salts	54-11-5*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P076		Nitric oxide	10102-43-9	ADGAS	ADGAS.
P078		Nitrogen dioxide	10102-44-0	ADGAS	ADGAS.
P081		Nitroglycerin	55-63-0	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P082	Table CCW in 268.43	N-Nitrosodimethylamine	62-75-9	NA	INCIN.
P084		N-Nitrosomethylvinylamine	4549-40-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P085		Octamethylpyrophosphoramide	152-16-9	CARBN; or INCIN	FSUBS; or INCIN.
P087		Osmium tetroxide	20816-12-0	NA	RMETL; or RTHRM.
P088		Endothall	145-73-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P092	Table CCWE in 268.41 and Table CCW in 268.43.	Phenyl mercury acetate: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—either incinerator residues or residues from RMERC).	62-38-4	NA	RMERC.
P092	Table CCWE in 268.41 and Table CCW in 268.43.	Phenyl mercury acetate: (All nonwastewaters that are not incinerator residues and are not residues from RMERC; regardless of Mercury Content).	62-38-4	NA	IMERC; or RMERC.
P093		N-Phenythiourea	103-85-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P095		Phosgene	75-44-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P096		Phosphine	7803-51-2	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
P102		Propargyl alcohol.....	107-19-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P105		Sodium azide.....	26628-22-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P108		Strychnine and salts.....	57-24-3*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P109		Tetraethylthiopyrophosphate.....	3689-24-5	CARBN; or INCIN	FSUBS; or INCIN.
P112		Tetranitromethane.....	509-14-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P113	Table CCW in 268.43	Thallic oxide.....	1314-32-5	NA	ATHRM; or STABL
P115	Table CCW in 268.43	Thallium (I) sulfate.....	7446-18-6	NA	ATHRM; or STABL
P116		Thiosemicarbazide.....	79-19-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P118		Trichloromethanethiol.....	75-70-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P119	Table CCW in 268.43	Ammonium vanadate.....	7803-55-6	NA	STABL.
P120	Table CCW in 268.43	Vanadium pentoxide.....	1314-62-1	NA	STABL.
P122		Zinc Phosphide (<10%).....	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U001		Acetaldehyde.....	75-07-0	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U003	Table CCW in 268.43	Acetonitrile.....	75-05-8	NA	INCIN.
U006		Acetyl Chloride.....	75-36-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U007		Acrylamide.....	79-06-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U008		Acrylic acid.....	79-10-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U010		Mitomycin C.....	50-07-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U011		Amitrole.....	61-82-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U014		Auramine.....	492-80-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U015		Azaserine.....	115-02-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U016		Benz(c)acridine.....	225-51-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U017		Benzal chloride.....	98-87-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U020		Benzenesulfonyl chloride.....	98-09-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U021		Benzidine.....	92-87-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U023		Benzotrithloride.....	98-07-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U026		Chloronaphazin.....	494-03-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U033		Carbonyl fluoride.....	353-50-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U034		Trichloroacetaldehyde (Chloral).....	75-87-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U035		Chlorambucil.....	305-03-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U038	Table CCW in 268.43	Chlorobenzilate.....	510-15-6	NA	INCIN.
U041		1-Chloro-2,3-epoxypropane (Epichlorohydrin).....	106-89-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U042	Table CCW in 268.43	2-Chloroethyl vinyl ether.....	110-75-8	NA	INCIN.
U046		Chloromethyl methyl ether.....	107-30-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U049		4-Chloro-o-toluidine hydrochloride.....	3155-93-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U053		Crotonaldehyde.....	4170-30-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U055		Cumene.....	98-82-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U056		Cyclohexane.....	110-82-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U057	Table CCW in 268.43	Cyclohexanone.....	108-94-1	NA	FSUBS; or INCIN.
U058		Cyclophosphamide.....	50-18-0	CARBN; or INCIN	FSUBS; or INCIN.
U059		Daunomycin.....	20830-81-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U062		Diallate.....	2303-16-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U064		1,2,7,8-Dibenzopyrene.....	189-55-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U073		3,3'-Dichlorobenzidine.....	91-94-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U074		cis-1,4-Dichloro-2-butene..... trans-1,4-Dichloro-2-butene.....	1476-11-5	(WETOX or CHOXD) fb CARBN; or INCIN (WETOX or CHOXD) fb CARBN; or INCIN	INCIN INCIN.
U085		1,2,3,4-Diepoxybutane.....	1464-53-5	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U086		N,N-Diethylhydrazine.....	1615-80-1	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U087		0,0-Diethyl S-methyldithiophosphate.....	3288-58-2	CARBN; or INCIN	FSUBS; or INCIN.
U089		Diethyl stilbestrol.....	56-53-1	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U090		Dihydrosafrole.....	94-58-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U091		3,3'-Dimethoxybenzidine.....	119-90-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U092		Dimethylamine.....	124-40-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U093	Table CCW in 268.43.....	p-Dimethylaminoazobenzene.....	621-90-9	NA	INCIN.
U094		7,12-Dimethyl benz(a)anthracene.....	57-97-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U095		3,3'-Dimethylbenzidine.....	119-93-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U096		a,a-Dimethyl benzyl hydroperoxide.....	80-15-9	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U097		Dimethylcarbonyl chloride.....	79-44-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U098		1,1-Dimethylhydrazine.....	57-14-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U099		1,2-Dimethylhydrazine.....	540-73-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U103		Dimethyl sulfate.....	77-78-1	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U109		1,2-Diphenylhydrazine.....	122-66-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U110		Dipropylamine.....	142-84-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U113		Ethyl acrylate.....	140-88-5	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U114		Ethylene bis-dithiocarbamic acid.....	111-54-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U115		Ethylene oxide.....	75-21-8	(WETOX or CHOXD) fb CARBN; or INCIN	CHOXD; or INCIN.
U116		Ethylene thiourea.....	96-45-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U119		Ethyl methane sulfonate.....	62-50-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U122		Formaldehyde.....	50-00-0	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U123		Formic acid.....	64-18-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U124		Furan.....	110-00-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U125		Furfural.....	98-01-1	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U126		Glycidaldehyde.....	765-34-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U132		Hexachlorophenene.....	70-30-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U133		Hydrazine.....	302-01-2	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U134	Table CCW in 268.43.....	Hydrogen Fluoride.....	7664-39-3	NA	ADGAS fb NEUTR; or NEUTR.
U135		Hydrogen Sulfide.....	7783-06-4	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U143		Lasiocarpine.....	303-34-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U147		Maleic anhydride.....	108-31-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U148		Maleic hydrazide.....	123-33-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U149		Malononitrile.....	109-77-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U150		Meiphalan.....	148-82-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U151	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury).	7439-97-8	NA	RMERC.
U153		Methane thiol	74-93-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U154		Methanol	67-56-1	(WETOX or CHOXC) fb CARBN; or INCIN	FSUBS; or INCIN.
U156		Methyl chlorocarbonate	79-22-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U160		Methyl ethyl ketone peroxide	1338-23-4	CHOXD; CHRED; CAREN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U163		N-Methyl N'-nitro N-Nitrosoguanidine	70-25-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U164		Methylthiuracil	56-04-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U166		1,4-Naphthoquinone	130-15-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U167		1-Naphthylamine	134-32-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U168	Table CCW in 268.43	2-Naphthylamine	91-59-8	NA	INCIN.
U171		2-Nitropropane	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U173		N-Nitroso-di-n-ethanolamine	1116-54-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U176		N-Nitroso-N-ethylurea	759-73-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U177		N-Nitroso-N-methylurea	684-93-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U178		N-Nitroso-N-methylurethane	615-53-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U182		Paraldehyde	123-63-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U184		Pentachloroethane	76-01-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U186		1,3-Pentadiene	504-60-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U189		Phosphorus sulfide	1314-80-3	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U191		2-Picoline	109-06-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U193		1,3-Propane sultone	1120-71-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U194		n-Propylamine	107-10-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U197		p-Benzoquinone	106-51-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U200		Reserpine	50-55-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U201		Resorcinol	108-46-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U202		Saccharin and salts	81-07-2*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U206		Streptozotocin	18883-66-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U213		Tetrahydrofuran	109-99-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U214	Table CCW in 268.43	Thallium (I) acetate	563-68-8	NA	RTHRM; or STABL
U215	Table CCW in 268.43	Thallium (I) carbonate	6533-73-9	NA	RTHRM; or STABL
U216	Table CCW in 268.43	Thallium (I) chloride	7791-12-0	NA	RTHRM; or STABL
U217	Table CCW in 268.43	Thallium (I) nitrate	10102-45-1	NA	RTHRM; or STABL
U218		Thioacetamide	62-55-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U219		Thiourea	62-56-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U221		Toluenediamine	25376-45-8	CARBEN; or INCIN	FSUBS; or INCIN.
U222		o-Toluidine hydrochloride	636-21-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U223		Toluene diisocyanate	26471-62-5	CARBEN; or INCIN	FSUBS; or INCIN.
U234		sym-Trinitrobenzene	99-35-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U236		Trypan Blue	72-57-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U237		Uracil mustard	66-75-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U238		Ethyl carbamate	51-79-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U240		2,4-Dichlorophenoxyacetic (salts and esters)	94-75-7*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U244		Thiram	137-26-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U246		Cyanogen bromide	506-68-3	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
U248		Warfarin (greater than or equal to 3%)	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U249		Zinc Phosphide (<10%)	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.

* CAS Number given for parent compound only.

** This waste code exists in gaseous form and is not categorized as wastewater or nonwastewater forms.

NA—Not Applicable.

TABLE 3.—TECHNOLOGY-BASED STANDARDS FOR SPECIFIC RADIOACTIVE HAZARDOUS MIXED WASTE

Waste code	Waste descriptions and/or treatment subcategory	CAS Number	Technology code	
			Wastewaters	Nonwastewaters
D002.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D004.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D005.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D006.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D007.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D008.....	Radioactive Lead Solids Subcategory (Note: these lead solids include, but are not limited to, all forms of lead shielding, and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and stabilized as ash.)	7439-92-1	NA	MACRO
D006.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D009.....	Elemental mercury contaminated with radioactive materials	7439-97-6	NA	AMLGM
D009.....	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory	7439-97-6	NA	INCIN
D009.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D010.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D011.....	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
U151.....	Mercury: Elemental mercury contaminated with radioactive materials	7439-97-6	NA	AMLGM

NA—Not Applicable.

(b) Any person may submit an application to the Administrator demonstrating that an alternative treatment method can achieve a measure of performance equivalent to that achievable by methods specified in paragraphs (a), (c), and (d) of this section. The applicant must submit information demonstrating that his treatment method is in compliance with federal, state, and local requirements and is protective of human health and the environment. On the basis of such information and any other available information, the Administrator may approve the use of the alternative treatment method if he finds that the alternative treatment method provides a measure of performance equivalent to that achieved by methods specified in

paragraphs (a), (c), and (d) of this section. Any approval must be stated in writing and may contain such provisions and conditions as the Administrator deems appropriate. The person to whom such approval is issued must comply with all limitations contained in such a determination.

(c) As an alternative to the otherwise applicable subpart D treatment standards, lab packs are eligible for land disposal provided the following requirements are met:

(1) The lab packs comply with the applicable provisions of 40 CFR 264.316 and 40 CFR 265.316;

(2) All hazardous wastes contained in such lab packs are specified in appendix IV or appendix V to part 268;

(3) The lab packs are incinerated in accordance with the requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O; and

(4) Any incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010, and D011 are treated in compliance with the applicable treatment standards specified for such wastes in subpart D of this part.

(d) Radioactive hazardous mixed wastes with treatment standards specified in Table 3 of this section are not subject to any treatment standards specified in § 268.41, § 268.43, or Table 2 of this section. Radioactive hazardous mixed wastes not subject to treatment standards in Table 3 of this section remain subject to all applicable treatment standards specified in

§ 268.41, § 268.43, and Table 2 of this section.

12. Section 268.43 is amended by revising paragraph (a) and Table CCW—Constituent Concentrations in Wastes, and by adding paragraph (c) to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) Table CCW identifies the restricted wastes and the concentrations of their associated hazardous constituents which may not be exceeded by the waste or treatment residual (not

an extract of such waste or residual) for the allowable land disposal of such waste or residual. Compliance with these concentrations is required based upon grab samples, unless otherwise noted in the following Table CCW.

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewater concentration (mg/l)	Non-wastewater concentration (mg/kg)
D003 (Reactive cyanides subcategory—based on 261.23(a)(5)).		Cyanides (Total).....	57-12-5	Reserved	# 590
D004	Table CCWE in 268.41	Cyanides (Amenable).....	57-12-5	0.56	30
D005	Table CCWE in 268.41	Arsenic.....	7440-38-2	5.0	NA
D006	Table CCWE in 268.41	Barium.....	7440-39-3	100	NA
D007	Table CCWE in 268.41	Cadmium.....	7440-43-9	1.0	NA
D008	Table CCWE in 268.41	Chromium (Total).....	7440-47-32	5.0	NA
D009	Table CCWE in 268.41	Lead.....	7439-92-1	5.0	NA
D010	Table CCWE in 268.41	Mercury.....	7439-97-8	0.20	NA
D011	Table CCWE in 268.41	Selenium.....	7782-49-2	1.0	NA
D012	Table CCWE in 268.41	Silver.....	7440-22-4	5.0	NA
D013	Table 2 in 268.42	Endrin.....	720-20-8	NA	0.13
D014	Table 2 in 268.42	Lindane.....	58-89-9	NA	0.066
D015	Table 2 in 268.42	Methoxychlor.....	72-43-5	NA	0.18
D016	Table 2 in 268.42	Toxaphene.....	8001-35-1	NA	1.3
D017	Table 2 in 268.42	2,4-D.....	94-75-7	NA	10.0
F001—F005 spent solvents	Table CCWE in 268.41 and Table 2 in 268.42	2,4,5-TP Silvex.....	93-76-5	NA	7.9
F001—F005 spent solvents (Pharmaceutical industry wastewater subcategory).		1,1,2-Trichloroethane.....	71-55-6	0.030	* 7.6
F006	Table CCWE in 268.41	Benzene.....	71-43-2	0.070	* 3.7
		Methylene chloride.....	75-09-2	0.44	NA
F007	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.2	590
		Cyanides (Amenable).....	57-12-5	0.86	30
		Cadmium.....	7440-43-9	1.6	NA
		Chromium.....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.040	NA
		Nickel.....	7440-02-0	0.44	NA
F008	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	590
		Cyanides (Amenable).....	57-12-5	0.1	30
		Chromium (Total).....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.04	NA
		Nickel.....	7440-02-0	0.44	NA
F009	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	590
		Cyanides (Amenable).....	57-12-5	0.1	30
		Chromium.....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.04	NA
		Nickel.....	7440-02-0	0.44	NA
F010	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	1.5
		Cyanides (Amenable).....	57-12-5	0.1	NA
F011	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	110
		Cyanides (Amenable).....	57-12-5	0.1	9.1
		Chromium (Total).....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.04	NA
		Nickel.....	7440-02-0	0.44	NA
F012	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	110
		Cyanides (Amenable).....	57-12-5	0.1	9.1
		Chromium (Total).....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.04	NA
		Nickel.....	7440-02-0	0.44	NA
F019	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.2	* 590
		Cyanides (Amenable).....	57-12-5	0.86	* 30
		Chromium (Total).....	7440-47-32	0.32	NA
F024	Table CCWE in 268.41 and Table 2 in 268.42 (Note: F024 organic standards must be treated via incineration (INCIN)).	2-Chloro-1,3-butadiene.....	126-99-8	* 0.23	* 0.28
		3-Chloropropene.....	107-05-1	* 0.28	* 0.28
		1,1-Dichloroethane.....	75-34-3	* 0.014	* 0.014
		1,2-Dichloroethane.....	107-06-2	* 0.014	* 0.014
		1,2-Dichloropropane.....	78-87-5	* 0.014	* 0.014
		cis-1,3-Dichloropropene.....	10061-01-5	* 0.014	* 0.014
		trans-1,3-Dichloropropene.....	10061-02-6	* 0.014	* 0.014

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewater concentration (mg/l)	Non-wastewater concentration (mg/kg)
F025 (Light ends subcategory)		Bis(2-ethylhexyl)phthalate.....	117-81-7	• 0.036	• 1.8
		Hexachloroethane.....	67-72-1	• 0.036	• 1.8
		Chromium (Total).....	7440-47-32	0.35	NA
		Nickel.....	7440-02-0	0.47	NA
		Chloroform.....	67-66-3	• 0.046	• 6.2
		1,2-Dichloroethane.....	107-06-2	• 0.21	• 6.2
		1,1-Dichloroethylene.....	75-35-4	• 0.025	• 6.2
		Methylene chloride.....	75-9-2	• 0.089	• 31
		Carbon tetrachloride.....	56-23-5	• 0.057	• 6.2
		1,1,2-Trichloroethane.....	79-00-5	• 0.054	• 6.2
		Trichloroethylene.....	79-01-6	• 0.054	• 5.8
		Vinyl chloride.....	75-01-4	• 0.27	• 33
		Chloroform.....	67-66-3	• 0.046	• 5.2
		Methylene chloride.....	75-9-2	• 0.089	• 31
F025 (Spent filters/aids and desiccants subcategory)		Carbon tetrachloride.....	56-23-5	• 0.057	• 6.2
		1,1,2-Trichloroethane.....	79-00-5	• 0.054	• 6.2
		Trichloroethylene.....	79-01-6	• 0.054	• 5.5
		Vinyl chloride.....	75-01-4	• 0.27	• 33
		Hexachlorobenzene.....	118-74-1	• 0.055	• 37
		Hexachlorobutadiene.....	87-68-3	• 0.055	• 29
		Hexachloroethane.....	67-72-1	• 0.055	• 30
		Acetone.....	67-64-1	• 0.28	• 160
		Acenaphthalene.....	208-96-8	• 0.059	• 3.4
		Acenaphthene.....	83-32-9	• 0.059	• 4.0
		Acetonitrile.....	75-35-8	• 0.17	NA
		Acetophenone.....	98-88-2	• 0.010	• 9.7
		2-Acetylaminofluorene.....	53-96-3	• 0.059	• 140
		Acrylonitrile.....	107-13-1	• 0.24	• 84
F039	Table CCWE in 268.41	Aldrin.....	309-00-2	• 0.021	• 0.066
		4-Aminobiphenyl.....	92-67-1	• 0.13	NA
		Aniline.....	62-53-3	• 0.81	• 14
		Anthracene.....	120-12-7	• 0.059	• 4.0
		Aroclor 1016.....	12674-11-2	• 0.013	• 0.92
		Aroclor 1221.....	11104-28-2	• 0.014	• 0.92
		Aroclor 1232.....	11141-16-5	• 0.013	• 0.92
		Aroclor 1242.....	53469-21-9	• 0.017	• 0.92
		Aroclor 1248.....	12672-29-6	• 0.013	• 0.92
		Aroclor 1254.....	11097-69-1	• 0.014	• 1.8
		Aroclor 1260.....	11096-82-5	• 0.014	• 1.8
		alpha-BHC.....	319-84-6	• 0.00014	• 0.066
		beta-BHC.....	319-85-7	• 0.00014	• 0.066
		delta-BHC.....	319-86-8	• 0.023	• 0.066
		gamma-BHC.....	58-89-9	• 0.0017	• 0.066
		Benzene.....	71-43-2	• 0.14	• 36
		Benzo(a)anthracene.....	56-55-3	• 0.059	• 8.2
		Benzo(b)fluoranthene.....	205-99-2	• 0.055	• 3.4
		Benzo(k)fluoranthene.....	207-08-9	• 0.059	• 3.4
		Benzo(g,h,i)perylene.....	191-24-2	• 0.0055	• 1.5
		Benzo(a)pyrene.....	50-32-8	• 0.061	• 8.2
		Bromodichloromethane.....	75-27-4	• 0.35	• 15
		Bromoform.....	75-25-2	• 0.63	• 15
		Bromomethane (methyl bromide).....	74-83-9	• 0.11	• 15
		4-Bromophenyl phenyl ether.....	101-55-3	• 0.055	• 15
		n-Butyl alcohol.....	71-36-3	• 5.6	• 2.6
		Butyl benzyl phthalate.....	95-68-7	• 0.017	• 7.9
		2-sec-Butyl-4,6-dinitrophenol.....	88-85-7	• 0.066	• 2.5
		Carbon tetrachloride.....	56-23-5	• 0.057	• 5.6
		Carbon disulfide.....	75-15-0	• 0.014	NA
		Chlordane.....	57-74-9	• 0.0033	• 0.13
		p-Chloroaniline.....	106-47-8	• 0.46	• 16
		Chlorobenzene.....	108-90-7	• 0.057	• 5.7
		Chlorobenzilate.....	510-15-8	• 0.10	• NA
		Chlorodibromomethane.....	124-48-1	• 0.057	• 16
		Chloroethane.....	75-00-3	• 0.27	• 6.0
		bis(2-Chloroethoxy) methane.....	111-91-1	• 0.036	• 7.2
		bis(2-Chloroethyl) ether.....	111-44-4	• 0.033	• 7.2
		2-Chloroethyl vinyl ether.....		• 0.057	NA
		Chloroform.....	67-66-3	• 0.046	• 5.6
		bis(2-Chloroisopropyl) ether.....	39638-32-9	• 0.055	• 7.2
		p-Chloro-m-cresol.....	59-50-7	• 0.018	• 14
		Chloromethane (Methyl chloride).....	74-87-3	• 0.19	• 33
		2-Chloronaphthalene.....	91-8-7	• 0.055	• 5.6
		2-Chlorophenol.....	95-57-8	• 0.044	• 5.7
		3-Chloropropene.....	107-05-1	• 0.036	• 28
		Chrysene.....	218-01-9	• 0.059	• 8.2
		o-Cresol.....	95-48-7	• 0.11	• 5.6

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Cresol (m- and p-isomers).....		* 0.77	* 3.2
		Cyclohexanone.....	108-94-1	* 0.36	NA
		1,2-Dibromo-3-chloropropane.....	96-12-8	* 0.11	* 15
		1,2-Dibromoethane (Ethylene dibromide).....	106-93-4	* 0.028	* 15
		Dibromomethane.....	74-95-3	* 0.11	* 15
		2,4-Dichlorophenoxyacetic acid (2,4-D).....	94-75-7	* 0.72	* 10
		o,p'-DDD.....	53-19-0	* 0.023	* 0.087
		p,p'-DDD.....	72-54-8	* 0.023	* 0.087
		o,p'-DDE.....	3424-82-6	* 0.031	* 0.087
		p,p'-DDE.....	72-55-9	* 0.031	* 0.087
		o,p'-DDT.....	739-02-6	* 0.0039	* 0.087
		p,p'-DDT.....	50-29-3	* 0.0039	* 0.087
		Dibenzo(a,h)anthracene.....	53-70-3	* 0.055	* 9.2
		m-Dichlorobenzene.....	541-73-1	* 0.036	* 6.2
		o-Dichlorobenzene.....	95-50-1	* 0.088	* 6.2
		p-Dichlorobenzene.....	106-46-7	* 0.090	* 6.2
		Dichlorodifluoromethane.....	75-71-3	* 0.23	* 7.2
		1,1-Dichloroethane.....	75-34-3	* 0.059	* 7.2
		1,2-Dichloroethane.....	107-06-2	* 0.21	* 7.2
		1,1-Dichloroethylene.....	75-35-4	* 0.025	* 33
		trans-1,2-Dichloroethene.....		* 0.054	* 33
		2,4-Dichlorophenol.....	120-83-2	* 0.044	* 14
		2,6-Dichlorophenol.....	87-85-0	* 0.044	* 14
		1,2-Dichloropropane.....	79-87-5	* 0.85	* 18
		cis-1,3-Dichloropropene.....	10061-01-5	* 0.036	* 18
		trans-1,3-Dichloropropene.....	10061-02-8	* 0.036	* 13
		Dieldrin.....	60-57-1	* 0.017	* 0.13
		Diethyl phthalate.....	84-66-2	* 0.20	* 29
		p-Dimethylaminobenzene.....	60-11-3	* 0.13	NA
		2,4-Dimethyl phenol.....	105-67-3	* 0.036	* 14
		Dimethyl phthalate.....	131-11-3	* 0.047	* 28
		Di-n-butyl phthalate.....	84-74-2	* 0.057	* 28
		1,4-Dinitrobenzene.....	100-25-4	* 0.32	* 2.3
		4,6-Dinitro-o-cresol.....	534-52-1	* 0.28	* 160
		2,4-Dinitrophenol.....	51-28-5	* 0.12	* 160
		2,4-Dinitrotoluene.....	121-14-2	* 0.32	* 140
		2,6-Dinitrotoluene.....	606-20-2	* 0.55	* 28
		Di-n-octyl phthalate.....	117-84-0	* 0.017	* 28
		Di-n-propylnitrosoamine.....	621-64-7	* 0.40	* 14
		1,2-Diphenyl hydrazine.....		* 0.087	NA
		1,4-Dioxane.....	123-91-1	* 0.12	* 170
		Disulfoton.....	298-04-4	* 0.017	* 6.2
		Endosulfan I.....	939-98-8	* 0.023	* 0.066
		Endosulfan II.....	33213-6-5	* 0.029	* 0.13
		Endosulfan sulfate.....	1-31-07-8	* 0.029	* 0.13
		Endrin.....	7-20-8	* 0.0028	* 0.13
		Endrin aldehyde.....	7421-93-4	* 0.025	* 0.13
		Ethyl acetate.....	141-78-8	* 0.34	* 33
		Ethyl cyanide.....		* 0.24	NA
		Ethyl benzene.....	100-41-4	* 0.057	* 6.0
		Ethyl ether.....	60-29-7	* 0.12	* 160
		bis(2-Ethylhexyl) phthalate.....	117-81-7	* 0.28	* 29
		Ethyl methacrylate.....	97-63-2	* 0.14	* 160
		Ethylene oxide.....	75-21-8	* 0.12	NA
		Famphur.....	52-85-7	* 0.017	* 15
		Fluoranthene.....	206-44-0	* 0.068	* 8.2
		Fluorene.....	86-73-7	* 0.059	* 4.0
		Fluorotrichloromethane.....	75-69-4	* 0.020	* 33
		Heptachlor.....	78-44-8	* 0.0012	* 0.066
		Heptachlor epoxide.....	1024-57-3	* 0.016	* 0.066
		Hexachlorobenzene.....	118-74-1	* 0.055	* 37
		Hexachlorobutadiene.....	87-68-3	* 0.055	* 28
		Hexachlorocyclopentadiene.....	77-47-4	* 0.057	* 3.6
		Hexachlorodibenzo-furans.....		* 0.000063	* 0.001
		Hexachlorodibenzo-p-dioxins.....		* 0.000063	* 0.001
		Hexachloroethane.....	67-72-1	* 0.055	* 28
		Hexachloropropene.....	1888-71-7	* 0.035	* 28
		Indeno(1,2,3-c,d)pyrene.....	193-39-5	* 0.0055	* 8.2
		Iodomethane.....	74-88-4	* 0.019	* 65
		Isobutanol.....	78-83-1	* 5.6	* 170
		Isodrin.....	465-73-6	* 0.021	* 0.066
		Isosafrole.....	120-58-1	* 0.081	* 2.6
		Kepone.....	143-50-8	* 0.0011	* 0.13
		Methacrylonitrile.....	126-98-7	* 0.24	* 84
		Methacrylonitrile.....	91-80-5	* 0.081	* 1.5

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Methoxychlor	72-43-5	* 0.25	• 0.18
		3-Methylcholanthrene	56-49-5	* 0.0055	• 15
		4,4-Methylene-bis-(2-chloroaniline)	101-14-4	* 0.50	• 35
		Methylene chloride	75-09-2	* 0.089	• 33
		Methyl ethyl ketone	78-93-3	* 0.28	• 36
		Methyl isobutyl ketone	108-10-1	* 0.14	• 33
		Methyl methacrylate	80-62-6	* 0.14	• 160
		Methyl methanesulfonate		* 0.018	NA
		Methyl parathion	298-00-0	* 0.014	• 4.8
		Naphthalene	91-20-3	* 0.059	• 3.1
		2-Naphthylamine	91-59-8	* 0.52	NA
		p-Nitroaniline	100-01-6	* 0.028	• 28
		Nitrobenzene	98-95-3	* 0.068	• 14
		5-Nitro-o-toluidine	99-55-8	* 0.32	• 28
		4-Nitrophenol	100-02-7	* 0.12	• 29
		N-Nitrosodiethylamine	55-18-5	* 0.40	• 28
		N-Nitrosodimethylamine	62-75-9	* 0.40	NA
		N-Nitroso-di-n-butylamine	924-16-3	* 0.40	• 17
		N-Nitrosomethylethylamine	10595-95-6	* 0.40	• 2.3
		N-Nitrosomorpholine	59-89-2	* 0.40	• 2.3
		N-Nitrosopiperidine	100-75-4	* 0.013	• 35
		N-Nitrosopyrrolidine	930-55-2	* 0.013	• 35
		Parathion	56-38-2	* 0.017	• 4.6
		Pentachlorobenzene	608-93-5	* 0.055	• 37
		Pentachlorodibenzo-furans		* 0.000035	• 0.001
		Pentachlorodibenzo-p-dioxins		* 0.000063	• 0.001
		Pentachloronitrobenzene	82-68-8	* 0.055	• 4.8
		Pentachlorophenol	67-86-5	* 0.089	• 7.4
		Phenacetin	62-44-2	* 0.081	• 16
		Phenanthrene	85-01-8	* 0.059	• 3.1
		Phenol	108-95-2	* 0.039	• 6.2
		Phorate	298-02-2	* 0.021	• 4.6
		Propanenitrile (ethyl cyanide)	107-12-0	* 0.24	• 360
		Pronamide	23950-58-5	* 0.093	• 1.5
		Pyrene	129-00-0	* 0.067	• 8.2
		Pyridine	110-86-1	* 0.014	• 16
		Satrole	94-59-7	* 0.081	• 22
		Silvex (2,4,5-TP)	93-72-1	* 0.72	• 7.9
		2,4,5-T	93-76-5	* 0.72	• 7.9
		1,2,4,5-Tetrachlorobenzene	95-94-3	* 0.055	• 19
		Tetrachlorodibenzo-furans		* 0.000063	• 0.001
		Tetrachlorodibenzo-p-dioxins		* 0.000063	• 0.001
		2,3,7,8-Tetrachlorodibenzo-p-dioxin		* 0.000063	NA
		1,1,1,2-Tetrachloroethane	630-20-6	* 0.057	• 42
		1,1,2,2-Tetrachloroethane	79-34-6	* 0.057	• 42
		Tetrachloroethene	127-18-4	* 0.056	• 5.6
		2,3,4,6-Tetrachlorophenol	58-90-2	* 0.030	• 37
		Toluene	108-88-3	* 0.080	• 26
		Toxaphene	8001-35-1	* 0.0095	• 1.3
		1,2,4-Trichlorobenzene	120-82-1	* 0.055	• 19
		1,1,1-Trichloroethane	71-55-8	* 0.054	• 5.6
		1,1,2-Trichloroethane	79-00-5	* 0.054	• 5.6
		Trichloroethylene	79-01-6	* 0.054	• 5.6
		2,4,5-Trichlorophenol	95-95-4	* 0.18	• 37
		2,4,6-Trichlorophenol	88-06-2	* 0.035	• 37
		1,2,3-Trichloropropane	96-18-4	* 0.85	• 28
		1,1,2-Trichloro-1,2,2-trifluoro-ethane	76-13-1	* 0.057	• 28
		Vinyl chloride	75-01-4	* 0.27	• 33
		Xylene(s)		* 0.32	• 28
		Cyanides (Total)	57-12-5	* 1.2	• 1.8
		Cyanides (Amenable)	57-12-5	* 0.86	NA
		Fluoride	16964-48-8	* 35	NA
		Sulfide	8496-25-8	* 14	NA
		Antimony	7440-36-0	* 1.9	NA
		Arsenic	7440-38-2	* 5.0	NA
		Barium	7440-39-3	* 1.2	NA
		Beryllium	7440-41-7	* 0.82	NA
		Cadmium	7440-43-9	* 0.20	NA
		Chromium (Total)	7440-47-32	* 0.37	NA
		Copper	7440-50-8	* 1.3	NA
		Lead	7439-92-1	* 0.28	NA
		Mercury	7439-97-6	* 0.15	NA
		Nickel	7440-02-0	* 0.55	NA
		Selenium	7782-49-2	* 0.82	NA
		Silver	7440-22-4	* 0.29	NA
		Vanadium	7440-62-2	* 0.042	NA
		Naphthalene	91-20-3	* 0.031	* 1.5

K001

Table CCWE in 268.41

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Pentachlorophenol.....	87-86-5	• 0.031	• 1.5
		Phenanthrene.....	85-01-8	• 0.031	• 1.5
		Pyrene.....	129-00-0	• 0.028	• 1.5
		Toluene.....	108-88-3	• 0.028	• 28
		Xylenes (Total).....		• 0.032	• 33
		Lead.....	7439-92-1	• 0.037	NA
K002.....	Table CCWE in 268.41.....	Chromium (Total).....	7440-47-32	• 2.9	NA
K003.....	Table CCWE in 268.41.....	Lead.....	7439-92-1	• 3.4	NA
K004.....	Table CCWE in 268.41.....	Chromium (Total).....	7440-47-32	• 2.9	NA
K005.....	Table CCWE in 268.41.....	Lead.....	7439-92-1	• 3.4	NA
K006.....	Table CCWE in 268.41.....	Chromium (Total).....	7440-47-32	• 2.9	NA
K007.....	Table CCWE.....	Lead.....	7439-92-1	• 3.4	NA
K008.....	Table CCWE in 268.41.....	Cyanides (Total).....	57-12-5	• 0.74	(*)
K009.....		Chromium (Total).....	7440-47-32	• 2.9	NA
K010.....		Lead.....	7439-92-1	• 3.4	NA
K011.....		Chromium (Total).....	7440-47-32	• 2.9	NA
		Lead.....	7439-92-1	• 3.4	• NA
		Cyanides (Total).....	57-12-5	• 0.74	
K008.....	Table CCWE in 268.41.....	Chromium (Total).....	7440-47-32	• 2.9	NA
K009.....		Lead.....	7439-92-1	• 3.4	NA
K010.....		Chloroform.....	67-66-3	0.1	• 6.0
K011.....		Chloroform.....	67-66-3	0.1	6.0
		Acetonitrile.....	75-05-8	33	1.8
		Acrylonitrile.....	107-13-1	0.06	1.4
		Acrylamide.....	79-06-1	19	23
		Benzene.....	71-43-2	0.02	0.03
K013.....		Cyanide (Total).....	57-12-5	21	57
		Acetonitrile.....	75-05-8	38	• 1.8
		Acrylonitrile.....	107-13-1	0.06	• 1.4
		Acrylamide.....	79-06-1	19	• 23
		Benzene.....	71-43-2	0.02	• 0.03
K014.....		Cyanide (Total).....	57-12-5	21	57
		Acetonitrile.....	75-05-8	38	• 1.8
		Acrylonitrile.....	107-13-1	0.06	• 1.4
		Acrylamide.....	79-06-1	19	• 23
		Benzene.....	71-43-2	0.02	• 0.03
K015.....	Table CCWE in 268.41.....	Cyanide (Total).....	57-12-5	21	57
		Anthracene.....	120-12-7	1.0	• 3.4
		Benzal chloride.....	58-87-3	0.28	• 6.2
		Sum of Benzo(b)fluoranthene and Benzo(k)fluoranthene.....	205-99-2		
		Phenanthrene.....	85-01-8	0.029	3.4
		Toluene.....	108-88-3	0.27	• 3.4
		Chromium (Total).....	7440-47-32	0.15	• 6.0
K016.....		Nickel.....	7440-02-0	0.32	NA
		Hexachlorobenzene.....	118-74-1	0.44	NA
		Hexachlorobutadiene.....	87-89-3	• 0.033	• 28
		Hexachlorocyclopentadiene.....	77-47-4	• 0.007	• 5.6
		Hexachloroethane.....	67-72-1	• 0.007	• 5.6
K017.....		Tetrachloroethene.....	127-18-4	• 0.033	• 28
		1,2-Dichloropropane.....	78-87-5	• 0.007	• 6.0
		1,2,3-Trichloropropane.....	96-18-4	• 0.007	• 18
K018.....		Bis(2-chloroethyl)ether.....	111-44-4	• 0.007	• 28
		Chloroethane.....	75-00-3	• 0.033	• 7.2
		1,1-Dichloroethane.....	75-34-3	• 0.007	• 6.0
		1,2-Dichloroethane.....	107-06-2	• 0.007	• 6.0
		Hexachloroethane.....	67-72-1	• 0.007	• 6.0
		Hexachlorobutadiene.....	87-68-3	• 0.007	• 28
		Hexachloroethane.....	67-72-1	• 0.033	• 5.6
		Pentachloroethane.....	76-01-7	• 0.007	• 29
K019.....		1,1,1-Trichloroethane.....	71-55-6	• 0.007	• 5.6
		Bis(2-chloroethyl)ether.....	111-44-4	• 0.007	• 6.0
		Chlorobenzene.....	103-90-7	• 0.007	• 5.6
		Chloroform.....	67-66-3	• 0.007	• 5.6
		p-Dichlorobenzene.....	106-46-7	• 0.007	• 6.0
		1,2-Dichloroethane.....	107-06-2	• 0.007	• 6.0
		Fluorene.....	86-73-7	• 0.007	• 6.0
		Hexachloroethane.....	67-72-1	• 0.007	• 6.0
		Naphthalene.....	91-20-3	• 0.033	• 28
		Phenanthrene.....	85-01-8	• 0.007	• 5.6
		1,2,4,5-Tetrachlorobenzene.....	95-94-3	• 0.007	• 5.6
		Tetrachloroethene.....	127-18-4	• 0.017	• NA
		1,2,4-Trichlorobenzene.....	120-82-1	• 0.007	• 6.0
		1,1,1-Trichloroethane.....	71-55-6	• 0.023	• 19
K020.....		1,2-Dichloroethane.....	106-33-4	• 0.007	• 6.0

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
K021	Table CCWE in 268.41	1,1,2,2-Tetrachloroethane	79-34-6	• 0.007	• 5.6
		Tetrachloroethene	127-18-4	• 0.007	• 6.0
		Chloroform	67-66-3	• 0.048	• 6.2
		Carbon tetrachloride	56-23-5	• 0.057	• 6.2
K022	Table CCWE in 268.41	Antimony	7440-36-0	• 0.60	NA
		Toluene	108-88-3	• 0.080	• 0.034
		Acetophenone	96-86-2	• 0.010	• 19
		Diphenylamine	22-39-4	• 0.52	NA
		Diphenylnitrosamine	86-30-6	• 0.40	NA
		Sum of Diphenylamine and Diphenylnitrosamine		NA	• 13
		Phenol	108-95-2	0.039	• 12
		Chromium (Total)	7440-47-32	0.35	NA
		Nickel	7440-02-0	0.47	NA
		Phthalic anhydride (measured as Phthalic acid)	85-44-9	• 0.54	• 28
K023		Phthalic anhydride (measured as Phthalic acid)	85-44-9	• 0.54	• 28
K029	Table CCWE in 268.41	1,1-Dichloroethane	75-34-3	• 0.007	• 6.0
		trans-1,2-Dichloroethane		• 0.033	• 6.0
		Hexachlorobutadiene	87-68-3	• 0.007	• 5.6
		Hexachloroethane	67-72-1	• 0.033	• 28
		Pentachloroethane	76-01-7	• 0.033	• 5.6
		1,1,1,2-Tetrachloroethane	630-20-6	• 0.007	• 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	• 0.007	• 5.6
		1,1,1-Trichloroethane	71-55-6	• 0.007	• 6.0
		1,1,2-Trichloroethane	79-00-5	• 0.007	• 6.0
		Tetrachloroethylene	127-18-4	• 0.007	• 6.0
		Cadmium	7440-43-9	6.4	NA
		Chromium (Total)	7440-47-32	0.35	NA
		Lead	7439-92-1	0.037	NA
		Nickel	7440-02-0	0.47	NA
		Chloroform	67-66-3	0.46	• 6.0
		1,2-Dichloroethane	107-06-2	0.21	• 6.0
		1,1-Dichloroethylene	75-35-4	0.025	• 6.0
		1,1,1-Trichloroethane	71-55-6	0.054	• 6.0
		Vinyl chloride	75-01-4	0.27	• 6.0
K030		o-Dichlorobenzene	95-50-1	• 0.008	NA
		p-Dichlorobenzene	106-46-7	• 0.008	NA
		Hexachlorobutadiene	87-68-3	• 0.007	• 5.6
		Hexachlorobutadiene	67-72-1	• 0.033	• 28
		Hexachloropropene	1888-71-7	NA	• 19
		Pentachlorobenzene	608-93-5	NA	• 28
		Pentachloroethane	76-01-7	• 0.007	• 5.6
		1,2,4,5-Tetrachlorobenzene	95-94-3	• 0.01	• 14
		Tetrachloroethane	127-18-4	• 0.007	• 6.0
		1,2,4-Trichlorobenzene	120-82-1	• 0.007	• 19
		Arsenic	7440-38-2	0.79	NA
K031	Table CCWE in 268.41	Hexachloropentadiene	77-47-4	• 0.057	• 2.4
K032		Chlordane	57-74-9	• 0.0033	• 0.26
		Heptachlor	76-44-8	• 0.012	• 0.066
K033		Heptachlor epoxide	1024-57-3	• 0.016	• 0.066
		Hexachlorocyclopentadiene	77-47-4	• 0.057	• 2.4
K034		Hexachlorocyclopentadiene	77-47-4	• 0.057	• 2.4
K035		Acenaphthene	83-32-9	NA	• 3.4
		Anthracene	120-12-7	NA	• 3.4
		Benz(a)anthracene	56-55-3	• 0.059	• 3.4
		Benzo(a)pyrene	50-32-8	NA	• 3.4
		Chrysene	218-01-9	• 0.059	• 3.4
		Dibenz(a,h)anthracene	53-70-3	NA	• 3.4
		Fluoranthene	206-44-0	• 0.068	• 3.4
		Fluorene	86-73-7	NA	• 3.4
		Indeno(1,2,3-cd)pyrene	193-39-5	NA	• 3.4
		Cresols (m- and p-isomers)		• 0.77	NA
		Naphthalene	91-20-3	• 0.059	• 3.4
		o-cresol	95-48-7	• 0.11	NA
		Phenanthrene	85-01-8	• 0.059	• 3.4
		Phenol	108-95-2	0.039	NA
		Pyrene	129-00-0	• 0.067	• 8.2
K036		Disulfoton	298-04-4	• 0.025	• 0.1
K037		Disulfoton	298-04-4	• 0.025	• 0.1
K038		Toluene	108-88-3	• 0.080	• 28
		Phorate	298-02-2	0.025	• 0.1
K040		Phorate	298-02-2	0.025	• 0.1
K041		Toxaphene	8001-35-1	• 0.0095	• 2.6
K042		1,2,4,5-Tetrachlorobenzene	95-94-3	• 0.055	• 4.4
		o-Dichlorobenzene	95-50-1	• 0.088	• 4.4

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
K043		p-Dichlorobenzene.....	106-46-7	* 0.090	* 4.4
		Pentachlorobenzene.....	608-93-5	* 0.055	* 4.4
		1,2,4-Trichlorobenzene.....	120-82-1	* 0.055	* 4.4
		2,4-Dichlorophenol.....	120-83-2	* 0.049	* 0.38
		2,6-Dichlorophenol.....	87-65-0	* 0.013	* 0.34
		2,4,5-Trichlorophenol.....	95-95-4	* 0.016	* 8.2
		2,4,6-Trichlorophenol.....	88-06-2	* 0.039	* 7.6
		Tetrachlorophenols (Total).....		* 0.018	* 0.68
		Pentachlorophenol.....	87-86-5	* 0.22	* 1.9
		Tetrachloroethene.....	79-01-8	* 0.006	* 1.7
		Hexachlorodibenzo-p-dioxins.....		* 0.001	* 0.001
		Hexachlorodibenzo-furans.....		* 0.001	* 0.001
		Pentachlorodibenzo-p-dioxins.....		* 0.001	* 0.001
		Pentachlorodibenzo-furans.....		* 0.001	* 0.001
		Tetrachlorodibenzo-p-dioxins.....		* 0.001	* 0.001
		Tetrachlorodibenzo-furans.....		* 0.001	* 0.001
K046	Table CCWE in 268.41.....	Lead.....	7439-92-1	0.037	NA
K048	Table CCWE in 268.41.....	Benzene.....	71-43-2	* 0.011	* 14
		Benzo(a)pyrene.....	50-32-8	* 0.047	* 12
		Bis(2-ethylhexyl)phthalate.....	117-81-7	* 0.043	* 7.3
		Chrysene.....	218-01-9	* 0.043	* 15
		Di-n-butyl phthalate.....	84-74-2	* 0.06	* 3.6
		Ethylbenzene.....	100-41-4	* 0.011	* 14
		Fluorene.....	86-73-7	* 0.05	NA
		Naphthalene.....	91-20-3	* 0.033	* 42
		Phenanthrene.....	85-01-8	* 0.039	* 34
		Phenol.....	108-95-2	* 0.047	* 3.6
		Pyrene.....	129-00-0	* 0.045	* 36
		Toluene.....	108-88-3	* 0.011	* 14
		Xylene(s).....		* 0.011	* 22
		Cyanides (Total).....	57-12-5	* 0.028	* 1.8
		Chromium (Total).....	7440-47-32	0.2	NA
		Lead.....	7439-92-1	0.037	NA
K049	Table CCWE in 268.41.....	Anthracene.....	120-12-7	* 0.039	* 28
		Benzene.....	71-43-2	* 0.011	* 14
		Benzo(a)pyrene.....	50-32-8	* 0.047	* 12
		Bis(2-ethylhexyl)phthalate.....	117-81-7	* 0.043	* 7.3
		Carbon disulfide.....	75-15-0	* 0.011	NA
		Chrysene.....	2218-01-9	* 0.043	* 15
		2,4-Dimethylphenol.....	105-67-9	* 0.033	NA
		Ethylbenzene.....	100-41-4	* 0.011	* 14
		Naphthalene.....	91-20-3	* 0.033	* 42
		Phenanthrene.....	85-01-8	* 0.039	* 34
		Phenol.....	108-95-2	* 0.047	* 3.6
		Pyrene.....	129-00-0	* 0.045	* 36
		Toluene.....	108-88-3	* 0.011	* 14
		Xylene(s).....		* 0.011	* 22
		Cyanides (Total).....	57-12-5	* 0.028	* 1.8
		Chromium (Total).....	7440-47-32	0.2	NA
		Lead.....	7439-92-1	0.037	NA
K050	Table CCWE in 268.41.....	Benzo(a)pyrene.....	50-32-8	* 0.047	* 12
		Phenol.....	108-95-2	* 0.047	* 3.6
		Cyanides (Total).....	57-12-5	* 0.028	* 1.8
		Chromium (Total).....	7440-47-32	0.2	NA
		Lead.....	7439-92-1	0.037	NA
K051	Table CCWE in 268.41.....	Acenaphthene.....	208-96-8	* 0.05	NA
		Anthracene.....	120-12-7	* 0.039	* 28
		Benzene.....	71-43-2	* 0.011	* 14
		Benzo(a)anthracene.....	50-32-8	* 0.043	* 20
		Benzo(a)pyrene.....	117-81-7	* 0.047	* 12
		Bis(2-ethylhexyl)phthalate.....	75-15-0	* 0.043	* 7.3
		Chrysene.....	2218-01-9	* 0.043	* 15
		Di-n-butyl phthalate.....	105-67-9	* 0.06	* 3.6
		Ethylbenzene.....	100-41-4	* 0.011	* 14
		Fluorene.....	86-73-7	* 0.05	NA
		Naphthalene.....	91-20-3	* 0.033	* 42
		Phenanthrene.....	85-01-8	* 0.039	* 34
		Phenol.....	108-95-2	* 0.047	* 3.6
		Pyrene.....	129-00-0	* 0.045	* 36
		Toluene.....	108-88-3	* 0.011	* 14
		Xylene(s).....		* 0.011	* 22
		Cyanides (Total).....	57-12-5	* 0.028	* 1.8
		Chromium (Total).....	7440-47-32	0.2	NA
		Lead.....	7439-92-1	0.037	NA
K052	Table CCWE in 268.41.....	Benzene.....	71-43-2	* 0.011	* 14
		Benzo(a)pyrene.....	50-32-8	* 0.047	* 12
		o-Cresol.....	95-48-7	* 0.011	* 6.2

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
K060		p-Cresol.....	108-44-5	* 0.011	* 6.2
		2,4-Dimethylphenol.....	105-67-9	* 0.033	* NA
		Ethylbenzene.....	100-41-4	* 0.011	* 14
		Naphthalene.....	91-20-3	* 0.033	* 42
		Phenanthrene.....	85-01-8	* 0.039	* 34
		Phenol.....	108-95-2	* 0.047	* 3.6
		Toluene.....	108-88-3	* 0.011	* 14
		Xylenes.....		* 0.011	* 22
		Cyanides (Total).....	57-12-5	* 0.028	* 1.8
		Chromium (Total).....	7440-47-32	0.2	NA
		Lead.....	7439-92-1	0.037	NA
		Benzene.....	71-43-2	* 0.17	* 0.071
		Benzo(a)pyrene.....	50-32-8	* 0.035	* 3.6
		Naphthalene.....	91-20-3	* 0.028	* 3.4
K061	Table CCWE in 268.41 and Table 2 in 268.42.	Phenol.....	108-95-2	* 0.042	* 3.4
		Cyanides (Total).....	57-12-5	1.9	1.2
		Cadmium.....	7440-43-9	1.61	NA
		Chromium (Total).....	7440-47-32	0.32	NA
K062	Table CCWE in 268.41.....	Lead.....	7439-92-1	0.51	NA
		Nickel.....	7440-02-0	0.44	NA
		Chromium (Total).....	7440-47-32	0.32	NA
		Lead.....	7439-92-1	0.04	NA
K069	Table CCWE in 268.41 and Table 2 in 268.42.	Nickel.....	7440-02-0	0.44	NA
		Cadmium.....	7440-43-9	1.6	NA
K071	Table CCWE in 268.41.....	Lead.....	7439-92-1	0.51	NA
		Mercury.....	7439-97-6	0.030	NA
K073		Carbon tetrachloride.....	56-23-5	* 0.057	* 6.2
		Chloroform.....	67-66-3	* 0.046	* 6.2
		Hexachloroethane.....	67-72-1	* 0.055	* 30
		Tetrachloroethene.....	127-18-4	* 0.056	* 6.2
		1,1,1-Trichloroethane.....	71-55-6	* 0.054	* 6.2
		Benzene.....	71-43-2	* 0.14	* 6.6
		Aniline.....	62-53-3	* 0.81	* 14
		Diphenylamine.....	22-39-4	* 0.52	NA
		Diphenylnitrosamine.....	86-30-6	* 0.40	NA
		Sum of Diphenylamine and Diphenylnitrosamine.....		NA	* 14
		Nitrobenzene.....	98-95-3	* 0.068	* 14
		Phenol.....	108-95-2	0.039	* 5.6
		Cyclohexanone.....	108-94-1	0.36	* 30
		Nickel.....	7440-02-0	0.47	NA
K084		Arsenic.....	7440-38-2	0.79	NA
		Benzene.....	71-43-2	* 0.14	* 4.4
K085		Chlorobenzene.....	108-90-7	* 0.057	* 4.4
		o-Dichlorobenzene.....	95-50-1	* 0.088	* 4.4
		m-Dichlorobenzene.....	541-73-1	* 0.036	* 4.4
		p-Dichlorobenzene.....	106-46-7	* 0.090	* 4.4
		1,2,4-Trichlorobenzene.....	120-82-1	* 0.055	* 4.4
		1,2,4,5-Tetrachlorobenzene.....	95-94-3	* 0.055	* 4.4
		Pentachlorobenzene.....	608-93-5	0.055	* 4.4
		Hexachlorobenzene.....	118-74-1	* 0.055	* 4.4
		Aroclor 1016.....	12674-1, 2	* 0.013	* 0.92
		Aroclor 1221.....	11104-28-2	* 0.014	* 0.92
		Aroclor 1232.....	11141-16-5	* 0.013	* 0.92
		Aroclor 1242.....	53469-21-9	* 0.017	* 0.92
		Aroclor 1248.....	12672-29-6	* 0.013	* 0.92
		Aroclor 1254.....	11097-69-1	* 0.014	* 1.8
		Aroclor 1260.....	11096-82-5	* 0.014	* 1.8
		Acetone.....	67-64-1	0.28	* 160
		Acetophenone.....	96-86-2	0.010	* 9.7
		Bis(2-ethylhexyl)phthalate.....	117-81-7	* 0.28	* 28
		n-Butyl alcohol.....	71-36-3	5.6	* 2.6
		Butylbenzylphthalate.....	85-68-7	* 0.017	* 7.9
		cyclohexanone.....	108-94-1	0.36	NA
		1,2-Dichlorobenzene.....	95-50-1	0.088	* 6.2
		Diethyl phthalate.....	84-66-2	* 0.20	* 28
		Dimethyl phthalate.....	131-11-3	* 0.047	* 28
		Di-n-butyl phthalate.....	84-74-2	* 0.057	* 28
		Di-n-octyl phthalate.....	117-84-0	* 0.017	* 28
K086	Table CCWE in 268.41.....	Ethyl acetate.....	141-78-8	* 0.34	* 33
		Ethylbenzene.....	100-41-4	* 0.057	* 6.0
		Methanol.....	67-56-1	* 5.6	NA
		Methyl isobutyl ketone.....	108-10-1	0.14	* 33
		Methyl ethyl ketone.....	78-93-3	0.28	* 36
		Methylene chloride.....	75-09-2	* 0.089	* 33

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
K087	Table CCWE in 268.41	Naphthalene	91-20-3	* 0.059	* 3.1
		Nitrobenzene	98-95-3	* 0.058	* 14
		Toluene	108-88-3	* 0.080	* 28
		1,1,1-Trichloroethane	71-55-6	* 0.054	* 5.6
		Trichloroethylene	79-01-6	* 0.054	* 5.6
		Xylenes (Total)		* 0.32	* 28
		Cyanides (Total)	57-12-5	1.9	1.5
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.037	NA
		Acenaphthalene	208-96-8	* 0.028	3.4
		Benzene	71-43-2	* 0.014	* 0.071
		Chrysene	218-01-9	* 0.028	* 3.4
		Fluoranthene	206-44-0	* 0.028	* 3.4
		Indeno(1,2,3-cd)pyrene	193-39-5	* 0.023	* 3.4
		Naphthalene	91-20-3	* 0.028	* 3.4
		Phenanthrene	85-01-8	* 0.028	* 3.4
		Toluene	108-88-3	* 0.008	* 0.55
		Xylenes		* 0.014	* 0.07
		Lead	7439-92-1	0.037	NA
K093		Phthalic anhydride (measured as Phthalic acid)	85-44-9	* 0.54	* 28
K094		Phthalic anhydride (measured as Phthalic acid)	85-44-9	* 0.54	* 28
K095		1,1,1,2-Tetrachloroethane	630-20-6	0.057	* 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	0.057	* 5.6
		Tetrachloroethene	127-18-4	0.056	* 6.0
		1,1,2-Trichloroethane	79-00-5	0.054	* 6.0
		Trichloroethylene	79-01-6	0.054	* 5.6
K096		Hexachloroethane	67-72-1	0.055	* 28
		Pentachloroethane	76-01-7	0.055	* 5.6
		1,1,1,2-Tetrachloroethane	630-20-6	0.057	* 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	0.057	* 5.6
		Tetrachloroethene	127-18-4	0.056	* 6.0
		1,1,2-Trichloroethane	79-00-5	0.054	* 6.0
		Trichloroethene	79-01-6	0.054	* 5.6
		1,3-Dichlorobenzene	541-73-1	0.036	* 5.6
		Pentachloroethane	76-01-7	0.055	* 5.6
		1,2,4-Trichlorobenzene	120-82-1	0.055	* 19
K097		Hexachlorocyclopentadiene	77-47-4	* 0.057	2.4
		Chlordane	57-74-9	* 0.0033	* 0.26
		Heptachlor	76-44-8	* 0.0012	* 0.066
		Heptachlor epoxide	1024-57-3	* 0.016	* 0.066
K098		Toxaphene	8001-35-1	* 0.0095	* 2.6
K099		2,4-Dichlorophenoxyacetic acid	94-75-7	* 1	* 1
		Hexachlorodibenzo-p-dioxins		* 0.001	* 0.001
		Hexachlorodibenzofurans		* 0.001	* 0.001
		Pentachlorodibenzo-p-dioxins		* 0.001	* 0.001
		Pentachlorodibenzofurans		* 0.001	* 0.001
		Tetrachlorodibenzo-p-dioxins		* 0.001	* 0.001
		Tetrachlorodibenzofurans		* 0.001	* 0.001
K100	Table CCWE in 268.41	Cadmium	7440-43-9	1.6	NA
		Chromium (Total)	7440-47-32	0.32	NA
K101		Lead	7439-92-1	0.51	NA
		o-Nitroaniline		* 0.27	* 14
		Arsenic	7440-38-2	0.79	NA
		Cadmium	7440-43-9	0.24	NA
		Lead	7439-92-1	0.17	NA
		Mercury	7439-97-6	0.082	NA
K102	Table CCWE in 268.41	o-Nitrophenol		* 0.028	* 13
		Arsenic	7440-38-2	0.79	NA
		Cadmium	7440-43-9	0.24	NA
		Lead	7439-92-1	0.17	NA
		Mercury	7439-97-6	0.082	NA
K103		Aniline	62-53-3	* 4.5	5.6
		Benzene	71-43-2	* 0.15	* 6.0
		2,4-Dinitrophenol	51-28-5	* 0.61	* 5.6
		Nitrobenzene	98-95-3	* 0.072	* 5.6
		Phenol	108-95-2	* 1.4	* 5.6
K104		Aniline	62-53-3	* 4.5	* 5.6
		Benzene	71-43-2	* 0.15	* 6
		2,4-Dinitrophenol	51-28-5	* 0.61	* 5.6
		Nitrobenzene	98-95-3	* 0.073	* 5.6
		Phenol	108-95-2	* 1.4	* 5.6
		Cyanides (Total)	57-12-5	2.7	* 18
K105		Benzene	71-43-2	0.14	* 14
		Chlorobenzene	108-90-7	0.057	* 14
		o-Dichlorobenzene	95-50-1	0.086	* 4.4

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
K106	Table CCWE in 268.41 and Table 2 in 268.42.	p-Dichlorobenzene..... 2,4,5-Trichlorophenol..... 2,4,6-Trichlorophenol..... 2-Chlorophenol..... Phenol..... Mercury.....	106-46-7 95-95-4 88-06-2 95-57-8 108-95-2 7439-97-6	0.090 0.18 0.035 0.044 0.039 0.030	• 4.4 • 4.4 • 4.4 • 4.4 • 4.4 NA
K115	Table CCWE in 268.41	Nickel.....	7440-02-0	0.47	NA

* Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Support O or Part 265 Support O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR Section 268.7.

* Based on analysis of composite samples.

* As analyzed using SW-846 Method 9010; sample size: 0.5-10; distillation time: one hour to one hour and fifteen minutes.

NA—Not Applicable.

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
P004	Aldrin.....		Aldrin.....	309-00-2	* 0.21	0.066
P010	Arsenic acid.....	Table CCWE in 268.41	Arsenic.....	7440-38-2	0.79	NA
P011	Arsenic pentoxide.....	Table CCWE in 268.41	Arsenic.....	7440-38-2	0.79	NA
P012	Arsenic trioxide.....	Table CCWE in 268.41	Arsenic.....	7440-38-2	0.79	NA
P013	Barium cyanide.....	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.1	9.1
P020	2-sec-Butyl-4,6-dinitrophenol (Dinoseb).....		2-sec-Butyl-4,6-dinitrophenol (Dinoseb).....	88-85-7	0.066	* 2.5
P021	Calcium cyanide.....		Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.1	9.1
P022	Carbon disulfide.....	Table 2 in 268.42	Carbon disulfide.....	75-15-0	0.014	NA
P024	p-Chloroaniline.....		p-Chloroaniline.....	106-47-8	0.46	* 16
P029	Copper cyanide.....		Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.1	9.1
P030	Cyanides (soluble salts and complexes).....		Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.1	9.1
P036	Dichlorophenylarsine.....	Table CCWE in 268.41	Arsenic.....	7440-38-2	0.79	NA
P037	Dieldrin.....		Dieldrin.....	60-57-1	* 0.017	* 0.13
P038	Diethylarsine.....	Table CCWE in 268.41	Arsenic.....	7740-38-2	0.79	NA
P039	Disulfoton.....		Disulfoton.....	298-04-4	0.017	* 0.1
P047	4,6-Dinitro-o-cresol.....		4,6-Dinitro-o-cresol.....	534-52-1	* 0.28	* 160
P048	2,4-Dinitrophenol.....		2,4-Dinitrophenol.....	51-28-5	* 0.12	* 160
P050	Endosulfan.....		Endosulfan I.....	939-98-8	* 0.023	* 0.066
			Endosulfan II.....	33213-6-5	* 0.029	* 0.13
			Endosulfan sulfate.....	1031-07-8	* 0.029	* 0.13
P051	Endrin.....		Endrin.....	72-20-8	* 0.0028	* 0.13
			Endrin aldehyde.....	7421-93-4	* 0.025	* 0.13
P056	Fluoride.....	Table 2 in 268.42	Fluoride.....	16964-48-8	35	NA
P059	Heptachlor.....		Heptachlor.....	76-44-8	* 0.0012	* 0.066
			Heptachlor epoxide.....	1024-57-3	* 0.016	* 0.066
P060	Isodrin.....		Isodrin.....	465-73-6	* 0.021	* 0.066
P063	Hydrogen cyanide.....		Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.10	9.1
P065	Mercury fulminate.....	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury.....	7439-97-6	0.030	NA
P071	Methyl parathion.....		Methyl parathion.....	298-00-0	0.025	* 0.1
P073	Nickel carbonyl.....	Table CCWE in 268.41	Nickel.....	7440-02-0	0.44	NA
P074	Nickel cyanide.....	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.10	9.1
			Nickel.....	7440-02-0	0.44	NA
P077	p-Nitroaniline.....		p-Nitroaniline.....	100-01-6	* 0.028	* 28
P082	N-Nitrosodimethylamine.....	Table 2 in 268.42	N-Nitrosodimethylamine.....	62-75-9	* 0.40	NA
P089	Parathion.....		Parathion.....	56-38-2	0.025	* 0.1
P092	Phenylmercury acetate.....	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury.....	7439-97-6	0.030	NA
P094	Phorate.....		Phorate.....	298-02-2	0.025	* 0.1
P097	Famphur.....		Famphur.....	52-85-7	0.025	* 0.1
P098	Potassium cyanide.....		Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.10	9.1
P099	Potassium silver cyanide.....	Table CCWE in 268.41	Cyanides (Total).....	57-12-5	1.9	110
			Cyanides (Amenable).....	57-12-5	0.1	9.1
			Silver.....	7440-22-4	0.29	NA
P101	Ethyl cyanide (Propanenitrile).....		Ethyl cyanide (Propanenitrile).....	107-12-0	* 0.24	* 360
P103	Selenourea.....	Table CCWE in 268.41	Selenium.....	7782-49-2	* 10	NA

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
P104	Silver cyanide	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
P106	Sodium cyanide		Silver	7440-22-4	0.23	NA
			Cyanides (Total)	57-12-5	1.9	110
P110	Tetraethyl lead	Table CCWE in 268.41 and Table 2 in 268.42	Cyanides (Amenable)	57-12-5	0.10	9.1
			Lead	7439-92-1	0.040	NA
P113	Thallic oxide	Table 2 in 268.42	Thallium	7440-29-0	*0.14	NA
P114	Thallium selenite	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
P115	Thallium(I)sulfate	Table 2 in 268.42	Thallium	7440-28-0	*0.14	NA
P119	Ammonia vanadate	Table 2 in 268.42	Vanadium	7440-62-2	*28	NA
P120	Vanadium pentoxide	Table 2 in 268.42	Vanadium	7440-62-2	*28	NA
P121	Zinc cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
F123	Toxaphene		Toxaphene	8001-35-1	*0.0095	*1.3
U002	Acetone		Acetone	67-64-1	0.23	*160
U003	Acetonitrile	Table 2 in 268.42	Acetonitrile	75-05-8	0.17	NA
U004	Acetophenone		Acetophenone	98-86-2	*0.010	*9.7
U005	2-Acetylaminofluorene		2-Acetylaminofluorene	53-96-3	*0.059	*140
U009	Acrylonitrile		Acrylonitrile	107-13-1	*0.24	*84
U012	Aniline		Aniline	62-53-3	0.81	*14
U018	Benz(a)anthracene		Benz(a)anthracene	56-55-3	*0.059	*3.2
U019	Benzene		Benzene	71-43-2	*0.14	*35
U022	Benzo(a)pyrene		Benzo(a)pyrene	50-32-8	*0.061	*8.2
U024	Bis(2-chloroethoxy)methane		Bis(2-chloroethoxy)methane	111-91-1	0.036	*7.2
U025	Bis(2-chloroethyl)ether		Bis(2-chloroethyl)ether	111-44-4	0.033	*7.2
U027	Bis(2-chloroisopropyl) ether		Bis(2-chloroisopropyl) ether	39638-32-9	*0.055	*7.2
U028	Bis(2-ethylhexyl) phthalate		Bis(2-ethylhexyl) phthalate	117-81-7	*0.54	*28
U029	Bromomethane (Methyl bromide)		Bromomethane (Methyl bromide)	74-83-9	*0.11	*15
U030	4-Bromophenyl phenyl ether		4-Bromophenyl phenyl ether	101-55-3	*0.055	*15
U031	n-Butyl alcohol		n-Butyl alcohol	71-36-3	5.6	*2.6
U032	Calcium chromate	Table CCWE in 268.41	Chromium (Total)	7440-47-32	0.32	NA
U036	Chlordane (alpha and gamma)		Chlordane (alpha and gamma)	57-74-9	*0.0033	*0.13
U037	Chlorobenzene		Chlorobenzene	108-90-7	*0.057	*5.7
U038	Chlorobenzilate	Table 2 in 268.42	Chlorobenzilate	510-15-6	*0.10	NA
U039	p-Chloro-m-cresol		p-Chloro-m-cresol	59-50-7	*0.013	*14
U042	2-Chloroethyl vinyl	Table 2 in 268.42	2-Chloroethyl vinyl	110-75-8	0.057	NA
U043	Vinyl chloride		Vinyl chloride	75-01-4	*0.27	*33
U044	Chloroform		Chloroform	67-66-3	*0.046	*5.6
U045	Chloromethane (Methyl chloride)		Chloromethane (Methyl chloride)	74-87-3	*0.19	*33
U047	2-Chloronaphthalene		2-Chloronaphthalene	91-58-7	*0.055	*5.6
U048	2-Chlorophenol		2-Chlorophenol	95-57-8	*0.044	*5.7
U050	Chrysene		Chrysene	218-01-9	*0.059	*8.2
U051	Creosote	Table CCWE in 268.41	Naphthalene	91-20-3	*0.031	*1.5
			Pentachlorophenol	87-86-5	*0.13	*7.4
			Phenanthrene	85-01-8	*0.031	*1.5
			Pyrene	129-00-0	*0.028	*28
			Toluene	108-88-3	*0.028	*33
			Xylenes (Total)	7439-92-1	*0.032	NA
			Lead		*0.037	
U052	Cresols (Cresylic acid)		o-Cresol	95-48-7	*0.11	*5.6
			Cresols (m- and p- isomers)		*0.77	*3.2
U057	Cyclohexanone	Table 2 in 268.42	Cyclohexanone	108-94-1	0.36	NA
U060	DDD		o,p'-DDD	53-19-0	0.023	*0.087
			p,p'-DDD	72-54-8	0.023	*0.087
U061	DDT		o,p'-DDT	789-02-6	*0.0039	*0.087
			p,p'-DDT	50-29-3	*0.0039	*0.087
			o,p'-DDD	53-19-0	*0.023	*0.087
			p,p'-DDD	72-54-8	*0.023	*0.087
			o,p'-DDE	3424-82-6	*0.031	*0.087
			p,p'-DDE	72-55-9	*0.031	*0.087
U063	Dibenzo(a,h)anthracene		Dibenzo(a,h)anthracene	53-70-3	*0.055	*8.2
U066	1,2-Dibromo-3-chloropropane		1,2-Dibromo-3-chloropropane	96-12-8	*0.11	*15
U067	1,2-Dibromoethane (Ethylenedibromide)		1,2-Dibromoethane (Ethylene dibromide)	106-93-4	*0.028	15
U068	Dibromomethane		Dibromomethane	74-95-3	*0.11	15
U069	Di-n-butyl phthalate		Di-n-butyl phthalate	84-74-2	*0.54	*28
U070	o-Dichlorobenzene		o-Dichlorobenzene	95-50-1	*0.088	*6.2
U071	m-Dichlorobenzene		m-Dichlorobenzene	541-73-1	0.036	6.2
U072	p-Dichlorobenzene		p-Dichlorobenzene	104-46-7	*0.090	*6.2
U075	Dichlorodifluoromethane		Dichlorodifluoromethane	75-71-8	*0.23	*7.2
U076	1,1-Dichloroethane		1,1-Dichloroethane	75-34-3	*0.059	7.2
U077	1,2-Dichloroethane		1,2-Dichloroethane	107-06-2	*0.21	*7.2
U079	1,1-Dichloroethylene		1,1-Dichloroethylene	75-35-4	*0.025	*33
U079	1,2-Dichloroethylene		trans-1,2-Dichloroethylene	156-60-6	*0.054	*33
U080	Methylene chloride		Methylene chloride	75-09-2	*0.089	*33
U081	2,4-Dichlorophenol		2,4-Dichlorophenol	120-83-2	*0.044	*14
U082	2,6-Dichlorophenol		2,6-Dichlorophenol	87-65-0	*0.044	*14

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
U083	1,2-Dichloropropane		1,2-Dichloropropane	78-87-5	² 0.85	¹ 18
U084	1,3-Dichloropropene		cis-1,3-Dichloropropylene	10061-01-5	² 0.036	¹ 18
			trans-1,3-Dichloropropylene	10061-02-6	² 0.036	¹ 18
U088	Diethyl phthalate		Diethyl phthalate	84-66-2	¹ 0.54	¹ 28
U093	p-Dimethylaminoazobenzene	Table 2 in 268.42	p-Dimethylaminoazobenzene	60-11-7	² 0.13	NA
U101	2,4-Dimethylphenol		2,4-Dimethylphenol	105-67-9	² 0.036	¹ 14
U102	Dimethyl phthalate		Dimethyl phthalate	131-11-3	¹ 0.54	¹ 28
U105	2,4-Dinitrotoluene		2,4-Dinitrotoluene	121-14-2	² 0.32	¹ 140
U106	2,6-Dinitrotoluene		2,6-Dinitrotoluene	606-20-2	² 0.55	¹ 28
U107	Di-n-octyl phthalate		Di-n-octyl phthalate	117-84-0	¹ 0.54	¹ 28
U108	1,4-Dioxane		1,4-Dioxane	123-91-1	² 0.12	¹ 170
U111	Di-n-propylnitrosoamine		Di-n-propylnitrosoamine	621-84-7	² 0.40	¹ 14
U112	Ethyl acetate		Ethyl acetate	141-78-6	² 0.34	¹ 33
U117	Ethyl ether		Ethyl ether	60-29-7	² 0.12	¹ 160
U118	Ethyl methacrylate		Ethyl methacrylate	97-63-2	² 0.14	¹ 160
U120	Fluoranthene		Fluoranthene	206-44-0	² 0.068	¹ 8.2
U121	Trichloromonofluoromethane		Trichloromonofluoromethane	75-69-4	² 0.020	¹ 33
U127	Hexachlorobenzene		Hexachlorobenzene	118-74-1	² 0.055	¹ 37
U128	Hexachlorobutadiene		Hexachlorobutadiene	87-68-3	² 0.055	¹ 28
U129	Lindane		alpha-BHC	319-84-6	² 0.00014	¹ 0.066
			beta-BHC	319-85-7	0.00014	¹ 0.066
			Delta-BHC	319-86-8	0.023	¹ 0.066
			gamma-BHC (Lindane)	58-89-9	0.0017	¹ 0.066
U130	Hexachlorocyclopentadiene		Hexachlorocyclopentadiene	77-47-7	² 0.057	¹ 3.8
U131	Hexachloroethane		Hexachloroethane	67-72-1	² 0.055	¹ 28
U134	Hydrogen fluoride	Table 2 in 268.42	Fluoride	16964-48-8	35	NA
U136	Cacodylic acid	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
U137	Indeno(1,2,3-c,d)pyrene		Indeno(1,2,3-c,d)pyrene	193-39-5	² 0.0055	¹ 8.2
U138	Iodomethane		Iodomethane	74-88-4	² 0.19	¹ 65
U140	Isobutyl alcohol		Isobutyl alcohol	78-83-1	5.8	¹ 170
U141	Isosafrole		Isosafrole	120-58-1	0.081	¹ 2.6
U142	Kepone		Kepone	143-50-8	0.0011	¹ 0.13
U144	Lead acetate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U145	Lead phosphate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U146	Lead subacetate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U151	Mercury	Table CCWE in 268.41 and Table 2 in 268.42	Mercury	7439-97-8	0.030	NA
U152	Methacrylonitrile		Methacrylonitrile	126-98-7	² 0.24	¹ 84
U155	Methapyrene		Methapyrene	91-80-5	0.081	¹ 1.5
U157	3-Methylcholanthrene		3-Methylcholanthrene	56-49-5	² 0.0055	¹ 15
U158	4,4'-Methylenebis(2-chloroaniline)		4,4'-Methylenebis(2-chloroaniline)	101-14-4	² 0.50	¹ 35
U159	Methyl ethyl ketone		Methyl ethyl ketone	78-93-3	0.28	¹ 36
U161	Methyl isobutyl ketone		Methyl isobutyl ketone	108-10-1	0.14	¹ 33
U162	Methyl methacrylate		Methyl methacrylate	80-62-6	0.14	¹ 160
U165	Naphthalene		Naphthalene	91-20-3	² 0.059	¹ 3.1
U168	2-Naphthylamine	Table 2 in 268.42	2-Naphthylamine	91-59-8	² 0.52	NA
U169	Nitrobenzene		Nitrobenzene	98-95-3	² 0.068	¹ 14
U170	4-Nitrophenol		4-Nitrophenol	100-02-7	² 0.12	¹ 29
U172	n-Nitrosodi-n-butylamine		n-Nitrosodi-n-butylamine	924-16-3	² 0.40	¹ 17
U174	N-Nitrosodiethylamine		N-Nitrosodiethylamine	55-18-5	² 0.40	¹ 26
U179	N-Nitrosopiperidine		N-Nitrosopiperidine	100-75-4	² 0.013	¹ 35
U180	N-Nitrosopyrrolidine		N-Nitrosopyrrolidine	930-55-2	² 0.013	¹ 35
U181	5-Nitro-o-toluidine		5-Nitro-o-toluidine	99-55-8	² 0.32	¹ 28
U183	Pentachlorobenzene		Pentachlorobenzene	608-93-5	² 0.055	¹ 37
U185	Pentachloronitrobenzene		Pentachloronitrobenzene	82-68-8	² 0.055	¹ 4.8
U187	Phenacetin		Phenacetin	62-44-2	0.081	¹ 16
U188	Phenol		Phenol	108-95-2	0.039	¹ 6.2
U190	Phthalic anhydride (measured as Phthalic acid)		Phthalic anhydride (measured as Phthalic acid)	85-44-9	¹ 0.54	¹ 28
U192	Pronamide		Pronamide	23850-58-5	0.093	¹ 1.5
U196	Pyridine		Pyridine	110-86-1	² 0.014	¹ 16
U203	Safrole		Safrole	94-59-7	0.081	¹ 22
U204	Selenium dioxide	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
U205	Selenium sulfide	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
U207	1,2,4,5-Tetrachlorobenzene		1,2,4,5-Tetrachlorobenzene	95-94-3	² 0.055	¹ 19
U208	1,1,1,2-Tetrachloroethane		1,1,1,2-Tetrachloroethane	630-20-8	0.057	¹ 42
U209	1,1,2,2-Tetrachloroethane		1,1,2,2-Tetrachloroethane	79-34-5	² 0.057	¹ 42
U210	Tetrachloroethylene		Tetrachloroethylene	127-18-4	² 0.056	¹ 5.6
U211	Carbon tetrachloride		Carbon tetrachloride	56-23-5	² 0.057	¹ 5.8
U214	Thallium(I)acetate	Table 2 in 268.42	Thallium	7440-28-0	² 0.14	NA
U215	Thallium(I)carbonate	Table 2 in 268.42	Thallium	7440-28-0	² 0.14	NA
U216	Thallium(I)chloride	Table 2 in 268.42	Thallium	7440-28-0	² 0.14	NA
U217	Thallium(I)nitrate	Table 2 in 268.42	Thallium	7440-28-0	² 0.14	NA
U220	Toluene		Toluene	108-88-3	² 0.080	¹ 28
U225	Tribromomethane (Bromofom)		Tribromomethane (Bromofom)	75-25-2	² 0.63	¹ 15
U226	1,1,1-Trichloroethane		1,1,1-Trichloroethane	71-55-6	² 0.054	¹ 5.6
U227	1,1,2-Trichloroethane		1,1,2-Trichloroethane	79-00-5	² 0.054	¹ 5.6

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewater concentration (mg/l)	Non-wastewater concentration (mg/kg)
U229	Trichloroethylene		Trichloroethylene	79-01-6	* 0.054	¹ 5.6
U235	tris-(2,3-Dibromopropyl)-phosphate		tris-(2,3-Dibromopropyl)-phosphate	126-72-7	0.025	¹ 0.10
U239	Xylenes		Xylenes		* 0.32	¹ 28
U240	2,4-Dichlorophenoxyacetic acid		2,4-Dichlorophenoxyacetic acid	94-75-7	0.72	¹ 10
U243	Hexachloropropene		Hexachloropropene	1888-71-7	* 0.035	28
U247	Methoxychlor		Methoxychlor	72-43-5	* 0.25	¹ 0.19

¹ Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR Section 268.7.

* Based on analysis of composite samples.

¹ As analyzed using SW-846 Method 9010; sample size: 0.5-10; distillation time: one hour to one hour fifteen minutes.

NA—Not Applicable.

(c) Notwithstanding the prohibitions specified in paragraph (a) of this section, treatment and disposal facilities may demonstrate (and certify pursuant to § 268.7(b)(5)) compliance with the treatment standards for organic constituents specified in this section provided the following conditions are satisfied:

(1) The treatment for the organic constituents were established based on incineration in units operated in accordance with the technical requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O, or based on combustion in fuel substitution units operating in accordance with applicable technical requirements;

(2) The organic constituents have been treated using the methods referenced in paragraph (c)(1) of this section; and

(3) The treatment or disposal facility has been unable to detect the organic constituents despite using its best good-faith efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are developed, such good-faith efforts may be demonstrated where the treatment or disposal facility has detected the organic constituents at levels within an order of magnitude of the treatment standard specified in this section.

13. Appendix IV is added to part 268 to read as follows:

Appendix IV—Organometallic Lab Packs

Hazardous waste with the following EPA waste codes may be placed in an "organometallic" or "Appendix IV lab pack:"

P001, P002, P003, P004, P005, P006, P007, P008, P009, P013, P014, P015, P016, P017, P018, P020, P022, P023, P024, P025, P026, P027, P028, P031, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P047, P048, P049, P050, P051, P054, P056, P057, P058, P059, P060, P062, P063, P064,

P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P077, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P108, P109, P110, P112, P113, P114, P115, P116, P118, P119, P120, P122, P123
 U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, U138, U139, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U152, U154, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359
 F001, F002, F003, F004, F005, F006, F010, F020, F021, F023, F024, F026, F027, F028

K001, K002, K008, K009, K010, K011, K013, K014, K015, K016, K017, K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K054, K060, K061, K064, K065, K066, K069, K071, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K136

D001, D002, D003, D004, D005, D006, D007, D008, D010, D011, D012, D013, D014, D015, D018, D017

U032, U136, U144, U145, U146, U133, U214, U215, U216, U217

14. Appendix V is added to part 268 to read as follows:

Appendix V—Organic Lab Packs

Hazardous wastes with the following EPA Hazardous Waste Code No. may be placed in an "organic" or "Appendix V:"

P001, P002, P003, P004, P005, P006, P007, P008, P009, P013, P014, P015, P016, P017, P018, P020, P022, P023, P025, P024, P026, P027, P028, P031, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P057, P058, P059, P060, P062, P063, P064, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P077, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P108, P109, P110, P111, P112, P113, P114, P115, P116, P119, P120, P122, P123
 U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U033, U034, U035, U036, U037, U038,

U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U135, U137, U138, U139, U140, U141, U142, U143, U147, U148, U149, U150, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U205, U206, U207, U208, U209, U210, U211.

U213, U214, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359
F001, F002, F003, F004, F005, F010, F020, F021, F023, F024, F026, F027, F028
K001, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K054, K060, K065, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K136

D001, D012, D013, D014, D015, D016, D017

15. Appendix VI is added to part 268, to read as follows:

Appendix VI—Recommended Technologies to Achieve Deactivation of Characteristics in Section 268.42

The treatment standard for many subcategories of D001, D002, and D003 wastes as well as for K044, K045, and K047 wastes is listed in 268.42 simply as "Deactivation to remove the characteristics of ignitability, corrosivity, and reactivity". EPA has determined that many technologies, when used alone or in combination, can achieve this standard. The following appendix presents a partial list of these technologies, utilizing the five letter technology codes established in 40 CFR 268.42 Table 1. Use of these specific technologies is not mandatory and does not preclude direct reuse, recovery, and/or the use of other pretreatment technologies provided deactivation is achieved and these alternative methods are not performed in units designated as land disposal.

Waste code/subcategory	Nonwastewaters	Wastewaters
D001 Ignitable Liquids based on 261.21(a)(1)—Low TOC Nonwastewater Subcategory (containing 1% to <10% TOC).	RORGs..... INCIN..... WETOX..... CHOXD..... BIODG.....	n.a.
D001 Ignitable Liquids based on 261.21(a)(1)—Ignitable Wastewater Subcategory (containing <1% TOC)	n.a.	RORGs INCIN WETOX CHOXD BIODG
D001 Compressed Gases based on 261.21(A)(3)	RCGAS..... INCIN..... FSUBS..... ADGAS fb. INCIN..... ADGAS fb. (CHOXD; or CHRED).....	n.a.
D001 Ignitable Reactives based on 261.21(a)(2)	WTRRX..... CHOXD..... CHRED..... STABL..... INCIN.....	n.a.
D001 Ignitable Oxidizers based on 261.21(a)(4)	CHRED..... INCIN.....	CHRED INCIN
D002 Acid Subcategory based on 261.22(a)(1) with pH less than or equal to 2	RCORR..... NEUTR..... INCIN.....	NEUTR INCIN
D002 Alkaline Subcategory based on 261.22(a)(1) with pH greater than or equal to 12.5	NEUTR..... INCIN.....	NEUTR INCIN
D002 Other Corrosives based on 261.22(a)(2)	CHOXD..... CHRED..... INCIN..... STABL.....	CHOXD CHRED INCIN
D003 Water Reactives based on 261.23(a) (2), (3), and (4)	INCIN..... WTRRX..... CHOXD..... CHRED.....	n.a.
D003 Reactive Sulfides based on 261.23(a)(5)	CHOXD..... CHRED..... INCIN..... STABL.....	CHOXD CHRED BIODG INCIN
D003 Explosives based on 261.23(a) (6), (7), and (8)	INCIN..... CHOXD..... CHRED.....	CHOXD CHRED BIODG CARBN
D003 Other Reactives based on 261.23(a)(1)	INCIN..... CHOXD..... CHRED.....	CHOXD CHRED BIODG CARBN

Waste code/subcategory	Nonwastewaters	Wastewaters
K044 Wastewater treatment sludges from the manufacturing and processing of explosives.....	CHOXD..... CHRED..... INCIN.....	CHOXD CHRED BICOG CARBN INCIN
K045 Spent carbon from the treatment of wastewaters containing explosives.....	CHOXD..... CHRED..... INCIN.....	CHOXD CHRED BICOG CARBN INCIN
K047 Pink/red water from TNT operations.....	CHOXD..... CHRED..... INCIN.....	CHOXD CHRED BICOG CARBN INCIN

Note: "n.a." stands for "not applicable"; "fb." stands for "followed by".

16. Appendix VII is added to part 268, to read as follows:

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRS *

[Comprehensive List]

Waste code	Waste category	Effective date
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l or certain metals or compounds of these metals greater than or equal to the prohibition levels.	July 8, 1987.
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	July 8, 1987.
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1,000 mg/l but less than 10,000 mg/l.	July 8, 1987.
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	July 8, 1987.

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
California list	Other liquid and non-liquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg.	Nov. 8, 1988.
California list	Soil and debris HOCs not from CERCLA/RCRA corrective actions.	July 8, 1989.
California list	Soil and debris HOCs from CERCLA/RCRA corrective actions.	Nov. 8, 1990.
D001	All	Aug. 8, 1990.
D002	All	Aug. 8, 1990.
D003	All	Aug. 8, 1990.
D004	Inorganic solid debris.	May 8, 1992.
D004	Nonwastewater	May 8, 1992.
D004	Wastewater	Aug. 8, 1990.
D005	Inorganic solid debris.	May 8, 1992.
D005	All others	Aug. 8, 1990.
D006	Inorganic solid debris.	May 8, 1992.
D006	All others	Aug. 8, 1990.
D007	Inorganic solid debris.	May 8, 1992.
D007	All others	Aug. 8, 1990.
D008	Inorganic solid debris.	May 8, 1992.
D008	Lead acid batteries.	May 8, 1992.
D008	All others	Aug. 8, 1990.
D009	Inorganic solid debris.	May 8, 1992.
D009	High mercury non-wastewater.	May 8, 1992.
D009	Low mercury non-wastewater.	May 8, 1992.
D009	All others	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
D010	Inorganic solid debris.	May 8, 1992.
D010	All others	Aug. 8, 1990.
D011	Inorganic solid debris.	May 8, 1992.
D011	All others	Aug. 8, 1990.
D012	All	Aug. 8, 1990.
D013	All	Aug. 8, 1990.
D0014	All	Aug. 8, 1990.
D0015	All	Aug. 8, 1990.
D0016	All	Aug. 8, 1990.
D0017	All	Aug. 8, 1990.
F001-F005	All, except:	Nov. 8, 1988.
F001-F005	Small quantity generators, CERCLA/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids, and non CERCLA/RCRA corrective action soils with less than 1 percent total solvent constituents.	Nov. 8, 1990.
F001-F005	Soil and debris	Nov. 8, 1990.
F002	All	Aug. 8, 1990.
F005	All	Aug. 8, 1990.
F006	Wastewater	Aug. 8, 1990.
F006	Nonwastewater	Aug. 8, 1988.
F006	Nonwastewater (cyanides).	July 8, 1989.
F007	All	July 8, 1989.
F008	All	July 8, 1989.
F009	All	July 8, 1989.
F010	Soil and debris	June 8, 1991.
F010	All others	June 8, 1989.
F011	All	July 8, 1989.
F012	All	July 8, 1989.
F019	All	Aug. 8, 1990.
F020	Soil and debris	Nov. 8, 1990.
F020	All others	Nov. 8, 1988.
F021	Soil and debris	Nov. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRs *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
F021.....	All others.....	Nov. 8, 1988.
F022.....	Soil and debris.....	Nov. 8, 1990.
F022.....	All others.....	Nov. 8, 1988.
F023.....	Soil and debris.....	Nov. 8, 1990.
F023.....	All others.....	Nov. 8, 1988.
F024.....	Soil and debris.....	June 8, 1991.
F024 (metals).....	Nonwastewater.....	Aug. 8, 1990.
F024.....	All.....	Aug. 8, 1990.
(dioxins/ furans).		
F024.....	All others.....	June 8, 1989.
F025.....	All.....	Aug. 8, 1990.
F026.....	Soil and debris.....	Nov. 8, 1990.
F026.....	All others.....	Nov. 8, 1988.
F027.....	Soil and debris.....	Nov. 8, 1990.
F027.....	All others.....	Nov. 8, 1988.
F028.....	Soil and debris.....	Nov. 8, 1990.
F028.....	All others.....	Nov. 8, 1988.
F039.....	Wastewater.....	Aug. 8, 1990.
F039.....	Nonwastewater.....	May 8, 1992.
K001.....	Soil and debris.....	Aug. 8, 1990.
K001 (lead/ organics).....	All.....	Aug. 8, 1990.
K001.....	All others.....	Aug. 8, 1988.
K002.....	All.....	Aug. 8, 1990.
K003.....	All.....	Aug. 8, 1990.
K004.....	All.....	Aug. 8, 1990.
K005 *.....	All.....	Aug. 8, 1990.
K006.....	All.....	Aug. 8, 1990.
K007 *.....	All.....	Aug. 8, 1990.
K008.....	All.....	Aug. 8, 1990.
K009.....	Soil and debris.....	June 8, 1991.
K009.....	All others.....	June 8, 1989.
K010.....	Soil and debris.....	June 8, 1991.
K010.....	All others.....	June 8, 1989.
K011.....	Wastewater.....	Aug. 8, 1990.
K011.....	Nonwastewater.....	June 8, 1989.
K011.....	Soil and debris.....	June 8, 1991.
K013.....	Wastewater.....	Aug. 8, 1990.
K013.....	Nonwastewater.....	June 8, 1989.
K013.....	Soil and debris.....	June 8, 1991.
K014.....	Wastewater.....	Aug. 8, 1990.
K014.....	Nonwastewater.....	June 8, 1989.
K014.....	Soil and debris.....	June 8, 1991.
K015.....	Wastewater.....	Aug. 8, 1988.
K015.....	Nonwastewater.....	Aug. 8, 1990.
K016.....	Soil and debris.....	Aug. 8, 1990.
K016.....	All others.....	Aug. 8, 1988.
K017.....	All.....	Aug. 8, 1990.
K018.....	Soil and debris.....	Aug. 8, 1990.
K018.....	All others.....	Aug. 8, 1988.
K019.....	Soil and debris.....	Aug. 8, 1990.
K019.....	All others.....	Aug. 8, 1988.
K020.....	Soil and debris.....	Aug. 8, 1990.
K020.....	All others.....	Aug. 8, 1988.
K021 *.....	All.....	Aug. 8, 1990.
K022.....	Wastewater.....	Aug. 8, 1990.
K022.....	Nonwastewater.....	Aug. 8, 1988.
K022.....	Soil and debris.....	Aug. 8, 1990.
K023.....	Soil and debris.....	June 8, 1991.
K023.....	All others.....	June 8, 1989.
K024.....	Soil and debris.....	Aug. 8, 1990.
K024.....	All others.....	Aug. 8, 1988.
K025 *.....	All.....	Aug. 8, 1990.
K026.....	All.....	Aug. 8, 1990.
K027.....	Soil and debris.....	June 8, 1991.
K027.....	All others.....	June 8, 1989.
K028.....	Soil and debris.....	June 8, 1991.
K028.....	Nonwastewater.....	Aug. 8, 1990.
(metals).		
K028.....	All others.....	June 8, 1989.
K029.....	Wastewater.....	Aug. 8, 1990.
K029.....	Nonwastewater.....	June 8, 1989.
K029.....	Soil and debris.....	June 8, 1991.
K030.....	Soil and debris.....	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRs *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
K030.....	All others.....	Aug. 8, 1988.
K031.....	Wastewater.....	Aug. 8, 1990.
K031.....	Nonwastewater.....	May 8, 1992.
K032.....	All.....	Aug. 8, 1990.
K033.....	All.....	Aug. 8, 1990.
K034.....	All.....	Aug. 8, 1990.
K035.....	All.....	Aug. 8, 1990.
K036 *.....	All.....	Aug. 8, 1990.
K037.....	Soil and debris.....	Aug. 8, 1990.
K037.....	Wastewater.....	Aug. 8, 1990.
K037.....	All others.....	Aug. 8, 1988.
K038.....	Soil and debris.....	June 8, 1991.
K038.....	All others.....	June 8, 1989.
K039.....	Soil and debris.....	June 8, 1991.
K039.....	All others.....	June 8, 1989.
K040.....	Soil and debris.....	June 8, 1991.
K040.....	All others.....	June 8, 1989.
K041.....	All.....	Aug. 8, 1990.
K042.....	All.....	Aug. 8, 1990.
K043.....	Soil and debris.....	June 8, 1991.
K043.....	All others.....	June 8, 1989.
K044.....	All.....	Aug. 8, 1990.
K045.....	All.....	Aug. 8, 1990.
K046.....	Nonreactive non- wastewater.....	Aug. 8, 1988.
K046.....	All others.....	Aug. 8, 1990.
K047.....	All.....	Aug. 8, 1990.
K048.....	Wastewater.....	Aug. 8, 1990.
K048.....	Nonwastewater.....	Nov. 8, 1990.
K049.....	Wastewater.....	Aug. 8, 1990.
K049.....	Nonwastewater.....	Nov. 8, 1990.
K050.....	Wastewater.....	Aug. 8, 1990.
K050.....	Nonwastewater.....	Nov. 8, 1990.
K051.....	Wastewater.....	Aug. 8, 1990.
K051.....	Nonwastewater.....	Nov. 8, 1990.
K052.....	Wastewater.....	Aug. 8, 1990.
K052.....	Nonwastewater.....	Nov. 8, 1990.
K060 *.....	All.....	Aug. 8, 1990.
K061.....	Wastewater.....	Aug. 8, 1990.
K061.....	Nonwastewater.....	Aug. 8, 1988.
K062.....	All.....	Aug. 8, 1988.
K069.....	All.....	Aug. 8, 1990.
K073.....	All.....	Aug. 8, 1990.
K083.....	All.....	Aug. 8, 1990.
K084.....	Wastewater.....	Aug. 8, 1990.
K084.....	Nonwastewater.....	May 8, 1992.
K085.....	All.....	Aug. 8, 1990.
K086.....	All.....	Aug. 8, 1990.
K087.....	Soil and debris.....	Aug. 8, 1990.
K087.....	All others.....	Aug. 8, 1988.
K093.....	Soil and debris.....	June 8, 1991.
K093.....	All others.....	June 8, 1989.
K094.....	Soil and debris.....	June 8, 1991.
K094.....	All others.....	June 8, 1989.
K095.....	Wastewater.....	Aug. 8, 1990.
K095.....	Nonwastewater.....	June 8, 1989.
K096.....	Soil and debris.....	June 8, 1991.
K096.....	Wastewater.....	Aug. 8, 1990.
K096.....	Nonwastewater.....	June 8, 1989.
K096.....	Soil and debris.....	June 8, 1991.
K097.....	All.....	Aug. 8, 1990.
K098.....	All.....	Aug. 8, 1990.
K099.....	All.....	Aug. 8, 1988.
K100 *.....	All.....	Aug. 8, 1990.
K101.....	Wastewater.....	Aug. 8, 1988.
K101.....	Nonwastewater.....	May 8, 1992.
K102.....	Wastewater.....	Aug. 8, 1988.
K102.....	Nonwastewater.....	May 8, 1992.
K103.....	Soil and debris.....	Aug. 8, 1990.
K103.....	All others.....	Aug. 8, 1988.
K104.....	Soil and debris.....	Aug. 8, 1990.
K104.....	All others.....	Aug. 8, 1988.
K105.....	All.....	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRs *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
K106.....	High mercury non- wastewater.....	May 8, 1992.
K106.....	Low mercury non- wastewater.....	May 8, 1992.
K106.....	All others.....	Aug. 8, 1990.
K113.....	Soil and debris.....	June 8, 1991.
K113.....	All others.....	June 8, 1989.
K114.....	Soil and debris.....	June 8, 1991.
K114.....	All others.....	June 8, 1989.
K115.....	Soil and debris.....	June 8, 1991.
K115.....	All others.....	June 8, 1989.
K116.....	Soil and debris.....	June 8, 1991.
K116.....	All others.....	June 8, 1989.
P001.....	All.....	Aug. 8, 1990.
P002.....	All.....	Aug. 8, 1990.
P003.....	All.....	Aug. 8, 1990.
P004.....	All.....	Aug. 8, 1990.
P005.....	All.....	Aug. 8, 1990.
P006.....	All.....	Aug. 8, 1990.
P007.....	All.....	Aug. 8, 1990.
P008.....	All.....	Aug. 8, 1990.
P009.....	All.....	Aug. 8, 1990.
P010.....	Wastewater.....	Aug. 8, 1990.
P010.....	Nonwastewater.....	May 8, 1992.
P011.....	Wastewater.....	Aug. 8, 1990.
P011.....	Nonwastewater.....	May 8, 1992.
P012.....	Wastewater.....	Aug. 8, 1990.
P012.....	Nonwastewater.....	May 8, 1992.
P013.....	All.....	Aug. 8, 1990.
P014.....	All.....	Aug. 8, 1990.
P015.....	All.....	Aug. 8, 1990.
P016.....	All.....	Aug. 8, 1990.
P017.....	All.....	Aug. 8, 1990.
P018.....	All.....	Aug. 8, 1990.
P020.....	All.....	Aug. 8, 1990.
P021.....	All.....	June 8, 1989.
P022.....	All.....	Aug. 8, 1990.
P023.....	All.....	Aug. 8, 1990.
P024.....	All.....	Aug. 8, 1990.
P026.....	All.....	Aug. 8, 1990.
P027.....	All.....	Aug. 8, 1990.
P028.....	All.....	Aug. 8, 1990.
P029.....	All.....	June 8, 1989.
P030.....	All.....	June 8, 1989.
P031.....	All.....	Aug. 8, 1990.
P033.....	All.....	Aug. 8, 1990.
P034.....	All.....	Aug. 8, 1990.
P036.....	Wastewater.....	Aug. 8, 1990.
P036.....	Nonwastewater.....	May 8, 1992.
P037.....	All.....	Aug. 8, 1990.
P038.....	Wastewater.....	Aug. 8, 1990.
P038.....	Nonwastewater.....	May 8, 1992.
P039.....	Soil and debris.....	June 8, 1991.
P039.....	All others.....	June 8, 1989.
P040.....	Soil and debris.....	June 8, 1991.
P040.....	All others.....	June 8, 1989.
P041.....	Soil and debris.....	June 8, 1991.
P041.....	All others.....	June 8, 1989.
P042.....	All.....	Aug. 8, 1990.
P043.....	Soil and debris.....	June 8, 1991.
P043.....	All others.....	June 8, 1989.
P044.....	Soil and debris.....	June 8, 1991.
P044.....	All others.....	June 8, 1989.
P045.....	All.....	Aug. 8, 1990.
P046.....	All.....	Aug. 8, 1990.
P047.....	All.....	Aug. 8, 1990.
P048.....	All.....	Aug. 8, 1990.
P049.....	All.....	Aug. 8, 1990.
P050.....	All.....	Aug. 8, 1990.
P051.....	All.....	Aug. 8, 1990.
P054.....	All.....	Aug. 8, 1990.
P056.....	All.....	Aug. 8, 1990.
P057.....	All.....	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
P058.....	All.....	Aug. 8, 1990.
P059.....	All.....	Aug. 8, 1990.
P060.....	All.....	Aug. 8, 1990.
P062.....	Soil and debris.....	June 8, 1991.
P062.....	All others.....	June 8, 1989.
P063.....	All.....	June 8, 1989.
P064.....	All.....	Aug. 8, 1990.
P065.....	High mercury non-wastewater.	May 8, 1992.
P065.....	Low mercury non-wastewater.	May 8, 1992.
P065.....	All others.....	Aug. 8, 1990.
P066.....	All.....	Aug. 8, 1990.
P067.....	All.....	Aug. 8, 1990.
P068.....	All.....	Aug. 8, 1990.
P069.....	All.....	Aug. 8, 1990.
P070.....	All.....	Aug. 8, 1990.
P071.....	Soil and debris.....	June 8, 1991.
P071.....	All others.....	June 8, 1989.
P072.....	All.....	Aug. 8, 1990.
P073.....	All.....	Aug. 8, 1990.
P074.....	All.....	June 8, 1989.
P075.....	All.....	Aug. 8, 1990.
P076.....	All.....	Aug. 8, 1990.
P077.....	All.....	Aug. 8, 1990.
P078.....	All.....	Aug. 8, 1990.
P081.....	All.....	Aug. 8, 1990.
P082.....	All.....	Aug. 8, 1990.
P084.....	All.....	Aug. 8, 1990.
P085.....	Soil and debris.....	June 8, 1991.
P085.....	All others.....	June 8, 1989.
P087.....	All.....	May 8, 1992.
P088.....	All.....	Aug. 8, 1990.
P089.....	Soil and debris.....	June 8, 1991.
P089.....	All others.....	June 8, 1989.
P092.....	High mercury non-wastewater	May 8, 1992.
P092.....	Low mercury non-wastewater	May 8, 1992.
P092.....	All others.....	Aug. 8, 1990.
P093.....	Soil and debris.....	May 8, 1992.
P093.....	All others.....	Aug. 8, 1990.
P094.....	Soil and debris.....	June 8, 1991.
P094.....	All others.....	June 8, 1989.
P095.....	Soil and debris.....	May 8, 1992.
P095.....	All others.....	Aug. 8, 1990.
P096.....	All.....	Aug. 8, 1990.
P097.....	Soil and debris.....	June 8, 1991.
P097.....	All others.....	June 8, 1989.
P098.....	All.....	June 8, 1989.
P099 (silver).....	Wastewater.....	Aug. 8, 1990.
P099 (cyanides).....	Wastewater.....	June 8, 1989.
P099 (cyanides/silver).....	Nonwastewater.....	June 8, 1989.
P101.....	All.....	Aug. 8, 1990.
P102.....	All.....	Aug. 8, 1990.
P103.....	All.....	Aug. 8, 1990.
P104 (silver).....	Wastewater.....	Aug. 8, 1990.
P104 (cyanides).....	Wastewater.....	June 8, 1989.
P104 (cyanides/silver).....	Nonwastewater.....	June 8, 1989.
P105.....	All.....	Aug. 8, 1990.
P106.....	All.....	June 8, 1989.
P108.....	Soil and debris.....	May 8, 1992.
P108.....	All others.....	Aug. 8, 1990.
P109.....	Soil and debris.....	June 8, 1991.
P109.....	All others.....	June 8, 1989.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
P110.....	All.....	Aug. 8, 1990.
P111.....	Soil and debris.....	June 8, 1991.
P111.....	All others.....	June 8, 1989.
P112.....	All.....	Aug. 8, 1990.
P113.....	All.....	Aug. 8, 1990.
P114.....	All.....	Aug. 8, 1990.
P115.....	All.....	Aug. 8, 1990.
P116.....	Soil and debris.....	May 8, 1992.
P116.....	All others.....	Aug. 8, 1990.
P118.....	Soil and debris.....	May 8, 1992.
P118.....	All others.....	Aug. 8, 1990.
P119.....	All.....	Aug. 8, 1990.
P120.....	All.....	Aug. 8, 1990.
P121.....	All.....	June 8, 1989.
P122.....	All.....	Aug. 8, 1990.
P123.....	All.....	Aug. 8, 1990.
U001.....	All.....	Aug. 8, 1990.
U002.....	All.....	Aug. 8, 1990.
U003.....	Soil and debris.....	May 8, 1992.
U003.....	All others.....	Aug. 8, 1990.
U004.....	All.....	Aug. 8, 1990.
U005.....	All.....	Aug. 8, 1990.
U006.....	Soil and debris.....	May 8, 1992.
U006.....	All others.....	Aug. 8, 1990.
U007.....	Soil and debris.....	May 8, 1992.
U007.....	All others.....	Aug. 8, 1990.
U008.....	All.....	Aug. 8, 1990.
U009.....	All.....	Aug. 8, 1990.
U010.....	Soil and debris.....	May 8, 1992.
U010.....	All others.....	Aug. 8, 1990.
U011.....	Soil and debris.....	May 8, 1992.
U011.....	All others.....	Aug. 8, 1990.
U012.....	All.....	Aug. 8, 1990.
U014.....	Soil and debris.....	May 8, 1992.
U014.....	All others.....	Aug. 8, 1990.
U015.....	Soil and debris.....	May 8, 1992.
U015.....	All others.....	Aug. 8, 1990.
U016.....	All.....	Aug. 8, 1990.
U017.....	Soil and debris.....	May 8, 1992.
U017.....	All others.....	Aug. 8, 1990.
U018.....	All.....	Aug. 8, 1990.
U019.....	All.....	Aug. 8, 1990.
U020.....	Soil and debris.....	May 8, 1992.
U020.....	All others.....	Aug. 8, 1990.
U021.....	Soil and debris.....	May 8, 1992.
U021.....	All others.....	Aug. 8, 1990.
U022.....	All.....	Aug. 8, 1990.
U023.....	All.....	Aug. 8, 1990.
U024.....	All.....	Aug. 8, 1990.
U025.....	All.....	Aug. 8, 1990.
U026.....	Soil and debris.....	May 8, 1992.
U026.....	All others.....	Aug. 8, 1990.
U027.....	All.....	Aug. 8, 1990.
U028.....	Soil and debris.....	June 8, 1991.
U028.....	All others.....	June 8, 1989.
U029.....	All.....	Aug. 8, 1990.
U030.....	All.....	Aug. 8, 1990.
U031.....	All.....	Aug. 8, 1990.
U032.....	All.....	Aug. 8, 1990.
U033.....	Soil and debris.....	May 8, 1992.
U033.....	All others.....	Aug. 8, 1990.
U034.....	Soil and debris.....	May 8, 1992.
U034.....	All others.....	Aug. 8, 1990.
U035.....	Soil and debris.....	May 8, 1992.
U035.....	All others.....	Aug. 8, 1990.
U036.....	All.....	Aug. 8, 1990.
U037.....	All.....	Aug. 8, 1990.
U038.....	Soil and debris.....	May 8, 1992.
U038.....	All others.....	Aug. 8, 1990.
U039.....	All.....	Aug. 8, 1990.
U041.....	Soil and debris.....	May 8, 1992.
U041.....	All others.....	Aug. 8, 1990.
U042.....	Soil and debris.....	May 8, 1992.
U042.....	All others.....	Aug. 8, 1990.
U043.....	All.....	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
U044.....	All.....	Aug. 8, 1990.
U045.....	All.....	Aug. 8, 1990.
U046.....	Soil and debris.....	May 8, 1992.
U046.....	All others.....	Aug. 8, 1990.
U047.....	All.....	Aug. 8, 1990.
U048.....	All.....	Aug. 8, 1990.
U049.....	Soil and debris.....	May 8, 1992.
U049.....	All others.....	Aug. 8, 1990.
U050.....	All.....	Aug. 8, 1990.
U051.....	All.....	Aug. 8, 1990.
U052.....	All.....	Aug. 8, 1990.
U053.....	All.....	Aug. 8, 1990.
U055.....	All.....	Aug. 8, 1990.
U056.....	All.....	Aug. 8, 1990.
U057.....	All.....	Aug. 8, 1990.
U058.....	Soil and debris.....	June 8, 1992.
U058.....	All others.....	June 8, 1989.
U059.....	Soil and debris.....	May 8, 1992.
U059.....	All others.....	Aug. 8, 1990.
U060.....	Soil and debris.....	May 8, 1992.
U060.....	All others.....	Aug. 8, 1990.
U061.....	Soil and debris.....	May 8, 1992.
U061.....	All others.....	Aug. 8, 1990.
U062.....	Soil and debris.....	May 8, 1992.
U062.....	All others.....	Aug. 8, 1990.
U063.....	All.....	Aug. 8, 1990.
U064.....	All.....	Aug. 8, 1990.
U066.....	All.....	Aug. 8, 1990.
U067.....	All.....	Aug. 8, 1990.
U068.....	All.....	Aug. 8, 1990.
U069.....	Soil and debris.....	June 8, 1991.
U069.....	All others.....	June 8, 1989.
U070.....	All.....	Aug. 8, 1990.
U071.....	All.....	Aug. 8, 1990.
U072.....	All.....	Aug. 8, 1990.
U073.....	Soil and debris.....	May 8, 1992.
U073.....	All others.....	Aug. 8, 1990.
U074.....	Soil and debris.....	May 8, 1992.
U074.....	All others.....	Aug. 8, 1990.
U075.....	All.....	Aug. 8, 1990.
U076.....	All.....	Aug. 8, 1990.
U077.....	All.....	Aug. 8, 1990.
U078.....	All.....	Aug. 8, 1990.
U079.....	All.....	Aug. 8, 1990.
U080.....	All.....	Aug. 8, 1990.
U081.....	All.....	Aug. 8, 1990.
U082.....	All.....	Aug. 8, 1990.
U083.....	All.....	Aug. 8, 1990.
U084.....	All.....	Aug. 8, 1990.
U085.....	All.....	Aug. 8, 1990.
U086.....	All.....	Aug. 8, 1990.
U087.....	Soil and debris.....	June 8, 1991.
U087.....	All others.....	June 8, 1989.
U088.....	Soil and debris.....	June 8, 1991.
U088.....	All others.....	June 8, 1989.
U089.....	All.....	Aug. 8, 1990.
U090.....	All.....	Aug. 8, 1990.
U091.....	Soil and Debris.....	May 8, 1992.
U091.....	All others.....	Aug. 8, 1990.
U092.....	Soil and debris.....	May 8, 1992.
U092.....	All others.....	Aug. 8, 1990.
U093.....	Soil and debris.....	May 8, 1992.
U093.....	All others.....	Aug. 8, 1990.
U094.....	All.....	Aug. 8, 1990.
U095.....	Soil and debris.....	May 8, 1992.
U095.....	All others.....	Aug. 8, 1990.
U096.....	All.....	Aug. 8, 1990.
U097.....	Soil and debris.....	May 8, 1992.
U097.....	All others.....	Aug. 8, 1990.
U098.....	All.....	Aug. 8, 1990.
U099.....	All.....	Aug. 8, 1990.
U101.....	All.....	Aug. 8, 1990.
U102.....	Soil and debris.....	June 8, 1991.
U102.....	All others.....	June 8, 1989.
U103.....	All.....	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
U105	All	Aug. 8, 1990.
U106	All	Aug. 8, 1990.
U107	Soil and debris	June 8, 1991.
U107	All others	June 8, 1989.
U108	All	Aug. 8, 1990.
U109	All	Aug. 8, 1990.
U110	Soil and debris	May 8, 1992.
U110	All others	Aug. 8, 1990.
U111	All	Aug. 8, 1990.
U112	All	Aug. 8, 1990.
U113	All	Aug. 8, 1990.
U114	Soil and debris	May 8, 1992.
U114	All others	Aug. 8, 1990.
U115	All	Aug. 8, 1990.
U116	Soil and debris	May 8, 1992.
U116	All others	Aug. 8, 1990.
U117	All	Aug. 8, 1990.
U118	All	Aug. 8, 1990.
U119	Soil and debris	May 8, 1992.
U119	All others	Aug. 8, 1990.
U120	All	Aug. 8, 1990.
U121	All	Aug. 8, 1990.
U122	All	Aug. 8, 1990.
U123	All	Aug. 8, 1990.
U124	All	Aug. 8, 1990.
U125	All	Aug. 8, 1990.
U126	All	Aug. 8, 1990.
U127	All	Aug. 8, 1990.
U128	All	Aug. 8, 1990.
U129	All	Aug. 8, 1990.
U130	Soil and debris	May 8, 1992.
U130	All others	Aug. 8, 1990.
U131	All	Aug. 8, 1990.
U132	Soil and debris	May 8, 1992.
U132	All others	Aug. 8, 1990.
U133	All	Aug. 8, 1990.
U134	All	Aug. 8, 1990.
U135	All	Aug. 8, 1990.
U136	Wastewater	Aug. 8, 1990.
U136	Nonwastewater	May 8, 1992.
U137	All	Aug. 8, 1990.
U138	All	Aug. 8, 1990.
U140	All	Aug. 8, 1990.
U141	All	Aug. 8, 1990.
U142	All	Aug. 8, 1990.
U143	Soil and debris	May 8, 1992.
U143	All others	Aug. 8, 1990.
U144	All	Aug. 8, 1990.
U145	All	Aug. 8, 1990.
U146	All	Aug. 8, 1990.
U147	All	Aug. 8, 1990.
U148	Soil and debris	May 8, 1992.
U148	All others	Aug. 8, 1990.
U149	Soil and debris	May 8, 1992.
U149	All others	Aug. 8, 1990.
U150	Soil and debris	May 8, 1992.
U150	All others	Aug. 8, 1990.
U151	High mercury non-wastewater.	May 8, 1992.
U151	Low mercury non-wastewater.	May 8, 1992.
U151	Soil and debris	May 8, 1992.
U151	All others	Aug. 8, 1990.
U152	All	Aug. 8, 1990.
U153	Soil and debris	May 8, 1992.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
U153	All others	Aug. 8, 1990.
U154	All	Aug. 8, 1990.
U155	All	Aug. 8, 1990.
U156	Soil and debris	May 8, 1992.
U156	All others	Aug. 8, 1990.
U157	All	Aug. 8, 1990.
U158	All	Aug. 8, 1990.
U159	All	Aug. 8, 1990.
U160	All	Aug. 8, 1990.
U161	All	Aug. 8, 1990.
U162	All	Aug. 8, 1990.
U163	Soil and debris	May 8, 1992.
U163	All others	Aug. 8, 1990.
U164	Soil and debris	May 8, 1992.
U164	All others	Aug. 8, 1990.
U165	All	Aug. 8, 1990.
U166	All	Aug. 8, 1990.
U167	Soil and debris	May 8, 1992.
U167	All others	Aug. 8, 1990.
U168	Soil and debris	May 8, 1992.
U168	All others	Aug. 8, 1990.
U169	All	Aug. 8, 1990.
U170	All	Aug. 8, 1990.
U171	Soil and debris	May 8, 1992.
U171	All others	Aug. 8, 1990.
U172	All	Aug. 8, 1990.
U173	Soil and debris	May 8, 1992.
U173	All others	Aug. 8, 1990.
U174	All	Aug. 8, 1990.
U176	Soil and debris	May 8, 1992.
U176	All others	Aug. 8, 1990.
U177	Soil and debris	May 8, 1992.
U177	All others	Aug. 8, 1990.
U178	Soil and debris	May 8, 1992.
U178	All others	Aug. 8, 1990.
U179	All	Aug. 8, 1990.
U180	All	Aug. 8, 1990.
U181	All	Aug. 8, 1990.
U182	All	Aug. 8, 1990.
U183	All	Aug. 8, 1990.
U184	Soil and debris	May 8, 1992.
U184	All others	Aug. 8, 1990.
U185	All	Aug. 8, 1990.
U186	All	Aug. 8, 1990.
U187	All	Aug. 8, 1990.
U188	All	Aug. 8, 1990.
U189	All	Aug. 8, 1990.
U190	Soil and debris	June 8, 1991.
U190	All others	June 8, 1989.
U191	Soil and debris	May 8, 1992.
U191	All others	Aug. 8, 1990.
U192	All	Aug. 8, 1990.
U193	Soil and debris	May 8, 1992.
U193	All others	Aug. 8, 1990.
U194	Soil and debris	May 8, 1992.
U194	All others	Aug. 8, 1990.
U196	All	Aug. 8, 1990.
U197	All	Aug. 8, 1990.
U200	Soil and debris	May 8, 1992.
U200	All others	Aug. 8, 1990.
U201	All	Aug. 8, 1990.
U202	Soil and debris	May 8, 1992.
U202	All others	Aug. 8, 1990.
U203	All	Aug. 8, 1990.
U204	All	Aug. 8, 1990.
U205	All	Aug. 8, 1990.
U206	Soil and debris	May 8, 1992.

APPENDIX VII.—EFFECTIVE DATES OF
SURFACE DISPOSED WASTES REGULAT-
ED IN THE LDRS *—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
U206	All others	Aug. 8, 1990.
U207	All	Aug. 8, 1990.
U208	All	Aug. 8, 1990.
U209	All	Aug. 8, 1990.
U210	All	Aug. 8, 1990.
U211	All	Aug. 8, 1990.
U213	All	Aug. 8, 1990.
U214	All	Aug. 8, 1990.
U215	All	Aug. 8, 1990.
U216	All	Aug. 8, 1990.
U217	All	Aug. 8, 1990.
U218	Soil and debris	May 8, 1992.
U218	All others	Aug. 8, 1990.
U219	Soil and debris	May 8, 1992.
U219	All others	Aug. 8, 1990.
U220	All	Aug. 8, 1990.
U221	Soil and debris	June 8, 1991.
U221	All others	June 8, 1989.
U222	Soil and debris	May 8, 1992.
U222	All others	Aug. 8, 1990.
U223	Soil and debris	June 8, 1991.
U223	All others	June 8, 1989.
U225	All	Aug. 8, 1990.
U226	All	Aug. 8, 1990.
U227	All	Aug. 8, 1990.
U228	All	Aug. 8, 1990.
U234	Soil and debris	May 8, 1992.
U234	All others	Aug. 8, 1990.
U235	Soil and debris	June 8, 1991.
U235	All others	June 8, 1989.
U236	Soil and debris	May 8, 1992.
U236	All others	Aug. 8, 1990.
U237	Soil and debris	May 8, 1992.
U237	All others	Aug. 8, 1990.
U238	Soil and debris	May 8, 1992.
U238	All others	Aug. 8, 1990.
U239	All	Aug. 8, 1990.
U240	Soil and debris	May 8, 1992.
U240	All others	Aug. 8, 1990.
U243	All	Aug. 8, 1990.
U244	Soil and debris	May 8, 1992.
U244	All others	Aug. 8, 1990.
U246	All	Aug. 8, 1990.
U247	All	Aug. 8, 1990.
U248	All	Aug. 8, 1990.
U249	All	Aug. 8, 1990.

* This table does not include mixed radioactive wastes (from the First, Second, and Third Third rules) which are receiving a national capacity variance until May 8, 1992 for all applicable treatment technologies.

* Standards are being promulgated for 1,1,2-trichloroethane and 2-nitropropane for wastewaters and nonwastewaters.

* Standards are being promulgated for benzene and 2-ethoxyethanol for wastewaters and nonwastewaters.

* Treatment standards for nonwastewaters disposed of after June 8, 1989, were promulgated June 8, 1989.

* Treatment standards for nonwastewaters disposed of after August 17, 1988, were promulgated May 2, 1989.

Note: This table is provided for the convenience of the reader.

17. Appendix VIII is added to part 268. to read as follows:

APPENDIX VIII—NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES * Comprehensive List

Waste code	Waste category	Effective date
F001—F005	All spent F001—F005 solvent containing less than 1 percent total F001—F005 solvent constituents.	August 8, 1990.

APPENDIX VIII—NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES • Comprehensive List—Continued

Waste code	Waste category	Effective date
California list.....	Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l, or containing certain metals or compounds of these metals greater than or equal to the prohibition levels.	August 8, 1990.
California list.....	Liquid hazardous waste having a pH less than or equal to 2.....	August 8, 1990.
California list.....	Hazardous wastes containing HOCs in total concentrations less than 10,000 mg/l but greater than or equal to 1,000 mg/l.	August 8, 1990.
D002 *	All.....	May 8, 1992.
D003 (cyanides).....	All.....	May 8, 1992.
D003 (sulfides).....	All.....	May 8, 1992.
D003 (explosives, reactives).....	All.....	May 8, 1992.
D007.....	All.....	May 8, 1992.
D009.....	High Mercury Nonwastewater.....	May 8, 1992.
D009.....	Low Mercury Nonwastewater.....	May 8, 1992.
F011.....	All.....	June 8, 1991.
F039.....	Wastewater.....	May 8, 1992.
K009.....	Wastewater.....	June 8, 1991.
K011.....	Nonwastewater.....	June 8, 1991.
K011.....	Wastewater.....	May 8, 1992.
K013.....	Nonwastewater.....	June 8, 1991.
K013.....	Wastewater.....	May 8, 1992.
K014.....	All.....	May 8, 1992.
K016 (dilute).....	All.....	June 8, 1991.
K048.....	All.....	August 8, 1990.
K049.....	All.....	August 8, 1990.
K050.....	All.....	August 8, 1990.
K051.....	All.....	August 8, 1990.
K052.....	All.....	August 8, 1990.
K062.....	All.....	August 8, 1990.
K071.....	All.....	August 8, 1990.
K104.....	All.....	August 8, 1990.

* Wastes that are deep well disposed on-site receive a six-month variance, with restrictions effective in November 1990.

† Deepwell injected D002 liquids with a pH less than 2 must meet the California List treatment standards on August 8, 1990.

Note: This table is provided for the convenience of the reader.

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

1. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

Subpart D—Changes to Permit

2. Section 270.42, appendix I is amended by redesignating item B(1)(b) as B(1)(c), and adding item B(1)(b) as follows:

§ 270.42 Permit modification at the request of the permittee.

• • • • •

APPENDIX I TO SECTION 270.42—CLASSIFICATION OF PERMIT MODIFICATION

Modification	Class
• • • • •	•
B. General Facility Standards	
1. • • •	
b. To incorporate changes associated with F039 (multi-source leachate) sampling or analysis methods....	1

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

Subpart A—Requirements for Final Authorization

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication in the Federal Register:

§ 271.1 Purpose and scope.

• • • • •
(j) • • •

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
June 1, 1990.....	Land Disposal Restrictions for Third Third wastes.....	[Insert page numbers].....	May 8, 1990.

3. Section 271.1(j) is amended by revising the entry for May 8, 1990 in Table 2 to read as follows:

§ 271.1 Purpose and Scope.

• • • • •

(j) • • •

TABLE 2.—SELF-IMPLEMENTING PROVISIONS OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Effective	Self-implementing provision	RCRA citation	Federal Register reference
May 8, 1990	Prohibition on land disposal of 3/3 of listed wastes.	3004(g)(6)(C)	[June 1, 1990 and page numbers of this document.]

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. The authority citation for part 302 continues to read as follows:

Authority: Sec. 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602; secs. 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

2. Section 302.4 is amended by adding the following entry in alphabetical order

under the column "Hazardous Substance" and adding as the first footnote, footnote † to read as follows. Footnotes 1* and 4 are republished.

§ 302.4 Designation of Hazardous Substances.

• • • • •

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code†	RCRA Waste Number	Category	Pounds (Kg)
Multi Source Leachate	•	•	1*	4	F039	X	1 (0.454)

† Indicates the statutory source as defined by 1, 2, 3, and 4 below.

4—indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001.

1*—indicates that the 1-pound RQ is a CERCLA statutory RQ.

[FR Doc. 90-12028 Filed 5-31-90; 8:45 am]

BILLING CODE 6560-50-M



Environmental Fact Sheet

FINAL RULE FOR THIRD THIRD SCHEDULED WASTES COMPLETES STATUTORY REQUIREMENTS FOR LAND DISPOSAL RESTRICTIONS

The fifth in a series of five Land Disposal Restrictions (LDR) rulemakings establishes treatment standards and effective dates for "Third Third" wastes, including characteristic wastes, and soft hammer wastes from the First and Second Third lists. The treatment standards apply to hazardous wastes that are land disposed, including those that are injected into deep wells. The Environmental Protection Agency (EPA) is granting, at a minimum, a three-month national capacity variance for all wastes affected by this rule to provide industry with time needed to comply with the new regulations.

BACKGROUND

The 1984 amendments to the Resource Conservation and Recovery Act (RCRA) required EPA to establish treatment standards for all hazardous wastes destined for land disposal. These standards must specify a level or method of treatment which substantially reduces the toxicity or mobility of the hazardous constituents so as to minimize long-term threats to human health and the environment.

Congress specified strict dates when particular groups of hazardous wastes not meeting the treatment standards are prohibited from land disposal unless the Agency finds that there will be "no migration of hazardous constituents...for as long as the wastes remain hazardous." With this rulemaking, the Agency has met all of the statutory deadlines imposed by Congress:

- On November 7, 1986, spent solvent and dioxin-bearing wastes were regulated.
- On July 8, 1987, the "California List"* wastes were addressed.
- Except for those wastes in today's rulemaking, all other wastes listed as of November 8, 1984 were included in the land disposal restrictions on August 8, 1988 (First Third) and June 8, 1990 (Second Third).

*"California List" wastes are liquid and nonliquid hazardous wastes containing halogenated organic compounds (HOCs) above 1,000 ppm, and liquid hazardous wastes containing polychlorinated biphenyls (PCBs) above 80 ppm, certain toxic metals above specified statutory concentrations, or corrosive liquid wastes that have a pH level below two.

The land ban provisions will change the way that industry must manage their hazardous waste and has given considerable impetus to the development of more economic and effective means of treating waste. As a result, treatment technologies have improved rapidly and include methods to destroy, detoxify, or incinerate waste. In addition, hazardous waste generators have developed new ways to recover and reuse waste as well as methods to reduce the volume of hazardous waste requiring treatment.

ACTION

The final rule specifies treatment standards and effective dates for all Third Third waste, characteristic wastes, First and Second Third soft hammer wastes, and five newly listed wastes. EPA also is promulgating treatment standards for multi-source leachate and mixed hazardous/radioactive waste, and is promulgating alternate treatment standards for lab packs. The Agency has rescheduled wastes from the petroleum refining industry to the Third Third and is revising existing standards for these wastes. Previously promulgated treatment standards expressed as "no land disposal" for nonwastewaters are being replaced with treatment levels or specified methods.

The effective date of the rule is May 8, 1990. However, EPA is granting, at a minimum, a three-month national capacity variance to the treatment standards for all wastes affected by this rule to allow the regulated community sufficient time to make necessary changes to comply with the regulations. During the period of variance, wastes that are placed in a landfill or into surface impoundments and do not meet the treatment standards, must be disposed of in units that meet the minimum technological requirements of Section 3004(o) of RCRA (e.g., ground-water monitoring and leachate collection) and comply with the recordkeeping requirements of 40 CFR 268.7.

For the characteristic wastes, EPA is specifying treatment levels below the characteristic for the EP toxic pesticide nonwastewaters and reactive cyanides. In addition, the Agency is specifying methods that require treatment below the characteristic level for high TOC ignitables and for EP toxic pesticide wastewaters. Concentrations are specified at the characteristic level for the EP toxic metals except for selenium, which is slightly higher than the EP level. For corrosive and remaining ignitable and reactive, the standards require that wastes be treated so that they no longer exhibit a characteristic.

The dilution prohibition developed for listed wastes is extended to characteristic wastes included in the Third Third. However, the final rule does not prohibit dilution of characteristic wastes that are generated and managed in wastewater treatment systems regulated under the Clean Water Act or underground injection wells regulated under the Safe Drinking Water Act. Prohibited wastes that are treated by

inappropriate methods or sent to treatment systems that do not treat the wastes are considered impermissibly diluted.

With regard to characteristic wastes, dilution is permissible when wastes are aggregated for legitimate treatment in centralized treatment systems.

Treatment standards for characteristic wastes require the following:

- Wastes that carry more than one characteristic waste code must be treated to meet the standard for each characteristic. Listed wastes that exhibit hazardous characteristics must meet the treatment standard for each waste code, unless each characteristic is specifically addressed in the treatment standard for the listed waste. In addition, land disposal of a waste that exhibits a characteristic is prohibited. The only exception to this standard is selenium where the data only supports a treatment level above the characteristic.
- During the period of a national capacity variance, hazardous wastes that are subject to more than one treatment standard must still meet the treatment standard for any waste that has not received an extension.
- The use of the Toxicity Characteristic Leaching Procedures (TCLP) in assessing whether a waste is subject to the Third Third land ban rule.

The Agency is promulgating alternate treatment standards for lab packs that contain certain prohibited organometallic and organic wastes. These standards are expressed as a specified technology for each of the waste categories. For the organometallic wastes, incineration, followed by treatment to meet the treatment standards for metals (included in the alternate standard) is required. For organic wastes incineration is a specified method. Generators and owners/operators who use the alternate treatment standards for lab pack wastes are required to ~~list~~ each waste code on the notification.

Due to inadequate treatment capacity for mixed hazardous/radioactive wastes included in the Third Third, EPA is granting a two-year national capacity variance for these wastes. Those hazardous wastes listed in the attached tables also are receiving a two-year national capacity variance. Furthermore, the Agency is granting wastes from the petroleum refining industry—EPA hazardous waste numbers K048-K052—a six-month national capacity variance.

EPA amended 40 CFR 268.7 to allow referencing treatment standards for all wastes except spent solvents, California List wastes, and multi-source leachate. The following information must be included in the reference: EPA hazardous waste number, subcategory of the waste code, treatability group, and CFR section where the treatment standards appear. In addition, EPA is allowing a one-time notification and certification for small quantity generator shipments that are subject to tolling agreements.

EPA promulgated waste analysis plan requirements for wastes treated in 90-day tanks or containers. Persons treating prohibited wastes to comply with treatment standards in such tanks and containers are required to prepare a plan justifying the frequency of testing and adhere to recordkeeping requirements.

CONCLUSION

The land disposal restrictions imposed by this rule completes the Agency's assessment of all hazardous waste as required by the Hazardous and Solid Waste Amendments (HSWA). Treatment standards have been established for all listed and characteristic wastes that existed when HSWA was enacted in 1984. Restricting the land disposal of wastes covered by this final rule will create significant changes in hazardous waste management, thereby minimizing threats to human health and the environment.

CONTACT

To order a copy of the *Federal Register* notice, or for additional information, contact the RCRA Hotline Monday-Friday, 8:30 a.m. to 7:30 p.m., EST. The national toll-free number is (800) 424-9346; for the hearing impaired, the number is TDD (800) 553-7672. In Washington, D.C., the number is (202) 382-3000 or TDD (202) 475-9652.

SUMMARY OF NATIONAL CAPACITY VARIANCES

Surface-Disposed Wastes¹

<u>Required Alternative Treatment Technology</u>	<u>Waste Code</u>	<u>Physical Form</u>	<u>Effective Date</u>
Acid Leaching & Chemical Precipitation	D009	Low Mercury Nonwastewater	May 1992
	K106	Low Mercury Nonwastewater	May 1992
	P065	Low Mercury Nonwastewater	May 1992
	P092	Low Mercury Nonwastewater	May 1992
	U151	Low Mercury Nonwastewater	May 1992
Combustion of Sludge/ Solids	F039 ²	Nonwastewater	May 1992
	K048 ²	Nonwastewater	November 1990
	K049 ²	Nonwastewater	November 1990
	K050 ²	Nonwastewater	November 1990
	K051 ²	Nonwastewater	November 1990
	K052 ²	Nonwastewater	November 1990
Mercury Retorting	D009	High Mercury Nonwastewater	May 1992
	K106	High Mercury Nonwastewater	May 1992
	P065	High Mercury Nonwastewater	May 1992
	P092	High Mercury Nonwastewater	May 1992
	U151	High Mercury Nonwastewater	May 1992
Secondary Smelting Storage Area	D008	Lead Materials before Secondary Smelting	May 1992
Thermal Recovery	P087	Nonwastewater/Wastewater	May 1992
Vitrification	D004	Nonwastewater	May 1992
	K031	Nonwastewater	May 1992
	K084	Nonwastewater	May 1992
	K101	Nonwastewater	May 1992
	K102	Nonwastewater	May 1992
	P010	Nonwastewater	May 1992
	P011	Nonwastewater	May 1992
	P012	Nonwastewater	May 1992
	P036	Nonwastewater	May 1992
	P038	Nonwastewater	May 1992
	U136	Nonwastewater	May 1992

¹EPA is granting these wastes a two-year national capacity variance, except as otherwise noted. This table does not include mixed radioactive wastes or soil and debris, which are receiving a national capacity variance for all applicable treatment technologies.

²Multi-source Leachate.

³For K048-K052 petroleum-refining nonwastewaters, EPA is granting only a six-month variance.

SUMMARY OF NATIONAL CAPACITY VARIANCES

Deep Well Disposed			
<u>Required Alternative Treatment Technology</u>	<u>Waste Code</u>	<u>Physical Form</u>	<u>Effective Date</u>
Acid Leaching followed by Chemical Precipitation	D009	Low Mercury Nonwastewater	May 1992
Alkaline Chlorination	D003 ¹	Wastewater/Nonwastewater	May 1992
Chemical Oxidation followed by Chemical Precipitation	D003 ²	Wastewater/Nonwastewater	May 1992
Chemical Oxidation followed by Chromium Reduction and Chemical Precipitation	D003 ³	Wastewater/Nonwastewater	May 1992
Chromium Reduction followed by Chemical Precipitation	D007	Wastewater/Nonwastewater	May 1992
Mercury Retorting	D009	High Mercury Nonwastewaters	May 1992
Neutralization	D002 ⁴	Wastewater/Nonwastewater	May 1992
Wet-Air Oxidation	K011	Wastewater	May 1992
	K013	Wastewater	May 1992
	K014	Wastewater/Nonwastewater	May 1992
Wet-Air Oxidation followed by Carbon Adsorption followed by Chemical Precipitation; Biological Treatment followed by Chemical Precipitation	F039 ⁵	Wastewater	May 1992

Wastes that are deep well disposed on-site receive a six-month variance, with restrictions effective in September 1990.

¹ D003 (Cyanides)

² D003 (Sulfides)

³ D003 (Explosives, Water Reactives, and Other Reactives)

⁴ Deepwell injected D002 liquids with a pH less than 2 must meet the California List treatment standards on August 8, 1990.

⁵ Multi-source Leachate

RCRA REVISION CHECKLIST 79

Organic air Emission Standards
for Process Vents and Equipment Leaks
55 FR 25454-25519
June 21, 1990
(HWSA Cluster II)

Note: The Federal Register addressed by this checklist is the first of a multiphased regulatory effort to control air emissions at new and existing hazardous waste treatment, storage and disposal facilities (TSDFs). On April 26, 1991 (56 FR 19290; Revision Checklist 87), a technical amendment for this rule was published. States are strongly encouraged to adopt the technical corrections at the same time the Revision Checklist 79 provisions are adopted.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART B - DEFINITIONS

REFERENCES

add "ASTM Standard Method for Analysis of Reformed Gas by Gas Chromatography"	260.11(a)				
add "ASTM Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter"	260.11(a)				
add "ASTM Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis"	260.11(a)				
add "ASTM Standard Practices for General Techniques of Infrared Quantitative Analysis"	260.11(a)				
add "ASTM Standard Practice for Packed Column Gas Chromatography"	260.11(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
add "ASTM Standard Test Method for Aromatics in Light Naphthas and Aviation Gasolines by Gas Chromatography"	260.11(a)				
Add "ASTM Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteriscope"	260.11(a)				
add "APTI Course 415: Control of Gaseous Emissions"	260.11(a)				

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

REQUIREMENTS FOR RECYCLABLE MATERIALS

insert ", AA, and BB" after "L"; insert "except as provided in 261.6(d)." after "regulation" in the last sentence	261.6(c)(1)				
add new paragraph reading "Section 261.6(d) of this chapter."	261.6(c)(2)(iii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
add new paragraph subjecting owners or operators of RCRA facilities to the requirements of Subparts AA and BB of Part 264 or 265 if they recycle hazardous wastes	261.6(d)				

**PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS
WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

change "which" to "that; add references to 264.1034(d) and 264.1063(d)	264.13(b)(6)				
--	--------------	--	--	--	--

GENERAL INSPECTION REQUIREMENTS

add references to 264.1033, 264.1052, 264.1053, and 264.1058	264.15(b)(4)				
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SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATION RECORD

add references to 264.1034 and 264.1063	264.73(b)(3)				
add references to 264.1034(c)-(f), 264.1035, 264.1063(d)-(i), and 264.1064	264.73(b)(6)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

ADDITIONAL REPORTS

add references to Subparts AA and BB	264.77(c)				
--	-----------	--	--	--	--

SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS

APPLICABILITY

1 regulations in this subpart apply to owners and operators of facilities that treat, store or dispose of hazardous waste except as provided in 264.1	264.1030(a)				
2 except for 264.1034(d) and 264.1034(e), Subpart AA applies to process vents associated with operations managing hazardous wastes with at least 10-ppmw organic concentrations if conducted in specific units	264.1030(b)				
units subject to the permitting requirements of Part 270	264.1030(b)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
hazardous waste recycling units located on hazardous waste management facilities otherwise subject to Part 270 permitting requirements	264.1030(b)(2)				
incorporation of 264.1032 through 264.1036 requirements for permits received under Section 3005 of RCRA prior to December 21, 1990, when permit is reissued under 124.15 or reviewed under 270.50; note included	264.1030(c)				
DEFINITIONS					
introductory paragraph	264.1031				
"air stripping operation"	264.1031				
"bottoms receiver"	264.1031				
"closed-vent system"	264.1031				
"condenser"	264.1031				
"connector"	264.1031				
"continuous recorder"	264.1031				
"control device"	264.1031				
"control device shutdown"	264.1031				
"distillate receiver"	264.1031				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"distillation operation"	264.1031				
"double block and bleed system"	264.1031				
"equipment"	264.1031				
"flame zone"	264.1031				
"flow indicator"	264.1031				
"first attempt at repair"	264.1031				
"fractionation operation"	264.1031				
"hazardous waste management unit shutdown"	264.1031				
"hot well"	264.1031				
"in gas/vapor service"	264.1031				
"in heavy liquid service"	264.1031				
"in light liquid service"	264.1031				
"in situ sampling systems"	264.1031				
"in vacuum service"	264.1031				
"malfunction"	264.1031				
"open-ended valve or line"	264.1031				
"pressure release"	264.1031				
"process heater"	264.1031				
"process vent"	264.1031				
"repaired"	264.1031				
"sensor"	264.1031				
"separator tank"	264.1031				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"solvent extraction operation"	264.1031				
"startup"	264.1031				
"steam stripping operation"	264.1031				
"surge control tank"	264.1031				
"thin-film evaporation operation"	264.1031				
"vapor incinerator"	264.1031				
"vented"	264.1031				

STANDARDS: PROCESS VENTS

owner or operator of facility with process vents meeting certain conditions shall either:	264.1032(a)				
reduce total organic emissions below 1.4 kg/h and 2.8 Mg/yr	264.1032(a)(1)				
using control device, reduce total organic emissions by 95 weight percent	264.1032(a)(2)				
264.1033 requirements must be met if owner or operator installs closed-vent system and control device to comply with 264.1032(a) provisions	264.1032(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
use of engineering calculations or performance tests (conforming to 264.1034(c) requirements) may be used for determining 1) vent emissions and emission reductions or 2) total organic compound concentrations achieved by add-on control devices	264.1032(c)				
use of 264.1034(c) procedures to resolve disagreements between owner or operator and Regional Administrator on vent determinations	264.1032(d)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

compliance with provisions of 264.1033 by owners or operators of closed-vent systems and control devices used to comply with provisions of Part 264	264.1033(a)(1)				
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**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
preparation of an implementation schedule by owner or operator, of existing facility, who cannot install a closed-vent system and control device to comply with Subpart AA provisions by effective date; units that begin operation after December 21, 1990, must comply with the rules immediately	264.1033(a)(2)				
specification of efficiency standards for control device involving vapor recovery unless 264.1032(a)(1) emission limits can be attained	264.1033(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination of actual exit velocity of a flare using flow rate as determined by Reference Methods 2, 2A, 2C or 2D in 40 CFR Part 60	264.1033(e)(3)				
determination of maximum allowed velocity for a flare complying with 264.1033(d)(4)(iii)	264.1033(e)(4)				
determination of maximum allowed velocity for an air-assisted flare	264.1033(e)(5)				
monitoring and inspection of control device by owner and operator to ensure compliance with 264.1033 by implementing specified requirements:	264.1033(f)				
installation, calibration, maintenance, and operation of a flow indicator; where sensor shall be installed	264.1033(f)(1)				
specifications for installation, calibration, maintenance, and operation of a device to continuously monitor control device operation:	264.1033(f)(2)				
temperature monitoring device with a continuous recorder for a thermal vapor incinerator	264.1033(f)(2)(i)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
temperature monitor- ing device with a continuous recorder for a catalytic vapor incinerator	264.1033(f)(2)(ii)				
heat sensing monitor- ing device with a continuous recorder for a flare	264.1033(f)(2)(iii)				
temperature monitor- ing device with a continuous recorder for a boiler or process heater having a design heat input capacity less than 44 MW	264.1033(f)(2)(iv)				
monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity greater than or equal to 44 MW	264.1033(f)(2)(v)				
for a condenser, either:	264.1033(f)(2)(vi)				
monitoring device with a continuous recorder to measure concen- tration level of the organic compounds in the exhaust vent stream from the condenser	264.1033(f)(2)(vi)(A)				
temperature monitor- ing device with a continuous recorder; specifications	264.1033(f)(2)(vi)(B)				
for a carbon adsorption system, either:	264.1033(f)(2)(vii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring device with a continuous recorder to measure concentration level of organic compounds in exhaust vent stream from carbon bed	264.1033(f)(2)(vii)(A)				
monitoring device with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular pre-determined time cycle	264.1033(f)(2)(vii)(B)				
3 daily inspection of readings from monitoring device required by 264.1033(f)(1) and 264.1033(f)(2); implement corrective measures if necessary	264.1033(f)(3)				
replacement of existing carbon in control device by owner or operator using a fixed-bed carbon adsorber that meets the 264.1035(b)(4)(iii)(F) requirement	264.1033(g)				
replacement of carbon on a regular basis by owner or operator using a carbon canister	264.1033(h)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitor organic compounds daily or at interval no greater than 20 percent of time required to consume total carbon working capacity established at 264.1035(b)(4)(iii)(G), whichever is longer; replace existing carbon when carbon breakthrough occurs	264.1033(h)(1)				
replacement of existing carbon at intervals less than design carbon replacement interval established as a requirement of 264.1035(b)(4)(iii)(G)	264.1033(h)(2)				
alternative operational or process parameter may be monitored if specific demonstration can be made	264.1033(i)				
documentation requirements for owner or operator seeking to comply with Part 264 provisions by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater condenser, or carbon adsorption system	264.1033(j)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design and operational requirements for closed-vent systems based on 264.1034(b) methods	264.1033(k)(1)				
monitoring of closed-vent systems during initial leak detection monitoring, conducted by the date that the facility becomes subject to 264.1033 provisions, annually, and as requested by Regional Administrator	264.1033(k)(2)				
control of detectable emissions no later than 15 calendar days after emission is detected	264.1033(k)(3)				
first attempt at repair no later than 5 calendar days after emission is detected	264.1033(k)(4)				
closed vent systems and control devices used to comply with provisions of Subpart AA shall be operated at all times when emissions may be vented to them	264.1033(l)				
TEST METHODS AND PROCEDURES					
compliance with 264.1034 test methods and procedures by owner or operator subject to provisions of Subpart AA	264.1034(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when testing a closed-vent system for compliance with 264.1033(k) requirements, comply with following test requirements:	264.1034(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	264.1034(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	264.1034(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	264.1034(b)(3)				
calibration gases shall be:	264.1034(b)(4)				
zero air	264.1034(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	264.1034(b)(4)(ii)				
background level determined as set forth in Reference Method 21	264.1034(b)(5)				
instrument probe traverse requirements as described in Reference Method 21	264.1034(b)(6)				
arithmetic difference compared with 500 ppm for compliance determination	264.1034(b)(7)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance test requirements to determine compliance with 264.1032(a) and 264.1033(c)	264.1034(c)				
reference methods and calculation procedures to use when determining total organic compound concentrations and mass flow rates	264.1034(c)(1)				
Method 2 in 40 CFR Part 60 for velocity and volumetric flow rate	264.1034(c)(1)(i)				
Method 18 in 40 CFR Part 60 for organic content	264.1034(c)(1)(ii)				
performance tests in three separate runs; conditions for conducting runs; averaging results on a time-weighted basis	264.1034(c)(1)(iii)				
equation for determining total organic mass flow rates	264.1034(c)(1)(iv)				
equation for determining annual total organic emission rate	264.1034(c)(1)(v)				
determination of total organic emissions from all process vents using 264.1034(c)(1)(iv) equation and 264.1034(c)(1)(v) equation	264.1034(c)(1)(vi)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
recording of process information necessary to determine performance test conditions; certain operational periods not applicable	264.1034(c)(2)				
performance testing facilities provided by owner or operator	264.1034(c)(3)				
sampling ports adequate for 264.1034(c)(1) test methods	264.1034(c)(3)(i)				
safe sampling platform(s)	264.1034(c)(3)(ii)				
safe access to sampling platform(s)	264.1034(c)(3)(iii)				
utilities for sampling and testing equipment	264.1034(c)(3)(iv)				
use of time-weighted average of three runs in making compliance determinations; Regional Administrator approval needed for average based on two runs if a sample is accidentally lost or certain conditions occur	264.1034(c)(4)				
to demonstrate a process vent is not subject to Subpart AA requirements, use one of two methods to determine an annual average total organic concentration of less than 10 ppmw	264.1034(d)				
direct measurement using the following procedures:	264.1034(d)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Method 8240 procedures used to resolve dispute in case of disagreement between owner or operator and Regional Administrator regarding the determination made in 264.1034(e)	264.1034(f)				
RECORDKEEPING REQUIREMENTS					
compliance with recordkeeping requirements	264.1035(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	264.1035(a)(2)				
information that must be recorded in the facility operating record	264.1035(b)				
for 264.1033(a)(2)-complying facilities, an implementation schedule that includes specified dates and rationale; inclusion in operating record by effective date the facility becomes subject to Subpart AA provisions	264.1035(b)(1)				
up-to-date documentation of 264.1032 standards	264.1035(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
documentation of compliance with 264.1033	264.1035(b)(4)				
information references and sources	264.1035(b)(4)(i)				
records including the dates of each compliance test required by 264.1033(k)	264.1035(b)(4)(ii)				
if engineering calculations are used, a design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters	264.1035(b)(4)(iii)				
design analysis requirements for a thermal vapor incinerator	264.1035(b)(4)(iii)(A)				
design analysis requirements for a catalytic vapor incinerator	264.1035(b)(4)(iii)(B)				
design analysis requirements for a boiler or process heater	264.1035(b)(4)(iii)(C)				
design analysis requirements for a flare	264.1035(b)(4)(iii)(D)				
design analysis requirements for a condenser	264.1035(b)(4)(iii)(E)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis requirements for carbon adsorption system that regenerates the carbon bed directly onsite	264.1035(b)(4)(iii)(F)				
design analysis requirements for a carbon adsorption system that does not regenerate the carbon bed directly onsite	264.1035(b)(4)(iii)(G)				
certification statement signed and dated by owner or operator regarding operating parameters	264.1035(b)(4)(iv)				
certification statement signed and dated by owner or operator regarding control equipment meeting design specifications	264.1035(b)(4)(v)				
all test results when performance tests are used to demonstrate compliance	264.1035(b)(4)(vi)				
information to be recorded and kept up-to-date in the facility operating record for each closed-vent system and control device subject to the Part 264 regulations	264.1035(c)				
description and date of each modification	264.1035(c)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
organic emission standards for enclosed combustion device; for boiler or process heater used as control device, vent stream introduced into flame zone	264.1033(c)				
specifications for the design and operation of a flare	264.1033(d)(1)				
	264.1033(d)(2)				
	264.1033(d)(3)				
	264.1033(d)(4)(i)				
	264.1033(d)(4)(ii)				
	264.1033(d)(4)(iii)				
	264.1033(d)(5)				
	264.1033(d)(6)				
determination of compliance of a flare with the visible emission provisions of Subpart AA using Reference Method 22 in 40 CFR Part 60	264.1033(e)(1)				
calculation of net heating value of gas being combusted in a flare using specified equation	264.1033(e)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
minimum of four grab samples under specified process conditions	264.1034(d)(1)(i)				
for waste generated onsite, collect grab samples before exposure to the atmosphere; for waste generated offsite, collect grab samples at the inlet to the first waste management unit that receives the waste under specific conditions	264.1034(d)(1)(ii)				
sample analysis using Method 9060 or 8240 of SW-846	264.1034(d)(1)(iii)				
calculation of time-weighted, annual average total organic concentration of waste	264.1034(d)(1)(iv)				
using knowledge of the waste to determine its total organic concentration is less than 10 ppmw; documentation of the waste determination is required; examples of acceptable documentation	264.1034(d)(2)				
guidelines for the determination that hazardous wastes are managed with time-weighted, annual average total organic concentrations less than 10 ppmw	264.1034(e)				
	264.1034(e)(1)				
	264.1034(e)(2)				
	264.1034(e)(3)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information and data identifying all affected process vents and specific information for each vent	264.1035(b)(2)(i)				
information and data supporting determinations of vent emissions and emission reductions; new determination required if any action taken increases total emissions	264.1035(b)(2)(ii)				
a performance test plan for owners or operators using test data for determination	264.1035(b)(3)				
a description of the determination that a planned test will be conducted when unit is operating at the highest load or capacity level	264.1035(b)(3)(i)				
detailed engineering description of closed-vent system and control device	264.1035(b)(3)(ii)				
	264.1035(b)(3)(ii)(A)				
	264.1035(b)(3)(ii)(B)				
	264.1035(b)(3)(ii)(C)				
	264.1035(b)(3)(ii)(D)				
	264.1035(b)(3)(ii)(E)				
detailed description of sampling and monitoring procedures	264.1035(b)(3)(iii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identification of operating parameter, description of monitoring device and location diagram for compliance with 264.1033(f)(1) and (f)(2)	264.1035(c)(2)				
information required by 264.1033(f)-(k)	264.1035(c)(3)				
date, time and duration of each period that occurs while control device is operating when any monitored parameter exceeds the value established in the design analysis	264.1035(c)(4)				
when combustion temperature is below 760°C for a thermal vapor incinerator	264.1035(c)(4)(i)				
	264.1035(c)(4)(ii)				
when temperature of vent stream is more than 28°C below average temperature or when temperature difference across catalyst bed is less than 80 percent of the design average temperature difference for a catalytic vapor incinerator	264.1035(c)(4)(iii)				
	264.1035(c)(4)(iii)(A)				
	264.1035(c)(4)(iii)(B)				
boiler or process heater	264.1035(c)(4)(iv)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
flame zone temperature is more than 28°C below design average temperature	264.1035(c)(4)(iv)(A)				
position changes	264.1035(c)(4)(iv)(B)				
period when the pilot flame is not ignited for a flare	264.1035(c)(4)(v)				
period when organic compounds are more than 20 percent greater than the design level for a condenser	264.1035(c)(4)(vi)				
condenser that complies with 264.1033(f)(2)(vi)(B)	264.1035(c)(4)(vii)				
temperature of exhaust vent stream is more than 6°C above design average temperature	264.1035(c)(4)(vii)(A)				
temperature of exiting coolant fluid is more than 6°C above design average temperature	264.1035(c)(4)(vii)(B)				
period when organic compounds are more than 20 percent greater than the design level for a carbon adsorption system	264.1035(c)(4)(viii)				
period when vent stream flow exceeds predetermined regeneration time for a carbon adsorption system	264.1035(c)(4)(ix)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
explanation for each period under 264.1035(c)(4) of the cause for parameters being exceeded and measures implemented	264.1035(c)(5)				
date when existing carbon is replaced	264.1035(c)(6)				
log to record specific dates	264.1035(c)(7)				
	264.1035(c)(7)(i)				
	264.1035(c)(7)(ii)				
date of each control device startup and shutdown	264.1035(c)(8)				
records required by paragraphs 264.1035(c)(3)-(c)(8) need be kept only 3 years	264.1035(d)				
specification of recordkeeping requirements for certain control devices by Regional Administrator	264.1035(e)				
logging of information used to determine if process vent is subject to 264.1032 and 264.1032(d)(2)	264.1035(f)				

REPORTING REQUIREMENTS

semiannual report submitted by date specified by Regional Administrator; information the report must contain:	264.1036(a)				
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**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
EPA ID number, name and address of facility	264.1036(a)(1)				
dates when design specifications are exceeded, duration and cause, and corrective measures taken	264.1036(a)(2)				
exception to reporting require- ments specified in 264.1036(a)	264.1036(b)				
reserved	264.1037 - 264.1049				

SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

APPLICABILITY

owners and operators of facilities that treat, store or dispose of hazardous wastes except as provided in 264.1	264.1050(a)				
except as provided in 264.1064(k), applicability of Subpart BB to equip- ment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in units or facilities subject to Part 270 permitting requirements	264.1050(b)				
	264.1050(b)(1)				
	264.1050(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
for permits received under Section 3005 of RCRA prior to December 21, 1990, requirements of 264.1052-264.1065 must be incorporated when permit is reissued under 124.15 or reviewed under 270.50	264.1050(c)				
equipment subject to Subpart BB, Part 264 shall be marked	264.1050(d)				
equipment in vacuum service excluded from requirements of 264.1052 to 264.1060 if identified as required in 264.1064(g)(5)	264.1050(e)				
DEFINITIONS					
all terms have meaning given them in 264.1031, the Act, and Parts 260-266	264.1051				
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE					
monthly monitoring to detect leaks as specified by 264.1063(b) methods except as provided in 264.1052(d), (e) and (f)	264.1052(a)(1)				
visual inspection each calendar week	264.1052(a)(2)				
conditions indicating a leak is detected	264.1052(b)(1)				
	264.1052(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
time frame for leak repair, except as provided in 264.1059	264.1052(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	264.1052(c)(2)				
pump equipped with dual mechanical seal system that includes a barrier fluid system is exempt from 264.1052(a) if specific requirements are met:	264.1052(d)				
operational and equipment requirements for a dual mechanical seal system	264.1052(d)(1)				
	264.1052(d)(1)(i)				
	264.1052(d)(1)(ii)				
	264.1052(d)(1)(iii)				
organic concentra- tion limitation for barrier fluid system	264.1052(d)(2)				
sensor requirement	264.1052(d)(3)				
weekly visual check of pump	264.1052(d)(4)				
daily check of barrier fluid system sensor or monthly check of audible alarm	264.1052(d)(5)(i)				
determination of criterion to indicate failure of systems	264.1052(d)(5)(ii)				
leak detection criteria	264.1052(d)(6)(i)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	264.1052(d)(6)(ii)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	264.1052(d)(6)(iii)				
conditions under which pump designated for no detectable emissions is exempt from 264.1052(a), (c) and (d) requirements	264.1052(e)				
	264.1052(e)(1)				
	264.1052(e)(2)				
	264.1052(e)(3)				
pump equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1052(a)-(e) requirements	264.1052(f)				

STANDARDS: COMPRESSORS

seal system requirement for compressor, except as provided in 264.1053(h) and (i)	264.1053(a)				
specifications for compressor seal system	264.1053(b)				
	264.1053(b)(1)				
	264.1053(b)(2)				
	264.1053(b)(3)				
organic concentration limitation for barrier fluid	264.1053(c)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
sensor requirement	264.1053(d)				
daily check of barrier fluid system sensor or monthly check of audible alarm; daily check if compressor located within boundary of unmanned site	264.1053(e)(1)				
determination of criterion to indicate failure of systems	264.1053(e)(2)				
leak detection criteria	264.1053(f)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	264.1053(g)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	264.1053(g)(2)				
compressor equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1053(a) and (b) requirements, except as provided in 264.1053(i)	264.1053(h)				
conditions under which compressor designated for no detectable emissions is exempt from 264.1053(a) through (h) requirements	264.1053(i)				
	264.1053(i)(1)				
	264.1053(i)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: PRESSURE RELIEF DEVICES IN GAS/VAPOR SERVICE					
except during pressure releases, no detectable emission standards for the operation of pressure relief device in gas/vapor service, as measured by 264.1063(c) method	264.1054(a)				
time requirement and criteria for return of pressure relief device to a condition of no detectable emissions, except as provided in 264.1059	264.1054(b)(1)				
monitoring of pressure relief device within 5 calendar days after pressure relief to confirm no detectable emissions, as measured by 264.1063(c) method	264.1054(b)(2)				
pressure relief device equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1054(a) and (b)	264.1054(c)				
STANDARDS: SAMPLING CONNECTING SYSTEMS					
sampling connecting system equipped with closed purge or closed-vent system	264.1055(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
return, collect and recycle purged waste with no detectable emissions; control device in compliance with 264.1060	264.1055(b)				
	264.1055(b)(1)				
	264.1055(b)(2)				
	264.1055(b)(3)				
in situ sampling systems exempt from 264.1055(a) and (b) requirements	264.1055(c)				

STANDARDS: OPEN-ENDED VALVES OR LINES

each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve	264.1056(a)(1)				
requirement to seal open end at all times except during specified operations	264.1056(a)(2)				
operational require- ments for open-ended valve or line equipped with a second valve	264.1056(b)				
requirements for bleed valve or line when a double block and bleed system is used; compliance with 264.1056(a)	264.1056(c)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE					
monthly monitoring of each valve in gas/vapor or light liquid service using 264.1063(b) methods; compliance with 264.1057(b)-(e), except as provided in 264.1057(f), (g) and (h), 264.1061 and 264.1062	264.1057(a)				
instrument reading of 10,000 ppm or greater indicates leak	264.1057(b)				
monitoring requirements if leak not detected for two successive months	264.1057(c)(1)				
monthly monitoring requirement if leak detected	264.1057(c)(2)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	264.1057(d)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	264.1057(d)(2)				
best practices to include in first attempt at repair	264.1057(e)				
	264.1057(e)(1)				
	264.1057(e)(2)				
	264.1057(e)(3)				
	264.1057(e)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
valve designated for no detectable emissions under 264.1064(g)(2) is exempt from 264.1057(a) requirements if specified conditions are met conditions under which an unsafe-to-monitor valve as described in 264.1064(h)(1) is exempt from 264.1057(a) requirements	264.1057(f)				
	264.1057(f)(1)				
	264.1057(f)(2)				
	264.1057(f)(3)				
	264.1057(g)				
	264.1057(g)(1)				
	264.1057(g)(2)				
conditions under which a difficult-to-monitor valve as described in 264.1064(h)(2) is exempt from 264.1057(a) requirements	264.1057(h)				
	264.1057(h)(1)				
	264.1057(h)(2)				
	264.1057(h)(3)				

STANDARDS: PUMPS AND VALVES IN HEAVY LIQUID SERVICE, PRESSURE RELIEF DEVICES IN LIGHT LIQUID OR HEAVY LIQUID SERVICE, AND FLANGES AND OTHER CONNECTORS

monitoring of specified pumps and valves, pressure relief devices, flanges and other connectors within 5 days using 264.1063(b) methods in case of potential leaks	264.1058(a)				
reading of 10,000 ppm or greater indicates leak	264.1058(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	264.1058(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	264.1058(c)(2)				
first attempt at repair includes best practices described under 264.1057(e)	264.1058(d)				

STANDARDS: DELAY OF REPAIR

requirements for the delay of repair of equipment for which leaks have been detected	264.1059(a)				
type of equipment for which delay of repair allowed	264.1059(b)				
conditions under which delay of repair of valves allowed	264.1059(c)				
	264.1059(c)(1)				
	264.1059(c)(2)				
conditions under which delay of repair of pumps allowed	264.1059(d)				
	264.1059(d)(1)				
	264.1059(d)(2)				
conditions for delay of repair beyond a hazardous waste management unit shutdown	264.1059(e)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES					
owners or operators of closed-vent systems and control devices shall comply with 264.1033 provisions	264.1060				
ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE: PERCENTAGE OF VALVES ALLOWED TO LEAK					
alternative standard allowing no greater than 2 percent of valves to leak for an owner or operator subject to 264.1057 requirements	264.1061(a)				
notification, performance test, and repair requirements if an owner or operator decides to comply with alternative standard	264.1061(b)				
	264.1061(b)(1)				
	264.1061(b)(2)				
	264.1061(b)(3)				
monitoring standards, leak detection criterion and determination of leak percentage when conducting performance tests	264.1061(c)				
	264.1061(c)(1)				
	264.1061(c)(2)				
	264.1061(c)(3)				
written notification to Regional Administrator of intent to follow 264.1057(a)-(e) work practice standard if owner or operator decides to no longer comply with 264.1061	264.1061(d)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE: SKIP PERIOD LEAK DETECTION AND REPAIR					
election to comply with 264.1062(b)(2) and (3) alternative work practices by owner or operator subject to 264.1057 requirements	264.1062(a)(1)				
notification of Regional Administrator before implementing alternative work practice	264.1062(a)(2)				
compliance with 264.1057 requirements, except as described in 264.1062(b)(2) and (b)(3)	264.1062(b)(1)				
conditions under which an owner or operator may begin to skip one of the quarterly leak detection periods for valves subject to 264.1057 requirements	264.1062(b)(2)				
conditions under which an owner or operator may begin to skip three of the quarterly leak detection periods for valves subject to 264.1057 requirements	264.1062(b)(3)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with 264.1057 monthly monitoring requirements if percentage of valves leaking exceeds 2 percent; may elect to use 264.1062 requirements again after meeting 264.1057(c)(1) requirements	264.1062(b)(4)				

TEST METHODS AND PROCEDURES

compliance with test methods and procedure requirements by owner or operator subject to provisions of Subpart BB	264.1063(a)				
leak detection monitoring as required in 264.1052-264.1062 shall comply with specified requirements:	264.1063(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	264.1063(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	264.1063(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	264.1063(b)(3)				
calibration gases shall be:	264.1063(b)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
zero air	264.1063(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	264.1063(b)(4)(ii)				
instrument probe traverse requirements as described in Reference Method 21	264.1063(b)(5)				
test compliance requirements for equipment with no detectable emissions as required in 264.1052(e), 264.1053(i), 264.1054 and 264.1057(f)	264.1063(c)				
	264.1063(c)(1)				
	264.1063(c)(2)				
	264.1063(c)(3)				
	264.1063(c)(4)				
in accordance with 264.13(b), determina- tion by owner or operator of whether equipment contains or contacts a hazardous waste with organic concentration equal to or greater than 10% by weight using the following: methods described in ASTM Methods D 2267-88, E 169-87, E 168-88 and E 260-85	264.1063(d)				
Method 9060 or 8240 of SW-846	264.1063(d)(1)				
	264.1063(d)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced; documentation required; examples of documentation	264.1063(d)(3)				
determination as specified in 264.1063(d) can be revised only after following 264.1063(d)(1) or (d)(2) procedures	264.1063(e)				
use of 264.1063(d)(1) or (d)(2) to resolve determination disputes between owner or operator and Regional Administrator	264.1063(f)				
samples used for determination representative of highest expected total organic content hazardous waste	264.1063(g)				
to determine if pumps or valves are in light liquid service, vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86	264.1063(h)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance tests for control device shall comply with 264.1034(c)(1) through (c)(4) procedures	264.1063(i)				
RECORDKEEPING REQUIREMENTS					
compliance with recordkeeping requirements	264.1064(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	264.1064(a)(2)				
specific information that owners and operators must record in the facility operating record for facilities that comply with the provisions of 264.1033(a)(2), an implementation schedule as specified in 264.1033(a)(2)	264.1064(b)				
	264.1064(b)(1)				
	264.1064(b)(1)(i)				
	264.1064(b)(1)(ii)				
	264.1064(b)(1)(iii)				
	264.1064(b)(1)(iv)				
	264.1064(b)(1)(v)				
	264.1064(b)(1)(vi)				
	264.1064(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance test plan as specified in 264.1035(b)(3) if test data are used for control device demonstration	264.1064(b)(3)				
documentation of compliance with 264.1060, including documentation or results specified in 264.1035(b)(4)	264.1064(b)(4)				
information require- ments when each leak is detected as specified in 264.1052, 264.1053, 264.1057 and 264.1058	264.1064(c)				
	264.1064(c)(1)				
	264.1064(c)(2)				
	264.1064(c)(3)				
inspection log information require- ments when each leak is detected as specified in 264.1052, 264.1053, 264.1057 and 264.1058	264.1064(d)				
	264.1064(d)(1)				
	264.1064(d)(2)				
	264.1064(d)(3)				
	264.1064(d)(4)				
	264.1064(d)(5)				
	264.1064(d)(6)				
	264.1064(d)(7)				
	264.1064(d)(8)				
	264.1064(d)(9)				
	264.1064(d)(10)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
for each closed-vent system and control device subject to 264.1060, design documentation and monitoring, operating and inspection information recorded in facility operating record as specified in 264.1035(c)	264.1064(e)				
for a control device other than thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, Regional Administrator will specify appropriate recordkeeping requirements	264.1064(f)				
information requirements for equipment subject to the requirements of 264.1052 through 264.1060 to be recorded in a log and kept in the facility operating record	264.1064(g)				
	264.1064(g)(1)				
	264.1064(g)(2)(i)				
	264.1064(g)(2)(ii)				
	264.1064(g)(3)				
	264.1064(g)(4)(i)				
	264.1064(g)(4)(ii)				
	264.1064(g)(4)(iii)				
	264.1064(g)(5)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information requirements for valves subject to the requirements of 264.1057(g) and (h)	264.1064(h)				
	264.1064(h)(1)				
	264.1064(h)(2)				
information requirements for valves complying with 264.1062	264.1064(i)				
	264.1064(i)(1)				
	264.1064(i)(2)				
additional information requirements	264.1064(j)				
criteria required in 264.1052(d)(5)(ii) and 264.1053(e)(2) and an explanation of the design criteria	264.1064(j)(1)				
any changes to the criteria and the reasons for the changes	264.1064(j)(2)				
information require- ments to be recorded in a log for determining exemptions as provided in the applicability section of Subpart BB and other specific Subparts	264.1064(k)				
	264.1064(k)(1)				
	264.1064(k)(2)				
	264.1064(k)(3)				
records of equipment leak and operating information need be kept for only three years	264.1064(l)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
the owner or operator of facility subject to Subpart BB and to regulations at 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V, may elect to determine compliance by documentation either pursuant to 264.1064 or provisions of 40 CFR Part 60 or Part 61, to the extent that the documentation duplicates the documentation required under Subpart BB	264.1064(m)				

REPORTING REQUIREMENTS

a semiannual report submitted by owners or operators to Regional Administrator by specified dates	264.1065(a)				
specific information the semiannual report must contain	264.1065(a)(1)				
	264.1065(a)(2)				
	264.1065(a)(2)(i)				
	264.1065(a)(2)(ii)				
	264.1065(a)(2)(iii)				
	264.1065(a)(3)				
	264.1065(a)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
a report to Regional Administrator not required if, during the semi-annual reporting period, leaks from valves, pumps, and compressors are repaired per 264.1057(d), 264.1052(c) and (d)(6) and 264.1053(g) requirements and the control device does not exceed or operate outside 264.1064(e) specifications for more than 24 hours	264.1065(b)				
reserved	264.1066 - 264.1079				

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS					
4 add references to 265.1034(d) and 265.1063(d)	265.13(b)(6)				
GENERAL INSPECTION REQUIREMENTS					
change "items" to "terms"; add references to 265.1033, 265.1052, 265.1053, and 265.1058	265.15(b)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATION RECORD

add references to 265.1034 and 265.1063	265.73(b)(3)				
add references to 265.1034(c)-(f), 265.1035, 265.1063(d)-, and 265.1064	265.73(b)(6)				

ADDITIONAL REPORTS

add new paragraph reading: "As otherwise required by Subparts AA and BB."	265.77(d)				
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SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS

APPLICABILITY

regulations in this subpart apply to owners and operators of facilities that treat, store or dispose of hazardous waste except as provided in 265.1	265.1030(a)				
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**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
5 except for 265.1034(d) and 265.1034(e), Subpart AA applies to process vents associated with operations managing hazardous wastes with at least 10-ppmw organic concentrations if conducted in specific units	265.1030(b)				
units subject to the permitting requirements of Part 270	265.1030(b)(1)				
hazardous waste recycling units located on hazardous waste management facilities otherwise subject to Part 270 permitting requirements	265.1030(b)(2)				
DEFINITIONS					
all terms have meaning given them in 264.1031, the Act, and Parts 260-266	265.1031				
STANDARDS: PROCESS VENTS					
owner or operator of facility with process vents meeting certain conditions shall either:	265.1032(a)				
reduce total organic emissions below 1.4 kg/h and 2.8 Mg/yr	265.1032(a)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
using control device, reduce total organic emissions by 95 weight percent	265.1032(a)(2)				
265.1033 require- ments must be met if owner or operator installs closed-vent system and control device to comply with 265.1032(a) provisions	265.1032(b)				
use of engineering calculations or performance tests conforming to 265.1034(c) requirements may be used for determi- nation of vent emissions and emission reductions or total organic compound concen- trations achieved by add-on control devices	265.1032(c)				
use of 265.1034(c) procedures to resolve disagreements between owner or operator and Regional Administrator on vent determinations	265.1032(d)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

compliance with provisions of 265.1033 by owners or operators of closed-vent systems and control devices used to comply with provisions of Part 265	265.1033(a)(1)				
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**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
preparation of an implementation schedule by owner or operator, of existing facility, who cannot install a closed-vent system and control device to comply with Subpart AA provisions by effective date; units that begin operation after December 21, 1990, must comply with the rules immediately	265.1033(a)(2)				
specification of efficiency standards for control device involving vapor recovery unless 265.1032(a)(1) emission limits can be attained	265.1033(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
organic emission standards for enclosed combustion device; for boiler or process heater used as control device, vent stream introduced into flame zone	265.1033(c)				
specifications for the design and operation of a flare	265.1033(d)(1)				
	265.1033(d)(2)				
	265.1033(d)(3)				
	265.1033(d)(4)(i)				
	265.1033(d)(4)(ii)				
	265.1033(d)(4)(iii)				
	265.1033(d)(5)				
	265.1033(d)(6)				
determination of compliance of a flare with the visible emission provisions of Subpart AA using Reference Method 22 in 40 CFR Part 60	265.1033(e)(1)				
calculation of net heating value of gas being combusted in a flare using specified equation	265.1033(e)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination of actual exit velocity of a flare using flow rate as determined by Reference Methods 2, 2A, 2C or 2D in 40 CFR Part 60	265.1033(e)(3)				
determination of maximum allowed velocity for a flare complying with 265.1033(d)(4)(iii)	265.1033(e)(4)				
determination of maximum allowed velocity for an air-assisted flare	265.1033(e)(5)				
monitoring and inspection of control device by owner and operator to ensure compliance with 265.1033 by implementing specified requirements:	265.1033(f)				
installation, calibration, maintenance, and operation of a flow indicator; where sensor shall be installed	265.1033(f)(1)				
specifications for installation, calibration, maintenance, and operation of a device to continuously monitor control device operation:	265.1033(f)(2)				
temperature monitoring device with a continuous recorder for a thermal vapor incinerator	265.1033(f)(2)(i)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
temperature monitoring device with a continuous recorder for a catalytic vapor incinerator	265.1033(f)(2)(ii)				
heat sensing monitoring device with a continuous recorder for a flare	265.1033(f)(2)(iii)				
temperature monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity less than 44 MW	265.1033(f)(2)(iv)				
monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity greater than or equal to 44 MW	265.1033(f)(2)(v)				
for a condenser, either:	265.1033(f)(2)(vi)				
monitoring device with a continuous recorder to measure concentration level of the organic compounds in the exhaust vent stream from the condenser	265.1033(f)(2)(vi)(A)				
temperature monitoring device with a continuous recorder; specifications	265.1033(f)(2)(vi)(B)				
for a carbon adsorption system, either:	265.1033(f)(2)(vii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring device with a continuous recorder to measure concentration level of organic compounds in exhaust vent stream from carbon bed	265.1033(f)(2)(vii)(A)				
monitoring device with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular pre-determined time cycle	265.1033(f)(2)(vii)(B)				
daily inspection of readings from monitoring device required by 265.1033(f)(1) and 265.1033(f)(2); implement corrective measures if necessary	265.1033(f)(3)				
replacement of existing carbon in control device by owner or operator using a fixed-bed carbon adsorber that meets the 265.1035(b)(4)(iii)(F) requirement	265.1033(g)				
replacement of carbon on a regular basis by owner or operator using a carbon canister	265.1033(h)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitor organic compounds daily or at interval no greater than 20 percent of time required to consume total carbon working capacity established at 265.1035(b)(4)(iii)(G), whichever is longer; replace existing carbon when carbon breakthrough occurs	265.1033(h)(1)				
replacement of existing carbon at intervals less than design carbon replacement interval established as a requirement of 265.1035(b)(4)(iii)(G)	265.1033(h)(2)				
documentation requirements for owner or operator seeking to comply with Part 265 provisions by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater condenser, or carbon adsorption system	265.1033(i)				
design and operational requirements for closed-vent systems based on 265.1034(b) methods	265.1033(j)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring of closed-vent systems during initial leak detection monitoring, conducted by the date that the facility becomes subject to 265.1033 provisions, annually, and as requested by Regional Administrator	265.1033(i)(2)				
control of detectable emissions no later than 15 calendar days after emission is detected	265.1033(i)(3)				
first attempt at repair no later than 5 calendar days after emission is detected	265.1033(i)(4)				
closed vent systems and control devices used to comply with provisions of Subpart AA shall be operated at all times when emissions may be vented to them	265.1033(k)				
TEST METHODS AND PROCEDURES					
compliance with 265.1034 test methods and procedures by owner or operator subject to provisions of Subpart AA	265.1034(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when testing a closed-vent system for compliance with 265.1033(j) requirements, comply with following test requirements:	265.1034(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	265.1034(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	265.1034(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	265.1034(b)(3)				
calibration gases shall be:	265.1034(b)(4)				
zero air	265.1034(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	265.1034(b)(4)(ii)				
background level determined as set forth in Reference Method 21	265.1034(b)(5)				
instrument probe traverse requirements as described in Reference Method 21	265.1034(b)(6)				
arithmetic difference compared with 500 ppm for compliance determination	265.1034(b)(7)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance test requirements to determine compliance with 265.1032(a) and 265.1033(c)	265.1034(c)				
reference methods and calculation procedures to use when determining total organic compound concentrations and mass flow rates	265.1034(c)(1)				
Method 2 in 40 CFR Part 60 for velocity and volumetric flow rate	265.1034(c)(1)(i)				
Method 18 in 40 CFR Part 60 for organic content	265.1034(c)(1)(ii)				
performance tests in three separate runs; conditions for conducting runs; averaging results on a time-weighted basis	265.1034(c)(1)(iii)				
equation for determining total organic mass flow rates	265.1034(c)(1)(iv)				
equation for determining annual total organic emission rate	265.1034(c)(1)(v)				
6 determination of total organic emissions from all process vents using 265.1034(c)(1)(iv) equation and 265.1034(c)(1)(v) equation	265.1034(c)(1)(vi)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
recording of process information necessary to determine performance test conditions; certain operational periods not applicable	265.1034(c)(2)				
performance testing facilities provided by owner or operator	265.1034(c)(3)				
sampling ports adequate for 265.1034(c)(1) test methods	265.1034(c)(3)(i)				
safe sampling platform(s)	265.1034(c)(3)(ii)				
safe access to sampling platform(s)	265.1034(c)(3)(iii)				
utilities for sampling and testing equipment	265.1034(c)(3)(iv)				
use of time-weighted average of three runs in making compliance determinations; Regional Administrator approval needed for average based on two runs if a sample is accidentally lost or certain conditions occur	265.1034(c)(4)				
to demonstrate a process vent is not subject to Subpart AA requirements, use one of two methods to determine an annual average total organic concentration of less than 10 ppmw	265.1034(d)				
direct measurement using the following procedures:	265.1034(d)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
minimum of four grab samples under specified process conditions	265.1034(d)(1)(i)				
for waste generated onsite, collect grab samples before exposure to the atmosphere; for waste generated offsite, collect grab samples at the inlet to the first waste management unit that receives the waste under specific conditions	265.1034(d)(1)(ii)				
sample analysis using Method 9060 or 8240 of SW-846	265.1034(d)(1)(iii)				
calculation of time-weighted, annual average total organic concentration of waste	265.1034(d)(1)(iv)				
using knowledge of the waste to determine its total organic concentration is less than 10 ppmw; documentation of the waste determination is required; examples of acceptable documentation	265.1034(d)(2)				
guidelines for the determination that hazardous wastes are managed with time-weighted, annual average total organic concentrations less than 10 ppmw	265.1034(e)				
	265.1034(e)(1)				
	265.1034(e)(2)				
	265.1034(e)(3)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Method 8240 procedures used to resolve dispute in case of disagreement between owner or operator and Regional Administrator regarding the determination made in 265.1034(e)	265.1034(f)				
RECORDKEEPING REQUIREMENTS					
compliance with recordkeeping requirements	265.1035(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	265.1035(a)(2)				
information that must be recorded in the facility operating record	265.1035(b)				
for 265.1033(a)(2)-complying facilities, an implementation schedule that includes specified dates and rationale; inclusion in operating record by effective date the facility becomes subject to subpart AA provisions	265.1035(b)(1)				
up-to-date documentation of 265.1032 standards	265.1035(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUI- VALENT	MORE STRINGENT	BROADER IN SCOPE
information and data identifying all affected process vents and specific information for each vent	265.1035(b)(2)(i)				
information and data supporting determinations of vent emissions and emission reductions; new determination required if any action taken increases total emissions	265.1035(b)(2)(ii)				
a performance test plan for owners or operators using test data for determination	265.1035(b)(3)				
a description of the determination that a planned test will be conducted when unit is operating at the highest load or capacity level	265.1035(b)(3)(i)				
detailed engineering description of closed-vent system and control device	265.1035(b)(3)(ii)				
	265.1035(b)(3)(ii)(A)				
	265.1035(b)(3)(ii)(B)				
	265.1035(b)(3)(ii)(C)				
	265.1035(b)(3)(ii)(D)				
	265.1035(b)(3)(ii)(E)				
detailed description of sampling and monitoring procedures	265.1035(b)(3)(iii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
documentation of compliance with 265.1033	265.1035(b)(4)				
information references and sources	265.1035(b)(4)(i)				
records including the dates of each compliance test required by 265.1033(j)	265.1035(b)(4)(ii)				
if engineering calculations are used, a design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters	265.1035(b)(4)(iii)				
design analysis requirements for a thermal vapor incinerator	265.1035(b)(4)(iii)(A)				
design analysis requirements for a catalytic vapor incinerator	265.1035(b)(4)(iii)(B)				
design analysis requirements for a boiler or process heater	265.1035(b)(4)(iii)(C)				
design analysis requirements for a flare	265.1035(b)(4)(iii)(D)				
design analysis requirements for a condenser	265.1035(b)(4)(iii)(E)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis requirements for carbon adsorption system that regenerates the carbon bed directly onsite	265.1035(b)(4)(iii)(F)				
design analysis requirements for a carbon adsorption system that does not regenerate the carbon bed directly onsite	265.1035(b)(4)(iii)(G)				
certification statement signed and dated by owner or operator regarding operating parameters	265.1035(b)(4)(iv)				
certification statement signed and dated by owner or operator regarding control equipment meeting design specifications	265.1035(b)(4)(v)				
all test results when performance tests are used to demonstrate compliance	265.1035(b)(4)(vi)				
information to be recorded and kept up-to-date in the facility operating record for each closed-vent system and control device subject to the Part 265 regulations	265.1035(c)				
description and date of each modification	265.1035(c)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identification of operating parameter, description of monitoring device and location diagram for compliance with 265.1033(f)(1) and (f)(2)	265.1035(c)(2)				
information required by 265.1033(f)-(j)	265.1035(c)(3)				
date, time and duration of each period that occurs while control device is operating when any monitored parameter exceeds the value established in the design analysis	265.1035(c)(4)				
when combustion temperature is below 760°C for a thermal vapor incinerator	265.1035(c)(4)(i)				
	265.1035(c)(4)(ii)				
when temperature of vent stream is more than 28°C below average temperature or when temperature difference across catalyst bed is less than 80 percent of the design average temperature	265.1035(c)(4)(iii)				
difference for a catalytic vapor incinerator	265.1035(c)(4)(iii)(A)				
	265.1035(c)(4)(iii)(B)				
boiler or process heater	265.1035(c)(4)(iv)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
flame zone temperature is more than 28°C below design average temperature	265.1035(c)(4)(iv)(A)				
position changes	265.1035(c)(4)(iv)(B)				
period when the pilot flame is not ignited for a flare	265.1035(c)(4)(v)				
period when organic compounds are more than 20 percent greater than the design level for a condenser	265.1035(c)(4)(vi)				
condenser that complies with 265.1033(f)(2)(vi)(B)	265.1035(c)(4)(vii)				
temperature of exhaust vent stream is more than 6°C above design average temperature	265.1035(c)(4)(vii)(A)				
temperature of exiting coolant fluid is more than 6°C above design average temperature	265.1035(c)(4)(vii)(B)				
period when organic compounds are more than 20 percent greater than the design level for a carbon adsorption system	265.1035(c)(4)(viii)				
period when vent stream flow exceeds predetermined regeneration time for a carbon adsorption system	265.1035(c)(4)(ix)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
7 explanation for each period under 265.1035(c)(4) of the cause for parameters being exceeded and measures implemented	265.1035(c)(5)				
date when existing carbon is replaced	265.1035(c)(6)				
log to record specific dates	265.1035(c)(7)				
	265.1035(c)(7)(i)				
	265.1035(c)(7)(ii)				
date of each control device startup and shutdown	265.1035(c)(8)				
records required by paragraphs 265.1035(c)(3)-(c)(8) need be kept only 3 years	265.1035(d)				
monitoring and inspection information for control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system must be recorded in the facility operating record	265.1035(e)				
logging of information used to determine if process vent is subject to 265.1032 and 265.1032(d)(2)	265.1035(f)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
reserved	265.1036 - 265.1049				

SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

APPLICABILITY

owners and operators of facilities that treat, store or dispose of hazardous wastes except as provided in 265.1	265.1050(a)				
except as provided in 265.1064(j), applicability of Subpart BB to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in units or facilities subject to Part 270 permitting requirements	265.1050(b)				
	265.1050(b)(1)				
	265.1050(b)(2)				
equipment subject to Subpart BB, Part 265 shall be marked	265.1050(c)				
equipment in vacuum service excluded from requirements of 265.1052 to 265.1060 requirements if identified as required in 265.1064(g)(5)	265.1050(d)				

DEFINITIONS

all terms have meaning given them in 264.1031, the Act, and Parts 260-266	265.1051				
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**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE					
monthly monitoring to detect leaks as specified by 265.1063(b) methods except as provided in 265.1052(d), (e) and (f)	265.1052(a)(1)				
visual inspection each calendar week	265.1052(a)(2)				
conditions indicating a leak is detected	265.1052(b)(1)				
	265.1052(b)(2)				
time frame for leak repair, except as provided in 265.1059	265.1052(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	265.1052(c)(2)				
pump equipped with dual mechanical seal system that includes a barrier fluid system is exempt from 265.1052(a) if specific requirements are met:	265.1052(d)				
operational and equipment requirements for a dual mechanical seal system	265.1052(d)(1)				
	265.1052(d)(1)(i)				
	265.1052(d)(1)(ii)				
	265.1052(d)(1)(iii)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
organic concentra- tion limitation for barrier fluid system	265.1052(d)(2)				
sensor requirement	265.1052(d)(3)				
weekly visual check of pump	265.1052(d)(4)				
daily check of barrier fluid system sensor or monthly check of audible alarm	265.1052(d)(5)(i)				
determination of criterion to indicate failure of systems	265.1052(d)(5)(ii)				
leak detection criteria	265.1052(d)(6)(i)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	265.1052(d)(6)(ii)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	265.1052(d)(6)(iii)				
8 conditions under which pump designated for no detectable emissions is exempt from 265.1052(a), (c) and (d) requirements	265.1052(e)				
	265.1052(e)(1)				
	265.1052(e)(2)				
	265.1052(e)(3)				
pump equipped with closed-vent system and control device in compliance with 265.1060 is exempt from 265.1052(a)-(e) requirements	265.1052(f)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: COMPRESSORS					
seal system requirement for compressor, except as provided in 265.1053(h) and (i)	265.1053(a)				
specifications for compressor seal system	265.1053(b)				
	265.1053(b)(1)				
	265.1053(b)(2)				
	265.1053(b)(3)				
	organic concentration limitation for barrier fluid	265.1053(c)			
sensor requirement	265.1053(d)				
daily check of barrier fluid system sensor or monthly check of audible alarm; daily check if compressor located within boundary of unmanned site	265.1053(e)(1)				
determination of criterion to indicate failure of systems	265.1053(e)(2)				
leak detection criteria	265.1053(f)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	265.1053(g)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	265.1053(g)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compressor equipped with closed-vent system and control device in compliance with 265.1060 is exempt from 265.1053(a) and (b) requirements, except as provided in 265.1053(i)	265.1053(h)				
conditions under which compressor designated for no detectable emissions is exempt from 265.1053(a) through (h) requirements	265.1053(i)				
	265.1053(i)(1)				
	265.1053(i)(2)				

STANDARDS: PRESSURE RELIEF DEVICES IN GAS/VAPOR SERVICE

except during pressure releases, no detectable emission standards for the operation of pressure relief device in gas/vapor service, as measured by 265.1063(c) method	265.1054(a)				
time requirement and criteria for return of pressure relief device to a condition of no detectable emissions, except as provided in 265.1059	265.1054(b)(1)				
monitoring of pressure relief device within 5 calendar days after pressure relief to confirm no detectable emissions, as measured by 265.1063(c) method	265.1054(b)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
pressure relief device equipped with closed-vent system and control device in compliance with 265.1060 is exempt from 265.1054(a) and (b)	265.1054(c)				

STANDARDS: SAMPLING CONNECTING SYSTEMS

sampling connecting system equipped with closed purge or closed-vent system	265.1055(a)				
return, collect and recycle purged waste with no detectable emissions; control device in compliance with 265.1060	265.1055(b)				
	265.1055(b)(1)				
	265.1055(b)(2)				
	265.1055(b)(3)				
in situ sampling systems exempt from 265.1055(a) and (b) requirements	265.1055(c)				

STANDARDS: OPEN-ENDED VALVES OR LINES

each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve	265.1056(a)(1)				
requirement to seal open end at all times except during specified operations	265.1056(a)(2)				
operational requirements for open-ended valve or line equipped with a second valve	265.1056(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements for bleed valve or line when a double block and bleed system is used; compliance with 265.1056(a)	265.1056(c)				
STANDARDS: VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE					
monthly monitoring of each valve in gas/vapor or light liquid service using 265.1063(b) methods; compliance with 265.1057(b)-(e), except as provided in 265.1057(f), (g) and (h), 265.1061 and 265.1062	265.1057(a)				
instrument reading of 10,000 ppm or greater indicates leak	265.1057(b)				
monitoring requirements if leak not detected for two successive months	265.1057(c)(1)				
monthly monitoring requirement if leak detected	265.1057(c)(2)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	265.1057(d)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	265.1057(d)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
best practices to include in first attempt at repair valve designated for no detectable emissions under 265.1064(g)(2) is exempt from 265.1057(a) requirements if specified conditions are met	265.1057(e)				
	265.1057(e)(1)				
	265.1057(e)(2)				
	265.1057(e)(3)				
	265.1057(e)(4)				
conditions under which an unsafe-to-monitor valve as described in 265.1064(h)(1) is exempt from 265.1057(a) requirements	265.1057(f)				
	265.1057(f)(1)				
	265.1057(f)(2)				
	265.1057(f)(3)				
	265.1057(g)				
conditions under which a difficult-to-monitor valve as described in 265.1064(h)(2) is exempt from 265.1057(a) requirements	265.1057(g)(1)				
	265.1057(g)(2)				
	265.1057(h)				
	265.1057(h)(1)				
	265.1057(h)(2)				
	265.1057(h)(3)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

STANDARDS: PUMPS AND VALVES IN HEAVY LIQUID SERVICE, PRESSURE RELIEF DEVICES IN LIGHT LIQUID OR HEAVY LIQUID SERVICE, AND FLANGES AND OTHER CONNECTORS

monitoring of specified pumps and valves, pressure relief devices, flanges and other connectors within 5 days using 265.1063(b) methods in case of potential leaks	265.1058(a)				
reading of 10,000 ppm or greater indicates leak	265.1058(b)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	265.1058(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	265.1058(c)(2)				
first attempt at repair includes best practices described under 265.1057(e)	265.1058(d)				

STANDARDS: DELAY OF REPAIR

requirements for the delay of repair of equipment for which leaks have been detected	265.1059(a)				
type of equipment for which delay of repair allowed	265.1059(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
conditions under which delay of repair of valves allowed	265.1059(c)				
	265.1059(c)(1)				
	265.1059(c)(2)				
conditions under which delay of repair of pumps allowed	265.1059(d)				
	265.1059(d)(1)				
	265.1059(d)(2)				
conditions for delay of repair beyond a hazardous waste management unit shutdown	265.1059(e)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

owners or operators of closed-vent systems and control devices shall comply with 265.1033 provisions	265.1060				
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**ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID
SERVICE: PERCENTAGE OF VALVES ALLOWED TO LEAK**

alternative standard allowing no greater than 2 percent of valves to leak for an owner or operator subject to 265.1057 requirements	265.1061(a)				
notification, performance test, and repair requirements if an owner or operator decides to comply with alternative standard	265.1061(b)				
	265.1061(b)(1)				
	265.1061(b)(2)				
	265.1061(b)(3)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring standards, leak detection criterion and determination of leak percentage when conducting performance tests	265.1061(c)				
	265.1061(c)(1)				
	265.1061(c)(2)				
	265.1061(c)(3)				
written notification to Regional Administrator of intent to follow 265.1057(a)-(e) work practice standard if owner or operator decides to no longer comply with 265.1061	265.1061(d)				

ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE: SKIP PERIOD LEAK DETECTION AND REPAIR

election to comply with 265.1062(b)(2) and (3) alternative work practices by owner or operator subject to 265.1057 requirements	265.1062(a)(1)				
notification of Regional Administrator before implementing alternative work practice	265.1062(a)(2)				
compliance with 265.1057 requirements, except as described in 265.1062(b)(2) and (b)(3)	265.1062(b)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
conditions under which an owner or operator may begin to skip one of the quarterly leak detection periods for valves subject to 265.1057 requirements	265.1062(b)(2)				
conditions under which an owner or operator may begin to skip three of the quarterly leak detection periods for valves subject to 265.1057 requirements	265.1062(b)(3)				
compliance with 265.1057 monthly monitoring requirements if percentage of valves leaking exceeds 2 percent; may elect to use 265.1062 requirements again after meeting 265.1057(c)(1) requirements	265.1062(b)(4)				
TEST METHODS AND PROCEDURES					
compliance with test methods and procedure requirements by owner or operator subject to provisions of Subpart BB	265.1063(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
leak detection monitoring as required in 265.1052-265.1062 shall comply with specified requirements:	265.1063(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	265.1063(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	265.1063(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	265.1063(b)(3)				
calibration gases shall be:	265.1063(b)(4)				
zero air	265.1063(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	265.1063(b)(4)(ii)				
instrument probe traverse requirements as described in Reference Method 21	265.1063(b)(5)				
test compliance requirements for equipment with no detectable emissions as required in 265.1052(e), 265.1053(i), 265.1054 and 265.1057(f)	265.1063(c)				
	265.1063(c)(1)				
	265.1063(c)(2)				
	265.1063(c)(3)				
	265.1063(c)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
in accordance with 265.13(b), determination by owner or operator of whether equipment contains or contacts a hazardous waste with organic concentration equal to or greater than 10% by weight using the following:	265.1063(d)				
methods described in ASTM Methods D 2267-88, E 169-87, E 168-88 and E 260-85	265.1063(d)(1)				
Method 9060 or 8240 of SW-846	265.1063(d)(2)				
application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced; documentation required; examples of documentation	265.1063(d)(3)				
determination as specified in 265.1063(d) can be revised only after following 265.1063(d)(1) or (d)(2) procedures	265.1063(e)				
use of 265.1063(d)(1) or (d)(2) to resolve determination disputes between owner or operator and Regional Administrator	265.1063(f)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
samples used for determination representative of highest expected total organic content hazardous waste	265.1063(g)				
to determine if pumps or valves are in light liquid service, vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86	265.1063(h)				
performance tests for control device shall comply with 265.1034(c)(1) through (c)(4) procedures	265.1063(i)				

RECORDKEEPING REQUIREMENTS

compliance with recordkeeping requirements	265.1064(a)(1)			
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	265.1064(a)(2)			

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
specific information that owners and operators must record in the facility operating record for facilities that comply with the provisions of 265.1033(a)(2), an implementation schedule as specified in 265.1033(a)(2)	265.1064(b)				
	265.1064(b)(1)				
	265.1064(b)(1)(i)				
	265.1064(b)(1)(ii)				
	265.1064(b)(1)(iii)				
	265.1064(b)(1)(iv)				
	265.1064(b)(1)(v)				
	265.1064(b)(1)(vi)				
performance test plan as specified in 265.1035(b)(3) if test data are used for control device demonstration	265.1064(b)(2)				
documentation of compliance with 265.1060, including documentation or results specified in 265.1035(b)(4)	265.1064(b)(3)				
	265.1064(b)(4)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
9 information require- ments when each leak is detected as specified in 265.1052, 265.1053, 265.1057 and 265.1058	265.1064(c)				
	265.1064(c)(1)				
	265.1064(c)(2)				
	265.1064(c)(3)				
inspection log information require- ments when each leak is detected as specified in 265.1052, 265.1053, 265.1057 and 265.1058	265.1064(d)				
	265.1064(d)(1)				
	265.1064(d)(2)				
	265.1064(d)(3)				
	265.1064(d)(4)				
	265.1064(d)(5)				
	265.1064(d)(6)				
	265.1064(d)(7)				
	265.1064(d)(8)				
	265.1064(d)(9)				
for each closed-vent system and control device subject to 265.1060, design documentation and monitoring, operating and inspection informa- tion recorded in facility operating record as specified in 265.1035(c)	265.1064(d)(10)				
	265.1064(e)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring and inspection information for control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system must be recorded in the facility operating record	265.1064(f)				
information requirements for equipment subject to the requirements of 265.1052 through 265.1060 to be recorded in a log and kept in the facility operating record	265.1064(g)				
	265.1064(g)(1)				
	265.1064(g)(2)(i)				
	265.1064(g)(2)(ii)				
	265.1064(g)(3)				
	265.1064(g)(4)(i)				
	265.1064(g)(4)(ii)				
	265.1064(g)(4)(iii)				
	265.1064(g)(5)				
information requirements for valves subject to the requirements of 265.1057(g) and (h)	265.1064(h)				
	265.1064(h)(1)				
	265.1064(h)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information requirements for valves complying with 265.1062 additional information requirements	265.1064(i)				
	265.1064(i)(1)				
	265.1064(i)(2)				
	265.1064(j)				
criteria required in 265.1052(d)(5)(ii) and 265.1053(e)(2) and an explanation of the design criteria	265.1064(j)(1)				
any changes to the criteria and the reasons for the changes	265.1064(j)(2)				
information requirements to be recorded in a log for determining exemptions as provided in the applicability section of Subpart BB and other specific Subparts	265.1064(k)				
	265.1064(k)(1)				
	265.1064(k)(2)				
	265.1064(k)(3)				
records of equipment leak and operating information need be kept for only three years	265.1064(l)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
the owner or operator of facility subject to Subpart BB and to regulations at 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V, may elect to determine compliance by documentation either pursuant to 265.1064 or provisions of 40 CFR Part 60 or Part 61, to the extent that the documentation duplicates the documentation required under Subpart BB	265.1064(m)				
reserved	265.1065 - 265.1079				

**PART 270 - EPA-ADMINISTERED PERMIT PROGRAMS:
THE HAZARDOUS WASTE PERMIT PROGRAM**

SUBPART B - PERMIT APPLICATION

CONTENTS OF PART B: GENERAL REQUIREMENTS

add references to 264.1033, 264.1052, 264.1053 and 264.1058	270.14(b)(5)			
remove "and" at the end of paragraph	270.14(b)(8)(iv)			
insert "; and" at the end of paragraph	270.14(b)(8)(v)			
add new paragraph reading "Prevent releases to atmosphere"	270.14(b)(8)(vi)			

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
SPECIFIC PART B INFORMATION REQUIREMENTS FOR PROCESS VENTS					
additional information that must be provided by owners and operators of facilities that have process vents to which Subpart AA of Part 264 applies, except as provided in 264.1	270.24				
implementation schedule as specified in 264.1033(a)(2) for facilities that cannot install a closed-vent system and control device to comply with Part 264 Subpart AA provisions on the effective date the facility becomes subject to Part 264 or Part 265 Subpart AA provisions	270.24(a)				
documentation of compliance with process vent standards in 264.1032 including:	270.24(b)				
information and data identifying all affected process vents and specific information for each vent	270.24(b)(1)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information and data supporting estimates of vent emissions and emission reductions; estimates made using parameter values representing highest load or capacity level conditions	270.24(b)(2)				
information and data for determining if a process vent is subject to 264.1032 requirements	270.24(b)(3)				
a performance test plan as specified in 264.1035(b)(3) if applying to use certain control devices and using test data to determine efficiency or concentration	270.24(c)				
documentation of compliance with 264.1033 including:	270.24(d)				
references and sources used in preparing documentation	270.24(d)(1)				
10 records including dates of each compliance test required by 264.1033(k)	270.24(d)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters as specified in 264.1035(b)(4)(iii)	270.24(d)(3)				
certification statement signed and dated by owner or operator regarding operating parameters used in design analysis	270.24(d)(4)				
certification statement signed and dated by owner or operator regarding control device meeting efficiency design specifications	270.24(d)(5)				
SPECIFIC PART B INFORMATION REQUIREMENTS FOR EQUIPMENT					
additional information that must be provided by owners and operators of facilities that have equipment to which Subpart BB of Part 264 applies, except as provided in 264.1	270.25				
for each piece of equipment to which Subpart BB of Part 264 applies:	270.25(a)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
equipment identification number and hazardous waste management unit identification	270.25(a)(1)				
approximate locations within the facility	270.25(a)(2)				
type of equipment	270.25(a)(3)				
percent by weight total organics in the hazardous waste stream at the equipment	270.25(a)(4)				
hazardous waste state at the equipment	270.25(a)(5)				
method of compliance with the standard	270.25(a)(6)				
implementation schedule as specified in 264.1033(a)(2) for facilities that cannot install a closed-vent system and control device to comply with Part 264 Subpart BB provisions on the effective date the facility becomes subject to Part 264 or Part 265 Subpart BB provisions	270.25(b)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
a performance test plan as specified in 264.1035(b)(3) if applying to use certain control devices and using test data to determine efficiency or concentration	270.25(c)				
documentation demonstrating compliance with 264.1052 to 264.1059 equipment standards and containing records required under 264.1064; Regional Administrator may request further documentation	270.25(d)				
documentation to demonstrate compliance with 264.1060 shall include:	270.25(e)				
references and sources used in preparing documentation	270.25(e)(1)				
records including dates of each compliance test required by 264.1033(j)	270.25(e)(2)				

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters as specified in <u>264.1035(b)(4)(iii)</u>	270.25(e)(3)				
certification statement signed and dated by owner or operator regarding operating parameters used in design analysis	270.25(e)(4)				
certification statement signed and dated by owner or operator regarding control device meeting efficiency design specifications	270.25(e)(5)				

- 1 There is a typographical error in the Federal Register notice for this checklist (55 FR 25494, June 21, 1990). The reference to "2641" in paragraph 264.1030(a) should be to "264.1."
- 2 There is a typographical error in the Federal Register notice for this checklist (55 FR 25494, June 21, 1990). The reference to "264.1035(e)" in paragraph 264.1030(b) should be to "264.1034(e)."
- 3 The reference to "paragraphs (1) and (2) of this section" in the Federal Register (55 FR 25454, June 21, 1990) in paragraph 264.1033(f)(3) should be to "paragraphs (f)(1) and (f)(2) of this section."
- 4 There is an error in the July 1, 1989 CFR which is repeated in the Federal Register for this checklist (55 FR 25506 and 25507, June 21, 1990). The reference to "265.193" should be to "265.200."

**RCRA REVISION CHECKLIST 79: Organic air Emission Standards
for Process Vents and Equipment Leaks (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
5	There is a typographical error in the <u>Federal Register</u> notice for this checklist (55 <u>FR</u> 25507, June 21, 1990). The reference to "265.1035(d)" in paragraph 265.1030(b) should be to "265.1034(e)."				
6	There is a typographical error in the <u>Federal Register</u> notice for this checklist (55 <u>FR</u> 25510, June 21, 1990). The first reference to "(c)(1)(v)" in paragraph 265.1034(c)(1)(vi) should be to "(c)(1)(iv)."				
7	There is a typographical error in the <u>Federal Register</u> for this checklist (55 <u>FR</u> 25512, June 21, 1990). The reference to "paragraph (3)" in paragraph 265.1035(c)(5) should be to "paragraph (4)."				
8	There is a typographical error in the <u>Federal Register</u> for this checklist (55 <u>FR</u> 25513). The reference to "(a)(2)" in paragraph 265.1052(e)(3) should be to "(e)(2)."				
9	There is a typographical error in the <u>Federal Register</u> for this checklist (55 <u>FR</u> 25516, June 21, 1990). The reference to "265.1953" in paragraph 265.1064(c) should be to "265.1053."				
10	There is a typographical error in the <u>Federal Register</u> for this checklist (55 <u>FR</u> 25518, June 21, 1990). The reference to "264.103(k)" in paragraph 270.24(d)(2) should be to "264.1033(k)."				

Thursday
June 21, 1990

Environmental Protection Agency

Part III

Environmental Protection Agency

40 CFR Parts 260, 261, 264, 265, 270, 271
Hazardous Waste Treatment, Storage,
and Disposal Facilities—Organic Air
Emission Standards for Process Vents
Equipment Leaks; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, 270, and 271

[FRL-3614-3]

Hazardous Waste Treatment, Storage, and Disposal Facilities—Organic Air Emission Standards for Process Vents and Equipment Leaks

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The EPA is today promulgating standards that limit organic air emissions as a class at hazardous waste treatment, storage, and disposal facilities (TSDF) requiring a permit under subtitle C of the Resource Conservation and Recovery Act (RCRA). Today's action is the first part of a multiphased regulatory effort to control air emissions at new and existing hazardous waste TSDF. The rule establishes final standards limiting organic emissions from (1) process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous wastes with 10 parts per million by weight (ppmw) or greater total organics concentration, and (2) leaks from equipment that contains or contacts hazardous waste streams with 10 percent by weight or greater total organics. These standards were proposed in the Federal Register on February 5, 1987 (52 FR 3748).

The final standards are promulgated under the authority of section 3004 of the Hazardous and Solid Waste Amendments (HSWA) to the RCRA. The EPA is required by section 3004(n) of RCRA to promulgate standards for the monitoring and control of air emissions from hazardous waste TSDF as necessary to protect human health and the environment. The EPA plans to promulgate additional standards under this section in two further phases. Phase II will consist of air standards for organic emissions from surface impoundments, tanks, containers, and miscellaneous units. These standards are scheduled for proposal later this year. In Phase III, the residual risk from the first two phases will be assessed and, if necessary, EPA will develop further regulations or guidance to protect human health and the environment from the effects of TSDF air emissions.

EFFECTIVE DATE: This final rule is effective on December 21, 1990. The

incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of September 5 and October 11, 1989.

ADDRESSES: The official record for this final rulemaking is contained in Docket No. F-90-AESF-FFFF. This docket and the proposal docket (Docket No. F-86-AESP-FFFF) are available for public inspection at the EPA RCRA Docket Office (OS-300) in room 2427M of the U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. Additional information concerning the development of the equipment leak standards is contained in Docket No. A-79-27, which is available for public inspection at EPA's Central Docket Section, room 2903B, Waterside Mall, 401 M Street SW., Washington, DC 20460. For further information, see the discussion of supporting documentation for the rules under section X of this preamble.

Background information document: The background information document (BID) for the final standards may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone (919) 541-2777. Please refer to "Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)—Background Information for Promulgated Organic Emission Standards for Process Vents and Equipment Leaks" (EPA-450/3-89-009). The EPA has prepared a technical guidance document to aid in implementation of these rules. This document may also be obtained from the U.S. EPA Library (see above address). Please refer to "Hazardous Waste TSDF—Technical Guidance Document for RCRA Air Emission Standards for Process Vents and Equipment Leaks" (EPA-450/3-89-21).

FOR FURTHER INFORMATION CONTACT: The RCRA Hotline, toll-free at (800) 424-9346. For further information on regulatory aspects of these standards, contact Rick Colyer, Standards Development Branch, Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5262. For further information on the technical aspects of these standards, contact Robert Lucas, Chemicals and Petroleum Branch, telephone number (919) 541-0884, at the same address. For further information on test methods associated with these standards, contact Terry Harrison, Emission Measurement Branch, telephone number (919) 541-5233, at the same address as above.

SUPPLEMENTARY INFORMATION: The contents of today's preamble are listed in the following outline:

- I. Authority
- II. Summary of Final Standards
 - A. Vents on Hazardous Waste Management Process Units
 - B. Equipment Leaks on Hazardous Waste Management Process Units
- III. Background
 - A. Regulatory Authority
 - B. Regulatory Scope of Today's Standards
 - C. Air Standards under RCRA Section 3004(n)
 - D. Other RCRA Air Standards
 - E. Relationship of Air Standards to Other Subtitle C Rules
 - F. Relationship of Today's Final Standards to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- IV. Applicability and Requirements of Proposed Process Vent and Equipment Leak Standards
- V. Applicability and Requirements of Today's Final Standards
 - A. Scope of Final Standards
 - B. Standards for Process Vents
 - C. Equipment Leak Standards
 - D. Summary of Changes from Proposal
 - E. Relationship of RCRA Exemptions to Final Standards
- VI. Summary of Comments and Responses
 - A. Regulatory Issues
 - B. Standards and Applicability
 - C. Control Technology
 - D. Impact Analyses Methodologies
 - E. Implementation and Compliance
- VII. Summary of Impacts of Final Standards
 - A. Overview of the Source Category
 - B. Use of Models in the Regulatory Development Process
 - C. Emission Impacts
 - D. Ozone Impacts
 - E. Health Risk Impacts
 - F. Cost Impacts
- VIII. State Authorization
 - A. Applicability of Rules in Authorized States
 - B. Effect on State Authorizations
- IX. Implementation
- X. Administrative Requirements
 - A. Regulatory Impact Analysis
 - B. Regulatory Flexibility Act
 - C. Paperwork Reduction Act
 - D. Supporting Documentation
 - E. List of Subjects

I. Authority

These regulations are promulgated under the authority of sections 1008, 2002, 3001-3007, 3010, 3014, and 7004 of the Solid Waste Disposal Act of 1970, as amended by RCRA, as amended (42 U.S.C. 6905, 6912, 6921-6927, 6930, 6934, and 6974).

II. Summary of Final Standards

The standards limit emissions of organics from certain process vents and equipment leaks at new and existing hazardous waste TSDF requiring a permit under RCRA subtitle C (i.e.,

permitted TSD and TSD that need authorization to operate under RCRA section 3005(e)). This applicability includes all hazardous waste management units that require RCRA permits and recycling units that are not subject to RCRA permit requirements, if, independent of today's final rules, a RCRA permit is needed for another part of the facility operations.

A. Vents on Hazardous Waste Management Process Units

Today's final standards are applicable to vents on waste management units that manage hazardous waste with an annual average total organics concentration of 10 ppmw or greater (hereafter referred to as "process vents") and specifically include (1) process vents on distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations and vents on condensers serving these operations; and (2) process vents on tanks (e.g., distillate receivers, bottoms receivers, surge control tanks, separator tanks, and hot wells) associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping processes if emissions from these process operations are vented through the tanks. Up-to-date information and data used to determine whether or not a hazardous waste management unit and its associated process vent(s) are subject to the subpart AA standards must be maintained in the facility operating record (§ 264.1035(f) and § 265.1035(f)). For example, documentation of a waste analysis showing that the waste managed in the unit is less than the 10-ppmw applicability criterion must be kept in the facility operating record.

The final rules for process vents require that owners or operators of TSD subject to the provisions of new subpart AA: (1) Reduce total organic emissions from all affected process vents at the facility to below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr), or (2) install and operate a control device(s) that reduces total organic emissions from all affected process vents at the facility by 95 weight percent. The owner or operator of the facility must determine through test data or engineering judgment and calculations that the facility is not expected to exceed the emission rate limit of 1.4 kg/h and 2.8 Mg/yr. Facilities with organic emissions from affected vents that never exceed the emission rate limit will not be required to install controls or monitor process vent emissions under this rule. For all other affected facilities, the owner or operator must install controls

to reduce total facility process vent emissions from all affected vents below the emission rate limit or to reduce total facility process vent organic emissions after primary recovery by 95 percent; if enclosed combustion devices are used, the owner/operator has the option of reducing the organic concentration of each affected vent stream at the facility to no more than 20 parts per million by volume (ppmv). Selection of the emission rate limit is addressed further in section VI.B below and in chapters 4.0 and 7.0 of the BID.

The final standards for process vents do not require the use of any specific types of equipment or add-on control devices. Condensers, carbon adsorbers, incinerators, and flares are demonstrated emission control equipment for the regulated processes, although the choice of control is not limited to these.

To demonstrate compliance with the process vent provisions, TSD owners/operators must document process vent emissions and emission reductions achieved by add-on control devices and certify the emission reduction capability of the control equipment. Documentation must (1) identify affected process vents, provide the throughput and operating hours of each affected unit, and provide emission rate determinations for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility); and (2) show whether installed add-on control devices achieve the emission rate limit by design and during operation. Where the emission rate limit is not attained, documentation must show whether the add-on control devices achieve a 95-percent reduction in organics or the 20-ppmv organics concentration limit by design and during operation. The documentation must include the basis for determining the design emission reduction.

The rules for process vents require that specific control device operating parameters be monitored continuously and the monitoring information be recorded in the facility operating record to ensure that the devices perform according to their design and are properly operated and maintained. For facilities with final RCRA permits, periods when monitoring indicates that control device operating parameters exceed established tolerances for design specifications must be reported semiannually. The records and reports must include dates, duration, cause, and corrective measures taken. There are no reporting requirements for interim status facilities. These monitoring and recordkeeping requirements are

discussed below in section V.B and in the BID in chapter 11.0, section 11.4.

B. Equipment Leaks on Hazardous Waste Management Process Units

The equipment leak standards apply to emissions from valves, pumps, compressors, pressure relief devices, sampling connection systems, and open-ended valves or lines. Under the final standards, controls for these sources are required at TSD where the equipment contains or contacts hazardous waste streams with organic concentrations of 10 percent by weight or greater. The owner or operator of a facility may choose any of the applicable test methods identified in the final rules for determining the organic content.

To comply with the equipment leak standards, the facility owner/operator must identify all affected equipment (i.e., pumps, valves, compressors, etc., that contain or contact hazardous waste streams with at least 10-percent-by-weight organics), establish which of the affected equipment is in heavy liquid service, and determine which valves are unsafe or difficult to monitor. By the effective date of this regulation, the facility owner/operator must conduct the initial monthly monitoring survey of pumps and valves in gas/vapor or light liquid service. A number of portable volatile organic monitoring devices are capable of detecting equipment leaks. Any analyzer can be used, provided it meets the specifications and performance criteria set forth in EPA Reference Method 21 (contained in appendix A of 40 CFR part 60).

Affected compressors must have a dual mechanical seal system that includes a barrier fluid system or must be designated as having "no detectable emissions," which means an instrument reading of less than 500 ppm above background using EPA Reference Method 21. Sampling connections must have a closed-purge system. Open-ended valves or lines must have a cap, blind flange, plug, or second valve. Pressure relief devices must operate with "no detectable emissions."

Recordkeeping and monitoring are also required by the equipment leak provisions. For example, leaking equipment as determined by Method 21 must be tagged as specified in the rule, and records of repair attempts, delay of repair, etc., must be recorded in a log and included as part of the facility's operating record. Monitoring of control device operating parameters is also required if a closed-vent system and control device are installed as a result of the equipment leak standards. The standards and recordkeeping

requirements are discussed below at section V.C.

III. Background

A. Regulatory Authority

In 1984, Congress passed HSWA, amending RCRA. Section 3004(n) of RCRA, as amended by HSWA, directs EPA to "promulgate such regulations for the monitoring and control of air emissions at hazardous waste treatment, storage, and disposal facilities, including but not limited to open tanks, surface impoundments, and landfills, as may be necessary to protect human health and the environment." The standards being promulgated today address, in part, this congressional directive and are applicable to all TSDF that require authorization to operate under section 3005 of RCRA. These regulations are being promulgated under the authority of sections 1006, 2002, 3001-3007, 3010, 3014, and 7004 of the Solid Waste Disposal Act of 1970, as amended by RCRA, as amended (42 U.S.C. 6905, 6912, 6921-6927, 6930, 6934, and 6974).

B. Regulatory Scope of Today's Standards

Today's final rules apply to facilities that treat, store, or dispose of hazardous wastes as defined in 40 CFR 261.3 and, specifically, to certain hazardous waste management units at facilities requiring RCRA subtitle C permits. This includes facilities with permits and those operating under interim status. Today's rules, codified in new subparts AA and BB of 40 CFR parts 264 and 265, are applicable to the following units at TSDF: (1) Hazardous waste management units subject to the permitting requirements of part 270 (i.e., not 90-day accumulation tanks at TSDF), and (2) hazardous waste recycling units located on hazardous waste management facilities otherwise subject to the permitting requirements of part 270. Under 40 CFR 260.10, the term "facility" means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. (Note: This definition differs from the definition of "facility" for purposes of corrective action under RCRA section 3004(u). See 50 FR 28712, July 15, 1985.)

C. Air Standards Under RCRA Section 3004(n)

Air emissions from hazardous wastes are generated or released from numerous sources at TSDF, including distillation and other organic separation units, surface impoundments, tanks,

containers, landfills, land treatment facilities, wastepiles, and leaks from equipment associated with these operations.

In considering the regulation of air emissions under RCRA section 3004(n) and within the RCRA regulatory framework, EPA has concluded that air emissions from hazardous waste management facilities that are subject to RCRA subtitle C should be regulated under the authority of RCRA section 3004(n). Air emissions from facilities or units that manage solid wastes that are not regulated as hazardous wastes pursuant to 40 CFR part 261 (e.g., cement kiln dust waste) and air emissions from hazardous waste from units or facilities that are exempt from the permitting provisions of 40 CFR 270.1(c)(2) (e.g., wastewater treatment units with National Pollutant Discharge Elimination System (NPDES) permits) will be subject to control techniques guidelines or standards developed as needed under either the Clean Air Act (CAA) or RCRA authority. Air emissions from wastes managed in units subject to subtitle D (nonhazardous solid wastes such as those managed in municipal landfills) also will be subject to guidelines or standards issued under CAA or RCRA authority as appropriate.

Air emissions from hazardous wastes include photochemically reactive and nonphotochemically reactive organics, some of which are toxic or carcinogenic, and also may include toxic or carcinogenic inorganic compounds. Depending on the source, particulates (including metals, aerosols of organics, dust, as well as toxics and carcinogens) also may be released or generated. These emissions, which are released to the atmosphere from a wide variety of sources within TSDF, present diverse health and environmental risks. Therefore, EPA has developed a multiphased approach for regulating TSDF organic air emissions. This approach, described generally below, reflects EPA's understanding of the problem and knowledge of applicable, effective controls at this time.

Organic emissions from TSDF managing hazardous wastes contribute to ambient ozone formation and increase cancer and other health risks. Phases I and II of EPA's TSDF regulatory approach will significantly reduce emissions of ozone precursors and air toxics and carcinogens from TSDF by controlling emissions of organics as a class rather than controlling emissions of individual waste constituents. The regulation of organics as a class has the advantage of being relatively straightforward because

it can be accomplished with a minimum number of standards, whereas the control of individual toxic constituents will require multiple standards.

Regulating organics as a class also makes efficient use of EPA resource, avoids many of the complexities of having multiple standards, and reduces the number of constituents for which separate standards may be required.

The health and environmental effects of ambient ozone are well documented: measured in terms of monetary losses, they total hundreds of millions of dollars each year. Other health impacts of TSDF organic emissions are summarized in section VII.D of this preamble and are discussed in more detail in the BID that accompanies this final rule and in the draft BID for Phase II organic standards titled, "Hazardous Waste TSDF—Background Information for Proposed RCRA Air Emission Standards," available in Docket F-90-CESP-FFFFF. The substantial reductions in organic emissions achievable through implementation of Phase I and Phase II controls will reduce atmospheric ozone formation as a result of reductions in TSDF emissions of ozone precursors and will reduce nationwide cancer incidence and maximum individual risk due to exposure to air toxics and carcinogens emitted from TSDF.

Specifically, Phase I (which is being promulgated as final rules today) entails the promulgation of standards for the control of organic air emissions from selected hazardous waste management processes and equipment leaks. As discussed in the February 1987 proposal, EPA chose to develop this portion of its TSDF rulemaking first to prevent uncontrolled air emissions from land disposal restriction (LDR) treatment technologies. The technologies used in lieu of land disposal include the distillation/separation processes subject to the Phase I rules. Publication of today's final rules for air emissions from hazardous waste management unit process vents from distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping processes and from leaks in piping and associated equipment handling hazardous wastes marks the completion of this first phase.

In the second phase, EPA will propose (in 1990) additional standards under section 3004(n) to control organic air emissions from other significant TSDF air emission sources not covered or not adequately controlled by existing standards. These sources include surface impoundments, tanks (including vents on closed, vented tanks), containers, and miscellaneous units.

The analyses of impacts indicate that, at some facilities, residual cancer risk to the most exposed individuals after implementing the first two phases of regulation will remain outside the risk range for other regulations promulgated under RCRA (which historically has been in the range of 1×10^{-4} to 1×10^{-6}). The EPA is therefore planning a third phase of the effort to control TSDF emissions in which various means for further reducing risk will be examined. In the interim, as explained in section VI.E, the omnibus permitting authority of RCRA is an available option for requiring additional emission and risk reductions beyond that achieved by today's final rules if it is decided, on a case-by-case basis, that additional control is needed to protect human health and the environment.

The EPA is currently involved in an effort to improve the data used in the current risk analyses and, in the third phase, will make use of any new data obtained. If additional constituent control is found to be necessary, the number of constituents for which additional control is needed is expected to be significantly less than if a constituent approach were used as the only means of regulating TSDF air emissions. Therefore, the EPA is convinced that the control of organics as a class followed by controls for individual toxic constituents, as necessary, will ultimately result in comprehensive standards that are protective while providing effective interim control.

Should additional regulation under Phase III be necessary, EPA is considering a variety of approaches for reducing residual risk associated with emissions from wastes managed at TSDF, and additional approaches may be developed in the future. For example, EPA could require additional technology control for toxic waste management (e.g., technology that ensures lower rates of leakage from equipment, if such technology can be developed for use at TSDF) or limit the quantities of specific constituents that can be managed at a TSDF. The constituents to be evaluated in Phase III will include those reported as being present in hazardous wastes managed by existing TSDF for which health effects have been established through the development of unit risk factors for carcinogens and reference doses for noncarcinogens.

D. Other RCRA Air Standards

The EPA has promulgated several standards under RCRA that reduce air emissions from TSDF. For example, several existing provisions in 40 CFR part 264 (40 CFR 264.251(f), 264.301(i),

and 264.273(f)) require the implementation of general design and operating practices at permitted wastepiles, landfills, and land treatment operations to limit the release of particulate air emissions. The EPA has prepared a technical guidance document to aid in the implementation of these particulate rules; the document ("Hazardous Waste TSDF—Fugitive Particulate Matter Air Emissions Guidance Document," EPA-450/3-89-019) provides information on the sources of, and control technology for, particulate air emissions at TSDF. Additionally, 40 CFR part 264, subpart X, contains provisions that require prevention of air releases that may have adverse effects on human health or the environment at miscellaneous hazardous waste management units.

Air standards also have been promulgated for the control of air emissions from permitted hazardous waste incinerators (40 CFR part 264, subpart O). These standards require that incinerators be operated to achieve a destruction and removal efficiency (DRE) of at least 99.99 percent for those primary organic hazardous constituents listed in the facility permit. Higher efficiencies are required when the incinerator is burning certain specified waste types. These standards also limit air emissions of organics, hydrochloric acid, and particulates from incinerator stacks.

Air standards for interim status hazardous waste incinerators (40 CFR 265, subpart O) require monitoring of visible emissions and operating conditions. When burning specified wastes, these incinerators must receive a certification from the Assistant Administrator stating that the incinerator can meet the performance standards specified for permitted incinerators in 40 CFR 264, subpart O.

Interim status standards for other thermal treatment units are found in 40 CFR part 265, subpart P. These standards apply to facilities that thermally treat hazardous waste in devices other than enclosed devices using controlled flame combustion. The standards require monitoring of visible emissions and operating conditions of the combustion devices and prohibit open burning except for open burning and detonation of waste explosives.

The EPA has also proposed standards covering the burning of hazardous waste in boilers and industrial furnaces (52 FR 16987; May 6, 1987). These standards would require such burning to achieve a DRE of 99.99 percent for each principal organic hazardous constituent identified in the facility permit. In addition, a DRE

of 99.99 percent must be achieved when burning certain specified constituents. The proposed standards also have provisions for burning low-risk wastes that allow an owner or operator to demonstrate that the burning of hazardous waste will not result in significant adverse health effects. To qualify for the low-risk waste exemption, an owner or operator would have to use dispersion modeling to demonstrate that emissions of carcinogenic compounds would not result in off-site ground-level concentrations that pose a risk to the most exposed individual of greater than 1×10^{-5} . For noncarcinogenic compounds, the dispersion modeling would demonstrate that the resulting air concentrations would not exceed the reference air concentration (RAC) of individual hazardous compounds. The proposed standards would also limit emissions of carbon monoxide, metals, and hydrochloric acid from boilers and furnaces burning hazardous wastes.

E. Relationship of Air Standards to Other Subtitle C Rules

In addition to the air emission standards discussed above, EPA has ongoing programs that indirectly affect air emissions from hazardous waste. Today's rules are designed to complement other air standards under RCRA and the rules that might otherwise affect air emissions. Existing RCRA regulations that have the potential for affecting air emissions from hazardous waste TSDF include: (1) The LDR and (2) the corrective action program.

The LDR, developed under section 3004(m) of the HSWA, require that hazardous waste be treated to reduce concentrations of specific chemicals or hazardous properties to certain performance levels or by certain methods before the waste may be disposed of on land. Affected land disposal units include surface impoundments, wastepiles, landfills, and land treatment units. The EPA anticipates that LDR will substantially reduce the potential for air emissions from these land disposal sources. The first set of LDR, for certain dioxins and solvent-containing hazardous wastes, was promulgated on November 7, 1986 (51 FR 46572); the second set of restrictions, the "California list," was promulgated on July 8, 1987 (52 FR 25760); the "First Third" was promulgated on August 17, 1988 (53 FR 31133), and the "Second Third" on June 23, 1989 (54 FR 26597).

The treatment technologies evaluated under LDR for both wastewater and

nonwastewater spent solvents include distillation and other separation processes subject to the requirements of the Phase I rules. Today's standards are designed to protect human health and the environment by reducing air emissions from technologies expected to be used to treat wastes prior to land disposal.

Under the authority of RCRA section 3004(u), EPA is developing rules to address releases of hazardous waste or hazardous constituents from solid waste management units (SWMU) that pose a threat to human health and the environment. Because this authority applies to contamination of soil, water, and air media, organic air emissions from SWMU at some TSDF would be addressed by the corrective action program EPA intends to propose under a separate rulemaking. The draft rules would establish health-based trigger levels measured at the TSDF boundary for determining whether further remedial studies are required to assess air emissions from a particular SWMU. Health-based cleanup standards would then be set for air emission levels that exceed acceptable health-based levels at the point at which actual exposure occurs. When such exposure is determined either through monitoring or modeling techniques, corrective action will be required to reduce such emissions at the point of compliance.

The corrective action program is designed to achieve site-specific solutions based on an examination of a particular TSDF and its environmental setting. It is not intended to set national standards that regulate organic air emissions from all TSDF. At sites where there are releases from SWMU to the atmosphere, organic emissions will be controlled based on site-specific exposure concerns. Furthermore, releases from the SWMU that contain hazardous solid wastes will also be subject to corrective action. Therefore, for air emissions, corrective action is in part designed to expeditiously address threats to human health and the environment that are identified prior to implementation of more comprehensive air emission standards. In addition, because corrective action can address a wider universe of SWMU, it will address, in some respects, exposure concerns that today's final standards do not address.

F. Relationship of Today's Final Standards to CERCLA

The CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), 42 U.S.C. 9601 et seq., authorizes EPA to undertake removal and remedial actions

to clean up releases of hazardous substances, pollutants, or contaminants. Removal actions typically are immediate or expedited activities necessary to minimize exposure or danger to human health and the environment from the release of a hazardous substance, pollutant, or contaminant. Remedial actions are longer term, planned activities performed at sites listed on the National Priorities List to permanently clean up hazardous substances, pollutants, or contaminants and any soils, surface waters, or ground waters contaminated by these materials. On-site remedial actions are required by CERCLA section 121(d)(2) to comply with the requirements of Federal and more stringent State public health and environmental laws that have been identified by EPA or the delegated State authority as applicable or relevant and appropriate requirements (ARAR) to the specific CERCLA site. In addition, the National Contingency Plan (NCP) provides that on-site CERCLA removal actions "should comply with Federal ARAR to the extent practicable considering the exigencies of the circumstances" (40 CFR 300.65(f)). Today's final standards may be considered ARAR for certain on-site remedial and removal actions.

A requirement under a Federal or State environmental law may either be "applicable" or "relevant and appropriate," but not both, to a remedial or removal action conducted at a CERCLA site. "Applicable requirements," as defined in the proposed revisions to the NCP, means those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site (40 CFR 300.5 (proposed), 53 FR 51475 (December 21, 1988)). "Relevant and appropriate requirements" means those Federal or State requirements that, while not applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site (53 FR 51478).

Some waste management activities used for remedial and removal actions to clean up hazardous organic substances use the distillation/separation operations regulated under subpart AA of today's rules. For example, hazardous organic liquid wastes and ground and surface waters

contaminated with hazardous wastes may be treated on site using air stripping processes. Therefore, the organic emission control requirements of today's subpart AA rules may be "applicable" for on-site remedial and removal action activities that use distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that treat substances that are identified or listed under RCRA as hazardous wastes and have a total organic concentration of 10 ppmw or greater. In addition, off-site storage, treatment, and disposal of all wastes classified under RCRA as hazardous waste must be performed at a TSDF permitted under RCRA subtitle C. Thus, CERCLA wastes that are defined as hazardous under RCRA, contain more than 10 ppmw of total organics, and are shipped off site for management in distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations, would be subject to today's final standards like any similar RCRA hazardous waste. The new subpart AA control requirements for process vents may also be "relevant and appropriate" to on-site CERCLA removal and remedial actions that use distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations to manage substances that contain organics that are not covered by this rule (e.g., organics less than 10 ppmw or organics from nonhazardous wastes).

Today's final rules do not include control requirements for process vents on operations not associated with organics distillation/separation but typically associated with CERCLA remedial or removal actions such as soil excavation, in situ soil vapor extraction, in situ steam stripping of soil, soil washing, stabilization, bioremediation (in situ or otherwise), dechlorination, and low temperature thermal desorption. Therefore, the final rule for process vents would not be "applicable" to remedial or removal actions involving these processes at CERCLA sites. Also, the final process vent standards may not be considered "relevant and appropriate" for these same activities at CERCLA sites. Waste management operations involving soil excavation, in situ soil vapor extraction, in situ steam stripping of soil, soil washing, bioremediation, dechlorination, and low temperature thermal desorption can be considerably different from the waste management operations (i.e., distillation/separation processes) regulated in subpart AA. Control technologies for reducing organic emissions from these types of processes

were not evaluated as part of today's rulemaking. However, the air emission potential of remedial and removal actions requiring excavation, land treatment, land farming, in situ treatment activities, and other treatment activities involving landfills and wastepiles should be determined, and, if necessary, the proper emission controls should be applied to these activities.

The organic emission control requirements of subpart BB for TSDF equipment leaks may also be considered as an ARAR for the equipment components (e.g., pumps and valves) installed at CERCLA cleanup sites that contain or contact substances containing 10 percent by weight or more total organics.

Although today's final standards would not be ARAR for all types of remedial and removal actions that are potential sources of organic air emissions, other existing RCRA or CAA regulations may qualify as ARAR for many of these activities. For example, subpart O of 40 CFR part 264 establishes standards of performance limiting organic emissions from thermal destruction processes (i.e., hazardous waste incinerators).

IV. Applicability and Requirements of Proposed Process Vent and Equipment Leak Standards

On February 5, 1987 (52 FR 3748), EPA proposed standards under RCRA section 3004(n) for the control of organic air emissions from certain equipment and process vents at hazardous waste TSDF. The proposed standards would have applied to equipment and process vents "in volatile hazardous air pollutant (VHAP) service" (i.e., containing or contacting liquids, gases, or other derivatives of hazardous waste in concentrations greater than 10 percent total organics) located at TSDF required to have a RCRA permit. The decision as to whether equipment or process vents would be covered by the rule (i.e., would ever contain or contact wastes greater than 10 percent total organics) could be based either on testing the waste and derivatives according to specified test procedures or on engineering judgment as to these materials, total organic content.

The proposed standards would have required a 95-percent reduction in organic emissions from vents in VIAP service on product accumulator vessels and on other process vent sources (e.g., vents on closed accumulator tanks on other processes). The preamble for the proposed standard, at 52 FR 3753, described "product accumulator vessels" as types of equipment that generate process emissions and include

distillate receivers, surge control vessels, product separators, or hot-wells that are vented to the atmosphere either directly or through a vacuum-producing system. Product accumulator vessels included units used to distill and steam or air strip volatile components from hazardous waste; examples include distillation columns, steam stripping columns, air stripping units, and thin-film evaporation units at TSDF.

The proposed standards would have regulated actual reclamation processes for the first time. Only recycling units at TSDF already subject to RCRA permit requirements (e.g., because of storage activity on the facility) would have been subject to the proposed air standards. Both new and existing units would have been required to have add-on control devices designed to achieve a 95-percent reduction (based on the application of secondary condensers) and to operate within that design. Once in operation, the facilities would have demonstrated compliance by monitoring the operation of the control device.

The proposed standards also would have required implementation of a monthly leak detection and repair (LDAR) program for valves, pumps, compressors, pressure relief devices, and closed-vent systems used to handle hazardous wastes and their derivatives at TSDF. Control systems, leak definition methodology, leak definitions, and repair schedules were based on existing equipment leak standards developed under sections 111 and 112 of the CAA.

Since proposal, EPA has made several important changes to the standards based on the public comments received after proposal and analyses resulting from these comments. The applicability and requirements of the final standards, including the changes made since proposal, are discussed in section V. The EPA's responses to the major comments are summarized in section VI. Additional information is presented in the BID for the final standards.

V. Applicability and Requirements of Today's Final Standards

This section provides a detailed summary of the final standards as they apply to the affected TSDF community and to process vents and equipment subject to today's rule. Also summarized is the relationship of the final standards to existing exemptions under the RCRA regulatory program.

A. Scope of Final Standards

Today's final standards limit organic air emissions as a class at TSDF that are subject to regulation under subtitle C of RCRA. This action is the first part of a

multiphased regulatory effort to control air emissions at new and existing hazardous waste TSDF. These rules establish final standards limiting organic emissions from (1) process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous wastes with 10 ppmw or greater total organics concentration on an annual average basis, and (2) leaks from equipment that contain or contact hazardous waste streams with 10 percent by weight or greater total organics.

The final standards do not expand the RCRA-permitted community for the purposes of air emissions control. As promulgated, the final standards control organic emissions only from process vents and equipment leaks at hazardous waste TSDF that are subject to permitting requirements under RCRA section 3005 and are applicable only to specific hazardous waste management units. The rules apply to hazardous waste management units that are subject to the permitting requirements of part 270 and to hazardous waste recycling units that are located at facilities otherwise subject to the permitting requirements of part 270. Exempt units, other than recycling units (e.g., 90-day accumulation tanks and wastewater treatment units as specified in § 270.1(c)(2)), are not subject to the rules even when they are part of a permitted facility. Permitting aspects are further discussed in section IX.

The term "organics" is used in the final standards instead of "volatile organics" to avoid confusion with "volatile organic compounds" (VOC) that are regulated as a class under the CAA. To be subject to the standards, a TSDF: (1) Must have equipment that contains or contacts hazardous wastes that are 10 percent or more by weight total organics, or (2) must have distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that treat or process hazardous wastes with total organics concentrations of 10 ppmw or greater on a time-weighted annual average basis.

The final regulations require the facility owners or operators to determine whether their equipment is subject to the equipment leak rules, subpart BB of parts 264 and 265. The owner or operator of a facility may rely on engineering judgment for this determination, or, if the waste's organic content is questionable, the owner or operator may choose any of the test methods identified in the final rule for

determining whether a piece of equipment contains or contacts hazardous wastes that are 10 percent or more total organics by weight. As proposed, these methods include: ASTM Methods D-2267-88, E 169-87, E 168-88, and E 260-85 and Methods 9060 and 8240 of SW-846. The owner or operator also may use any other test method for determining total organic content that is demonstrated to be equivalent to the test methods identified in the rule using the petition process described in 40 CFR 260.21. The test method selected should be the one best suited for the characteristics of the waste stream. Regardless of the method chosen, the final standard requires the facility owner or operator to determine that the organic content is never expected to exceed 10 percent. The determination of organic content of the waste must at all times be appropriate to the wastes currently being managed in the relevant units. If any action is taken that would result in the determination no longer being appropriate to the facility's or a particular unit's operations (e.g., an upstream process change that results in a change in a waste's organic content), then a new determination is required.

To determine whether a particular hazardous waste management unit of the type specified in the rule (e.g., a steam stripping or air stripping unit) is subject to the provisions of subpart AA of parts 264 and 265, the owner/operator is required to determine the total organic concentration of the waste managed in the unit initially (by the effective date of the standards or when the waste is first managed in the waste management unit) and thereafter on a periodic basis (for continuously generated wastes). A waste determination for subpart AA applicability would not be necessary when an owner/operator manages the waste in a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping unit that is controlled for organic emissions and meets the substantive requirements of subpart AA.

Determination that the time-weighted, annual average total organic concentration of the waste managed in the unit is less than 10 ppmw must be performed by direct measurement or by knowledge of the waste as described later in this section. Direct measurement of the waste's total organic concentration must be performed by collecting individual grab samples of the waste and analyzing the samples using one of the approved reference methods identified in the rule.

The EPA is requiring that analytical results for a minimum of four samples be used to determine the total organic concentration for each waste stream managed in the unit. In setting the minimum number of samples at four, EPA will obtain sufficient data to characterize the total organic concentration of a waste without imposing an unnecessary burden on the owner/operator to collect and analyze the samples.

Waste determinations must be performed under process conditions expected to result in the maximum waste organic concentration. For waste generated on site, the samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation/separation operation. For waste generated off site, the samples must be collected at the inlet to the first waste management unit that receives the waste, provided the waste has been transferred to the facility in a closed system such as a tank truck, and the waste is not diluted or mixed with other waste.

The location where the waste's total organic content is determined is important because sampling location can greatly affect the results of the determination. This effect occurs because the concentration level can decrease significantly after generation as the waste is transferred to (and managed in) various waste management units.

If the waste is directly or indirectly exposed to ambient air at any point, a portion of the organics in the waste will be emitted to the atmosphere, and the concentration of organics remaining in the waste will decrease. For example, for highly volatile organic compounds such as butadiene, all of the compound would evaporate within a few seconds of exposure to air. To ensure that the determination of total organic concentration is an accurate representation of the emission potential of a waste upon generation, it is essential that the waste determination be performed at a point as near as possible to where the waste is generated, before any exposure to the atmosphere can occur.

For the reasons stated above, the waste determination must be based on the waste composition before the waste is exposed, either directly or indirectly, to the ambient air. Direct exposure of the waste to the ambient air means the waste surface interfaces with the ambient air. Indirect exposure of the

waste to the ambient air means the waste surface interfaces with a gas stream that subsequently is emitted to the ambient air. If the waste determination is performed using direct measurement, the standards would require that waste samples be collected from an enclosed pipe or other closed system that is used to transfer the waste after generation to the first hazardous waste management unit. If the waste determination is performed using knowledge of the waste, the standards would require that the owner or operator have documentation attesting to the organic concentration of the waste before any exposure to the ambient air.

The location where the waste determination would be made for any one facility will depend on several factors. One factor is whether the waste is generated and managed at the same site or generated at one site and transferred to a commercial TSDF for management. Another important factor is the mechanism used to transfer the waste from the location where the waste is generated to the location of the first waste management unit (e.g., pipeline, sewer, tank truck). For example, if a waste is first accumulated in a tank using a direct, enclosed pipeline to transfer the waste from its generation process, then the waste determination could be made based on waste samples collected at the inlet to the tank. In contrast, if the waste is first accumulated in a tank using an open sewer system to transfer the waste from its generation process then the waste determination would need to be made based on waste samples collected at the point where the waste enters the sewer before the waste is exposed to the ambient air. Where the waste is generated off site, the owner or operator may make the determination based on samples collected at the inlet to the first waste management unit at the TSDF that receives the waste, provided the waste has been transferred to the TSDF in a closed system such as a tank truck and the waste is not diluted or mixed with other waste. If a waste determination indicates that the total organic concentration is equal to or greater than the applicability criterion, then the owner or operator would be required to comply with the standards.

As an alternative to using direct measurement, an owner/operator is allowed to use knowledge of the waste as a means of determining that the total organic concentration of the waste is less than 10 ppmw. Examples of information that might be considered by EPA to constitute sufficient knowledge

include: (1) Documentation that organics are not involved in the process generating the waste, (2) documentation that the waste is generated by a process that is identical to a process at the same or another facility that has previously been determined by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or (3) previous speciation analysis results from which the total concentration of organics in the waste can be computed and it can be documented that no process changes have occurred since the analysis that could affect the waste's total organic concentration. The final standards include the provision that EPA can require that the waste be analyzed using Method 8240 if EPA believes that the documentation is insufficient to determine an exception by knowledge of the waste (§§ 264.1034(f) and 265.1034(f)).

To address the temporal variability that can occur both within a particular waste stream and within the various waste streams managed in a hazardous waste management unit, the final rules require a time-weighted, annual average concentration to characterize the waste managed in the unit. The final rules require that an owner/operator repeat the waste determination whenever there is a change in the waste being managed or a change in the process that generates or treats the waste that may affect the regulatory status of the waste or, if the waste and process remain constant, at least annually. For example, continuous processes are more likely to generate a more homogeneous waste than batch operations; batch operations involve processes that may frequently involve change in materials or process conditions. Batch operations, therefore, usually generate wastes with varying characteristics, including such characteristics as organics content. Ground water concentrations would also be expected to show significant variation if more than one well provides influent to a waste management unit such as an air stripper and the wells that feed the unit are varied over time or if the proportions from the wells that make up the influent are changed. This is because there is typically considerable spatial variability in contaminated ground water concentrations. The situation where feed wells are changed and the change is not accounted for in the initial waste determination would be considered a process change or change in the waste being managed that would require a new determination.

With the time-weighted, annual average applicability criterion, a

hazardous waste management unit would not be subject to this rule if it occasionally treats wastes that exceed 10 ppmw if at other times the wastes being treated in the unit are such that the weighted annual average total organic concentration of all wastes treated is less than 10 ppmw. The time-weighted, annual average is calculated using the annual quantity of each waste stream managed in the unit and the mean organic concentration of each waste stream.

Determining the applicability of the standards to affected processes, units, and facilities is of paramount importance to the TSDF owner or operator in complying with the final standards. A mistake even an inadvertent one, will not excuse a facility owner or operator from the obligation to comply with either the requirements of the standards or with potential enforcement actions. Accurate determinations of what equipment and vents must be controlled are crucial to ensuring that all equipment and vents subject to this rule are in fact controlled. When the facility owner/operator and the Regional Administrator disagree on the determination of emissions or emission reduction achieved, then a performance test conducted as specified in the rules must be used to resolve the disagreement. In situations where the owner/operator and Regional Administrator disagree on whether a unit manages a waste with 10 ppmw or greater organics content or a piece of equipment contains or contacts a waste with 10 percent or more organics content, then procedures that conform to the test methods referenced in the rules may be used to resolve the disagreement.

Consistent with section 3010 of RCRA, the final standards for process vent and equipment leak control and monitoring become effective 6 months from today. Owners and operators must come into compliance with these requirements by the effective date; however, where compliance involves the installation of a control device, EPA is requiring that installation be completed as soon as possible but no later than 24 months from the date the regulatory action affecting the unit is published or promulgated. To obtain the extended time for compliance (18 months beyond the effective date), a facility must show that installation cannot reasonably be expected to be completed earlier. In these circumstances, an owner/operator must develop an implementation schedule that indicates when the installation will be completed and shows that additional time is necessary.

The implementation schedule must be included in the operating record by the effective date of the rules. Changes in the implementation schedule are allowed within the 24-month time frame if the owner/operator documents that the change cannot reasonably be avoided.

B. Standards for Process Vents

Affected Equipment

A "process vent" is a pipe, stack, or other opening through which emissions from a hazardous waste management unit are released to the atmosphere either directly, through a vacuum-producing system, or indirectly, through another tank. The process vents that would have been covered by the proposed standard included vents associated with any hazardous waste management process or waste management unit.

Review of the hazardous waste TSDF industry has shown that process vents are most typically associated with processes related to distillation or other separation operations. These technologies were also the type being evaluated under the LDR for spent solvents. Therefore EPA concentrated its analysis of process vents on those hazardous waste management units that are involved in solvent or other organic chemical separation or reclamation by distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. This should include the largest segment of process vents at TSDF and address those sources with the greatest emission potential. Vents on other types of waste management units (e.g. vents on storage tanks) are being addressed in the Phase II rulemaking.

Two basic changes have been made since proposal that clarify the applicability of the final vent standard. First, to avoid confusion with tanks not associated with the processing of waste streams, the term "product accumulator vessel" has been deleted from the final standard and affected equipment is more specifically defined. The applicability of the final standard for process vents also has been clarified since proposal to exclude air emissions from vents on other closed (covered) and vented tanks not associated with the specified distillation/separation processes to avoid regulatory duplication of the Phase II standards as discussed above.

Thus, the final vent standards apply to: (1) Vents on distillation fractionation, thin-film evaporation, solvent extraction, and air or steam stripping

processes and vents on condensers serving these processes; and (2) vents on tanks (e.g., distillate receivers, bottoms receivers, surge control tanks, separator tanks, and hot wells associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping processes) if emissions from these processes are vented through the tank. For example, *uncondensed overhead* emitted from a distillate receiver (which fits the definition of a tank) serving a hazardous waste distillation process unit is subject to these Phase I air controls. On the other hand, emissions from vents on tanks or containers that do not derive from a process unit specified above are not covered by these rules. For example, if the condensed (recovered) solvent is pumped to an intermediate holding tank following the distillate receiver mentioned in the above example, and the intermediate storage tank has a pressure-relief vent (e.g., a conservation vent) serving the tank, this vent will not be subject to the process vent standards. Emissions from vents that are not covered under today's rules will be addressed by Phase II of the air standards under section 3004(n).

Second, the terms "VHAP" and "in VHAP service" have been deleted from the final rule in response to public comments. Commenters found the terms inappropriate for transfer from equipment leak standards developed under section 111 or 112 of the CAA to RCRA standards for organic emissions from hazardous waste. The EPA agrees with these commenters; these terms can be confusing and they are unnecessary for these rules. Therefore, the cross-reference to part 81 has been eliminated and the wording of the final regulation has been revised to reflect applicability based on clearly specified hazardous waste management processes or unit operations that manage wastes with a 10 ppmw or greater total organic content.

Requirements of Final Standard for Process Vents

In response to public comments, several changes have been made to the proposed standard for process vents. While the proposed 95-percent emission reduction standard would have applied to individual process vents emitting organics with concentrations of 10 percent or greater by weight, the final process vent 95-percent emission reduction standard applies to total organic emissions from the combination of all affected vents (i.e., vents subject to the provisions of subpart AA) at the facility. As discussed in section VI of this preamble and in the BID for the

final rules, the term "facility" refers to the entire site that is under control of the owner or operator engaged in hazardous waste management. Thus, organic emissions from affected process vents anywhere on the hazardous waste management facility are subject to the standards.

The 10-percent concentration criterion for process vents has not been included in the final rules because the promulgated standards contain a facility-based emission rate limit of 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr) that is more effective in controlling emissions from affected sources and excluding facilities with little emission reduction potential. Based on emissions and health risk analyses conducted in response to comments, this emission rate limit represents an emission level from process vents that is protective of human health and the environment and below which additional meaningful reductions in nationwide health risk and environmental impacts attributable to process vents cannot be achieved. Control of facilities with process vent emissions less than the emission rate limit would not result in further reductions of either cancer risk or incidence on a nationwide basis. Facilities with organic emissions from process vents that do not exceed these emission rates will not have to install controls or monitor emissions from affected process vents. Selection of the emission rate limit is addressed in section VLB of this preamble and in chapters 4.0 and 7.0 of the BID.

Because the emission rate limits (3 lb/h and 3.1 ton/yr) provide health-based limits, EPA considered dropping completely the organic content criterion (i.e., at least 10 percent total organics). However, EPA decided not to completely eliminate the organic content criterion because it is not clear that the same controls can be applied to very low concentration streams as can be applied to the higher concentration streams that generally are associated with emission rates greater than the limits. For low-concentration streams, EPA questions whether controls are needed on a national or generic basis but is unable to resolve this question at this time. Thus, EPA decided to defer controlling very low concentration streams until it is better able to characterize and assess these streams and the appropriate controls.

Once EPA decided to consider facilities that manage very low concentration organic wastes as a separate category, there remained the problem of determining the appropriate criterion. The EPA examined existing

data on air strippers, the treatment device most commonly used with low-concentration streams; it appeared that the quantity of emissions and the risk associated with air strippers treating streams with concentrations below 10 ppmw may be relatively small, thus minimizing the potential harm of deferring control until a later time. Examples of facilities managing low-concentration wastes are sites where ground water is undergoing remedial action under CERCLA or corrective action pursuant to RCRA. Given the limited set of precise data available, and the comments that the 10-percent criterion was too high, EPA determined that an appropriate criterion would be 10 parts per million (ppm) total organics in the waste by weight.

The 10-ppmw criterion is not an exemption from regulation; it is intended only as a way for EPA to divide the air regulations into phases. The EPA is deferring action on very low concentration streams (i.e., ones with less than 10 ppmw total organic content) from the final rule today but will evaluate and announce a decision later on whether to regulate these waste streams.

To comply with the final standards for process vents, the TSD owner or operator is required to identify all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and stripping processes that are treating hazardous waste with a 10-ppmw or greater total organics concentration on a time-weighted annual average basis (i.e., vents affected by the rules). Organic emission rates for each affected vent and for the entire facility from all affected vents must be determined. The facility process vent emission rate must then be compared to the short- and long-term process vent emission rate limits (3 lb/h or 3.1 ton/yr) to determine whether additional emission controls are required. If the process vent emission rate limit is exceeded, the owner or operator must take appropriate action to reduce total facility emissions from affected process vents to below the cutoff level or install additional emission controls to reduce total facility process vent organic emissions by 95 weight percent. If an incinerator, process heater, or boiler is used as a control device, the volume concentration standard of 20 ppmv can be met instead of the 95-weight-percent reduction (§§ 264.1033(c), 264.1060, 265.1033(c), and 265.1060).

Because the final rules could apply to dilute process vent streams and the rule is formatted in terms of a weight-percent

reduction standard, it is necessary to include the volume concentration standard in the final control device standards to account for the technological limitations of enclosed combustion devices (48 FR 48933, October 21, 1983), one of the control technologies examined as part of the rulemaking, treating dilute streams. Below a critical concentration level, the maximum achievable efficiency for enclosed combustion devices decreases as inlet concentration decreases; thus, for streams with low organic vapor concentrations, the 95-percent mass reduction may not be technologically achievable in all cases. Available data show that 20 ppmv is the lowest outlet concentration of total organic compounds achievable with control device inlet streams below approximately 2,000 ppmv total organics. Therefore, a concentration limit of 20 ppmv has been added as an alternative standard for incinerators, process heaters, and boilers to allow for the drop in achievable destruction efficiency with decreasing inlet organics concentration. For consistency, the 20-ppmv concentration is expressed as the sum of the actual individual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen. For facilities that do not meet the emission rate limit, the final process vent standards require that control devices achieve a 95-percent reduction in total organic emissions for the facility or, in the case of enclosed combustion devices, a reduction of each process vent stream to a concentration of no more than each process vent stream to a concentration of no more than 20 ppmv total organic compounds.

The final standards for process vents do not require the use of any specific equipment or add-on control device; the standards can be met using several types of controls. Depending on the characteristics of the process vent stream, either a condenser or a carbon adsorber will likely be the control technology of choice. However, other control devices such as flares, incinerators, process heaters, and boilers, as well as any other device of the owner or operator's choice, also can be used where applicable to achieve compliance.

Operating requirements for closed-vent systems and control devices are included in §§ 264.1033 and 265.1033. A closed-vent system means a system not open to the atmosphere and composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device. If vapor

recovery systems such as condensers and adsorbers are used as control devices, they must be designed and operated to recover the organic vapors vented to them with an efficiency of 95 percent or more unless the total organic emission limits for affected process vents (§§ 264.1032 and 265.1032) can be attained at efficiencies less than 95 percent. Vapor recovery systems whose primary function is the recovery of organics for commercial or industrial use or reuse (e.g., a primary condenser on a waste solvent distillation unit) are not considered a control device and should not be included in the 95-percent emission reduction determination.

If enclosed combustion devices such as incinerators, boilers, or process heaters are used, they must be designed and operated to achieve a total organic compound emission reduction efficiency of 95 percent or more or must provide a minimum residence time of 0.5 s at a minimum temperature of 730 °C. The latter are general design criteria established by EPA, and used in numerous rulemakings, that can be used by facilities in lieu of conducting a site-specific design for enclosed combustion devices. The operating requirements for closed-vent systems and control devices include a provision allowing enclosed combustion devices to reduce organic emissions to a total organic compound concentration of 20 ppmv, by compound, rather than achieve the 95-weight percent reduction.

If flares are used, they must be designed and operated with no visible emissions as determined by the procedures of Reference Method 22, except for periods not to exceed a total of 5 min during any 2 consecutive hours. The final standard specifies that flares must be operated with a flame present at all times and must be operated at all times when emissions may be vented to them. In addition, flares must provide a net heating value of the gas being combusted of 11.2 megajoules per standard cubic meter (MJ/scm) or more, be steam-assisted or air-assisted, or provide a net heating value of 7.45 MJ/scm or more if the flare is nonassisted. Specific design and operating requirements for steam-assisted, air-assisted and nonassisted flares also are included in the final standard. Calculations and procedures for determining the net heating value of the gas being combusted the actual exit velocity and the maximum allowed velocity are included in the final provisions for closed-vent systems and control devices (see §§ 264.1033(d) and 265.1033(d)).

Facilities must maintain documentation in the operating record supporting waste determinations, identifying affected process vents, affected waste management unit throughputs and operating hours, emission rates for each affected vent and for the overall facility, and the basis for determining the emission rates (§§ 264.1035(b)(2) and 265.1035(b)(2)). Regardless of the type of control device used, the documentation must certify that add-on control devices achieve the emission rate limit by design and during operation, or that add-on control devices achieve a 95-percent reduction in organics or achieve the 20-ppmv organics concentration limit by design and during operation where the emission rate limit is not attained. The design documentation must present the basis for determining the design emission reduction and establish the basic values for operating parameters used to monitor the control device's operation and maintenance. The design control level (i.e., the emission reduction needed to achieve the emission rate cutoff or 95-percent emission reduction) can be documented by vendor/manufacturer certifications, by engineering calculations, or through source tests to show that the control device removes the required percentage of organics entering the device. All required information and documentation must be kept in the facility's operating record. The facility's waste determinations and process vent emission rate determinations must at all times reflect the facility's current waste management unit designs and wastes managed. If the owner/operator takes any action that would result in the determination no longer being appropriate to the facility's operations (e.g., if a waste of different composition is managed, the operating hours of the affected management units are increased beyond what was originally considered, or a new affected unit is added that may impact its regulatory status), then a new determination is required (§§ 264.1035(b)(2)(ii) and 265.1035(b)(2)(ii)). In addition, certain information regarding the facility's emission determination and control device design must be included in the facility's part B permit application.

The final rules require the continuous monitoring of specific parameters on all control devices needed to meet the standards to ensure that the devices perform according to their design (§§ 264.1033(f) and 265.1033(f)). The final rules clarify the general parameters listed in the proposal by describing the requirements in greater detail. Operating

parameters are specified for condensers, carbon adsorbers, flares, incinerators, and other enclosed combustion devices. Although minimum operating conditions are identified for organic vapor destruction devices (e.g., incinerators and flares) to ensure 95-percent destruction, values or ranges of values for recovery device (i.e., condensers and carbon adsorbers) operating parameters cannot be specified on an industry-wide basis. Therefore, a recovery device must be designed for the particular application and monitored to ensure that it is being operated within design specifications. Proper design shall be determined through engineering calculations, vendor certification, and/or emission testing.

The owner/operator is required to record the control device monitoring information, including the basis for the operating parameters used to monitor control device performance, in the facility operating record. Periods when monitoring indicates control device operating parameters are outside established tolerances on design specifications must be recorded. Facilities with final permits incorporating these standards (i.e., facilities subject to the provisions of 40 CFR part 264 subpart AA) must report exceedances that are not corrected within 24 hours to the Regional Administrator on a semiannual basis. The records and reports must include the dates, duration, cause, and corrective measures taken. (See §§ 264.1036(a) and 264.1065(a)(4).)

The specific monitoring requirements for control device operating parameters include: (1) Continuous monitoring of coolant fluid temperature and exhaust gas temperatures or the concentration level of organic compounds in the exit gas stream for condensers; (2) continuous monitoring of exhaust gas organic breakthrough for carbon adsorbers; (3) continuous monitoring of combustion zone temperature for incinerators, boilers and process heaters; and (4) the presence of a pilot flame using a thermocouple or any other equivalent device to detect the presence of a flame for flares.

The final standards would require that emission control equipment is properly designed, installed, operated, and maintained. Also, as previously described, the standards would require continuous monitoring of specific control device operating parameters. A control device monitor reading outside the operating range allowed by the standards (referred to in this preamble as a "control device exceedance") indicates that the control device is not

operating normally or is malfunctioning (i.e., not operating at the design setting necessary to achieve at least 95 percent organic emission control efficiency). Action must be taken by the owner or operator to return the control device to operating at the design setting. When a control device exceedance cannot be corrected within 24 hours of detection, the final standards would require the owner or operator to record specific information concerning the control device exceedance. Facilities with final RCRA permits must report this information to EPA on a semiannual basis; interim status facilities are not required to report control device exceedances. The exceedance report would need to describe the nature and period of each control device exceedance and to explain why the control device could not be returned to normal operation within 24 hours. A report would need to be submitted to EPA only if control device exceedances have occurred during the past 6-month reporting period. These reports would serve to aid EPA in determining the owner's or operator's ability to properly operate and maintain the control device. The EPA recognizes that a control device malfunction may occur due to circumstances beyond the control of the owner or operator (e.g., defective equipment supplied by the manufacturer). Therefore, a single control device exceedance may not necessarily be indicative of improper control device operation or maintenance.

C. Equipment Leak Standards

Affected Equipment

The final standards apply to each valve, pump, compressor, pressure relief device, open-ended valve or line, flange or other connector, and associated air emission control device or system that contains or contacts hazardous waste streams with 10 percent or more total organics by weight.

In response to public comments, EPA has changed the applicability of the final LDAR standards for pumps and valves to better relate to the volatility of the wastes managed and thus to air emission potential. The requirements for pumps and valves have been revised to include the heavy liquid provisions contained in EPA's new source performance standard (NSPS) for equipment leaks of VOC in the synthetic organic chemicals manufacturing industry (SOCMI) (40 CFR part 60, part VV). The heavy liquid provisions (§§ 264.1058 and 265.1058) exempt pumps and valves processing lower vapor pressure substances from the

routine leak detection monitoring requirements of the standards. By their nature, heavy liquids exhibit much lower volatilities than do light liquids, and because equipment leak rates and emissions have been shown to vary with stream volatility, emissions from heavy liquids are less than those for lighter, more volatile streams. For example, EPA analyses indicate that emissions from valves in heavy liquid service are more than 30 times lower than the emissions from valves in light liquid service.

Pumps and valves are in light liquid service if the vapor pressure of one or more of the components being handled by the piece of equipment is greater than 0.3 kilopascal (kPa) at 20 °C, if the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight, and if the fluid is a liquid at operating conditions. Pumps and valves not in light liquid service are defined to be in heavy liquid service.

The regulations governing equipment leaks also have been incorporated and reprinted in the final standards to eliminate cross-referencing to part 61 regulations and to consolidate the requirements under RCRA.

Equipment Leak Control Requirements

The control requirements for valves are based on LDAR requirements. Valves in light liquid or gas/vapor service (§§ 264.1057 and 265.1057) must be monitored using Reference Method 21; an instrument reading at or above 10,000 ppm indicates the presence of a leak. If a leak is detected, the valve must be repaired as soon as practicable but no later than 15 days after the leak is detected. A first attempt to repair the valve must be made no later than 5 days after the leak is detected. First attempts at repair include, but are not limited to, tightening or replacing bonnet bolts, tightening packing gland nuts, or injecting lubricant into the lubricated packing.

Monthly monitoring is required; however, any valve for which a leak is not detected for 2 successive months may be monitored the first month of each succeeding quarter until a leak is detected (§§ 264.1057(c) and 265.1057(c)). If a leak is detected the valve must be monitored monthly until a leak is not detected for 2 successive months.

In addition, monthly monitoring is not required if: (1) A leakless valve, such as a sealed-bellows valve, is used to achieve a no-detectable-emissions limit (500 ppm above background, as measured by Method 21, with an annual performance test; §§ 264.1057(f) and

265.1057(f); (2) the owner or operator meets a performance level of 2 percent of all valves leaking (§§ 264.1061 and 265.1061); (3) the owner or operator elects to comply with a skip-period leak detection and repair program as described for valves (§§ 264.1062 and 265.1062); or (4) the valve is designated by the owner or operator as unsafe-to-monitor or difficult-to-monitor (§§ 264.1057 (g) and (h) and 265.1057 (g) and (h)). A valve may be designated as unsafe-to-monitor if monitoring personnel would be exposed to an immediate danger as a consequence of monitoring and if the owner or operator adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times. A valve may be designated as difficult-to-monitor if the valve cannot be monitored without elevating monitoring personnel more than 2 m above a support surface, the valve is in an existing hazardous waste management unit and the owner or operator follows a written plan that requires monitoring at least once a year.

The EPA is continuing to study the status of new technology available for the control of air emissions from valves. The EPA has issued a separate notice in the Federal Register that discusses available information on leakless valve technology (54 FR 30228, July 19, 1989). Public comments were requested in that notice on several aspects of the technology to assist EPA in determining applications for which leakless valve technology would be appropriate at hazardous waste TSDF.

The final standards also require monitoring for pumps at TSDF containing or contacting wastes with greater than 10 percent organics (§§ 264.1052 and 265.1052). Each pump in light liquid service must be monitored monthly with a portable vapor analyzer following the EPA Reference Method 21 protocol. In addition, each pump in light liquid service must be checked weekly by visual inspection for indications of liquids dripping from the pump seal. A pump is determined to be leaking if an instrument reading of 10,000 ppm or greater is measured or there are indications of liquids dripping from the pump seal. When a leak is detected, it must be repaired as soon as practicable, but not later than 15 days after it is detected unless the delay-of-repair provisions specified in the rule apply. The first attempt at repair must be made within 5 calendar days of the leak being detected.

Pumps in light liquid service are exempt from the monitoring requirements under §§ 264.1052 (d) and

(e) and 265.1052 (d) and (e) if: (1) The pump is equipped with a dual mechanical seal system that includes a barrier fluid between the two seals, (2) a magnetically coupled or diaphragm pump is used to achieve a no-detectable-emissions limit (indicated by a portable organic vapor analyzer reading of less than 500 ppm above background), or (3) the pump is equipped with a closed-vent system capable of transporting any leakage from the seal or seals to a 95-percent efficient control device. If pumps are equipped with a dual mechanical seal system, emissions from the barrier fluid reservoir must be vented to a control device designed and operated to achieve a 95-percent control efficiency, the barrier fluid must be purged and added to the hazardous waste stream, or the pressure of the barrier fluid must be maintained at a level above the pressure in the pump or exhauster stuffing box. A pressure or level indicator to detect any failure of the seal system or the barrier fluid system is required, with the indicator checked daily or equipped with an alarm to signal failure of the system. If leakless equipment is used, such as magnetically coupled or diaphragm pumps, the standards require an annual performance test by Method 21 to verify the no-detectable-emissions status of the equipment.

Compressors must be equipped with a seal system that includes a barrier fluid system that prevents leakage of organic emissions to the atmosphere. The seal system must be operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure, be equipped with a barrier fluid system that is connected by a closed-vent system to a control device that meets the design and operating requirements established in §§ 264.1060 and 265.1060, or be equipped with a system that purges the barrier fluid into a hazardous waste stream with zero total organic emissions to the atmosphere. In addition, the barrier fluid system must be equipped with a sensor that detects failure of the seal system, barrier fluid system, or both. A compressor is determined to be leaking if the sensor indicates failure of the seal system, the barrier fluid system, or both. When a leak is detected, it must be repaired as soon as practicable, but not later than 15 calendar days after it is detected; a first attempt at repair must be made within 5 calendar days.

Except during emergency pressure releases, each pressure relief device in gas/vapor service must be operated with no detectable emissions (500 ppm above background, as measured by

Reference Method 21) (§§ 264.1054 and 265.1054). No later than 5 calendar days after any pressure release, the device must be returned to a condition of no detectable emissions and be monitored to confirm that status. Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage to a control device that meets the requirements of §§ 264.1060 and 265.1060 is exempt from these requirements.

Each open-ended valve or line must be equipped with a cap, blind flange, plug, or second valve (§§ 264.1056 and 265.1056). The cap, blind flange, plug, or second valve must seal the open end at all times except during operation requiring hazardous waste stream flow through the open-ended valve or line. Operational requirements for second valves and double block and bleed systems also are specified in the final regulation.

Pumps and valves in heavy-liquid service, pressure relief devices in light-liquid or heavy-liquid service, and flanges and other connectors must be monitored within 5 days by Reference Method 21 if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method (§§ 264.1058 and 265.1058). A leak is detected if an instrument reading of 10,000 ppm or greater is measured. When a leak is detected, it shall be repaired as soon as practicable but not later than 15 calendar days after detection. The first attempt at repair must be made within 5 calendar days of the leak being detected.

The final standards also include provisions for delay of repair (§§ 264.1059 and 265.1059). Delay of repair of leaking equipment is allowed if the repair is technically infeasible without a hazardous waste management unit shutdown (i.e., a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit). However, repair of the leak must be performed before the end of the next shutdown of that unit. Delay of repair also is allowed for equipment (i.e., either pumps or valves) that is isolated from the hazardous waste management unit and is prevented from containing or contacting a hazardous waste with 10 percent or more organic content. For valves, delay of repair is allowed if: (1) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair, and (2) when the valve is repaired the purged materials are

collected and destroyed or recovered in a control device complying with the requirements of the standards. Delay of repair beyond a hazardous waste management unit shutdown is allowed only if valve assembly replacement is necessary during the next shutdown of the unit, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before supplies were depleted (i.e., the owner/operator has made a good-faith effort to maintain adequate spare parts). For pumps, delay of repair is allowed if: (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and (2) repair is completed as soon as practicable, but not later than 6 months after the leak is detected.

The final standards also include design and operating requirements for closed-vent systems that may be used to comply with the equipment leak standards (§§ 264.1060 and 265.1060). Closed-vent systems must be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background by Reference Method 21. A leak on a closed-vent system, indicated by an instrument reading of 500 ppm or by visual inspection, must be repaired within 15 calendar days after detection; a first attempt at repair must be made no later than 5 calendar days after detection. Monitoring must be conducted initially, annually, and at other times as requested by the Regional Administrator, to confirm the no-detectable-emissions status of the system. Like other control devices, closed-vent systems must be operated at all times when any emissions may be vented to them.

The provisions of 40 CFR 61.244, subpart V, which provide a formal mechanism for applying for use of an alternative means of emission limitation, were specifically not included in the proposed TSDF process vent and equipment leak rules and have not been included in these final standards. The alternative means of emission limitation provisions are not considered self-implementing; i.e., these provisions cannot be satisfied without the need for detailed explanation or negotiation between the facility owner/operator and EPA, and thus are not appropriate as requirements for interim status facilities under part 265. Therefore, the alternative means of emission limitation provisions were not included in the final subpart AA and BB rules. An owner or operator, however, may use an alternative means of emission limitation to comply with the process vent or

equipment leak standards of part 264. The owner/operator can use part B of the permit application to provide information that demonstrates the effectiveness of any alternative means of emission limitation and can use the negotiation process associated with issuance of a final permit to establish conditions for use of an alternative means of emission limitation. The owner or operator would be responsible for collecting and verifying test data to document that the emission reduction achieved by the alternative is equal to or greater than the emission reduction achieved by the equipment, design, or operational requirements in the standard.

Additional general recordkeeping requirements include information on pump, valve, compressor, and pressure relief device leak repair attempts; reasons for repair delays; and design criteria for sampling connection systems and closed-vent systems and control devices. There are also recordkeeping and monitoring requirements for pieces of equipment covered by alternative requirements.

Compliance with the equipment leak standards will be assessed through plant inspections and the review of records that document implementation of the requirements as required by the final standards.

D. Summary of Changes from Proposal

Several changes have been made to the standards since proposal as the result of EPA's evaluation of comments and of additional information gathered in response to comments. These changes respond primarily to commenters' concerns that additional controls are unnecessary for TSDF process vents and equipment with very low emissions and that the applicability, implementation, and compliance provisions of the standards should be clarified. The EPA has addressed these problems in the final rules.

The proposed standards would have required that organic emissions from all process vents that emit organics in concentrations of 10 percent or greater on all TSDF waste management units be reduced by 95 percent. The final rules apply to process vents on specific hazardous waste management units that treat wastes with total organics concentrations of 10 ppmw or greater and include (1) process vents on distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations and vents on condensers serving these operations and (2) process vents on tanks associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or

steam stripping operations if emissions from these process operations are vented through the tanks.

While the proposed standard would have required 95 percent emission reduction from each affected vent, the final vent standard's weight-percent reduction applies to total emissions from the combination of all affected vents at each facility. The final rules also add facility-based emission rate limits for all affected process vents of 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr) (§§ 264.1032(a)(1) and 265.1032(a)(1)). Facilities with organic emissions from vents below the emission rate limits will not have to reduce process vent organic emissions. The owner or operator of the facility must determine and document that emissions from affected vents will not exceed the emission rate limits. The EPA estimates that baseline emissions will be reduced by about 90 percent by controlling process vent emissions from about 55 percent of affected facilities, i.e., those with emissions above the emission rate limit.

Another major change affects the applicability of the final standards for pumps and valves to better relate to the volatility of the wastes managed and thus to air emission LDAR potential. The proposed LDAR requirements for pumps and valves have been revised to distinguish between equipment in heavy liquid service and equipment in gas/light liquid service. The provisions exempt pumps and valves processing relatively low vapor pressure substances (heavy liquids) from the routine instrument monitoring requirements of the standards. These provisions are included to avoid requiring unnecessary controls on equipment that poses little emission problem even when leaking.

Because of commenters' concerns with the administrative problems associated with obtaining a major permit modification, the final standards do not require modifications of RCRA permits issued before the effective date of these rules (§§ 264.1030(c) and 264.1050(c)). In such cases, requirements for affected hazardous waste management units and associated requirements for process vents and equipment must be added or incorporated into the facility's permit at review under § 270.50 or at reissue under § 124.15. However, in the forthcoming Phase II air rules, EPA will be proposing to modify §§ 264.1030(c) and 264.1050(c) as they apply to control of air emissions under subparts AA and BB. This action, if adopted, would mean that the air rules promulgated under RCRA section 3004(n) would be

applicable to all facilities as of the effective date of the Phase II rules. More details regarding implementation are presented in section IX of this preamble.

The proposed air emission standards for process vents and equipment leaks would have added part 269, Air Emission Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities. For consistency with standards for other TSDF sources under RCRA, the final standards have been incorporated into part 264, for permitted facilities, and part 265, for interim status facilities. In addition, whereas at proposal the equipment leak requirements of 40 CFR part 61, subpart V, were incorporated by reference, these provisions have been written into subpart BB with editorial revisions appropriate for a standard promulgated under RCRA authority rather than CAA authority.

E. Relationship of RCRA Exemptions to Final Standards

Under 40 CFR 261.4(c), hazardous wastes that are generated in process-related equipment such as product or raw material storage tanks or pipelines are exempt from RCRA regulation. This exemption applies until the waste is physically removed from the unit in which it was generated, unless the unit is a surface impoundment or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials. This exemption is not affected by this rule. Therefore, units such as *product* (not hazardous waste) distillation columns generating hazardous waste still bottoms containing organics are not subject to the standard while the wastes are in the product distillation column. However, distillation columns that receive hazardous wastes and that are used in hazardous waste treatment (i.e., hazardous waste management units) are subject to this standard if the waste's organic content exceeds the 10-ppmw applicability criterion. As discussed in the preamble to the proposed standard, only those recycling units that are part of a facility already subject to RCRA permit requirements are subject to the air standards. The EPA's authority to control air emissions from solvent reclamation operations not part of closed-loop systems is discussed further in section VI of this preamble and in the BID.

Totally enclosed treatment facilities also are exempt from RCRA subtitle C requirements under 40 CFR 264.1(g)(5), 40 CFR 265.1(c)(9), and 270.1(c)(2). A

"totally enclosed treatment facility" is a hazardous waste treatment facility that is "directly connected to an industrial production process and which is constructed and operated in a manner that prevents the release of any hazardous waste or any constituent thereof into the environment during treatment" (40 CFR 260.10).

Treatment facilities located off the site of generation are not directly connected to an industrial process. Thus, commercial waste treatment facilities with equipment affected by the final standards, such as solvent reclamation facilities, by definition ordinarily would not be totally enclosed. In addition, storage facilities, disposal facilities, and ancillary equipment not used for treating hazardous waste do not fall within the definition of a totally enclosed treatment facility.

The EPA believes that many on-site treatment facilities also are not totally enclosed. Distillation columns and other treatment technologies typically are designed to release emissions into the air. Therefore, by definition, these on-site technologies generally are not totally enclosed. (See 45 FR 33218, May 19, 1980 (no constituents released to air during treatment).)

Two important characteristics define a totally enclosed treatment facility. The key characteristic of a totally enclosed treatment facility is that it does not release any hazardous waste or constituent of hazardous waste into the environment during treatment. Thus, if a facility leaks, spills, or discharges waste or waste constituents, or emits waste or waste constituents into the air during treatment, it is not a totally enclosed treatment facility within the meaning of these regulations. The second important characteristic is that it must be directly connected to an industrial production process.

The EPA also excludes elementary neutralization and wastewater treatment tanks as defined by 40 CFR 260.10 from regulation under the hazardous waste rules. The EPA amended these definitions (see 53 FR 34080, September 2, 1988) to clarify that the scope of the exemptions applies to the tank systems, not just the tank. For example, if a wastewater treatment or elementary neutralization unit is not subject to RCRA subtitle C hazardous waste management standards, neither is ancillary equipment connected to the exempted unit. The amendments also clarify that, for a wastewater treatment unit to be covered by the exemption, it must be part of an onsite wastewater treatment facility. Thus, emissions from process vents associated with

distillation, fractionation thin-film evaporation, solvent extraction, or air or steam stripping operations and ancillary equipment (piping, pumps, etc.) that are associated with a tank that is part of the wastewater treatment system subject to regulation either under sections 402 or 307(b) of the Clean Water Act are not subject to these standards. However, air emission sources not subject to RCRA may be subject to CAA guidance and/or standards.

As noted in the preamble to the proposal, under 40 CFR 262.34, generators that accumulate hazardous waste in tanks and containers for 90 days or less are not subject to RCRA permitting requirements, provided they comply with the provisions of 40 CFR 262.34, which include the substantive requirements for tanks and containers storing hazardous waste, 40 CFR part 265, subparts I and J. This remains unchanged, and the final standards do not apply to generator tanks that accumulate hazardous waste for 90 days or less. However, as part of the Phase II TSDF air emission regulations, EPA intends to propose to modify the exemption conditions to require that 90-day tanks meet the control requirements of the Phase I and Phase II standards.

Today's final rules regulate the activity of reclamation at certain types of RCRA facilities for the first time. The EPA is amending 40 CFR 261.6 under its RCRA authority over reclamation to allow covering reclamation of hazardous wastes in waste management units affected by today's final rules. It should be recognized, however, that these final rules apply only at facilities otherwise needing a RCRA permit. In addition, the closed-loop reclamation exemption in § 261.4(a)(8) is not changed by these rules. Therefore, not all reclamation units will necessarily be affected by these rules.

VI. Summary of Comments and Responses

Numerous comments on the proposed rule were received that relate to nearly all aspects of the RCRA standards development process. The comment summaries cover topics relating to regulatory issues, applicability of the standards, control technologies impact analyses and implementation and compliance issues. Detailed responses to these and other comments are included in the BID for the promulgated standards, which is available in the public docket for this rule.

A. Regulatory Issues

Statutory Authority

Comment: Several commenters argued that TSDF air emissions should be regulated under the CAA rather than RCRA because (1) CAA standards under sections 111 and 112 are already in place in the SOGMI and petroleum refining industries; (2) air emissions at some TSDF have already been permitted under State implementation plans (SIP), new source review programs, or under State regulations for VOC or air toxics control; (3) VOC and ozone control are the province of the CAA, not RCRA; and (4) a statutory mechanism already exists under the CAA for evaluating the risk posed by air emissions.

Response: Congress has required EPA to promulgate air emission monitoring and control requirements at hazardous waste TSDF, under section 3004(n) of RCRA, as may be necessary to protect human health and the environment. Congress was aware of the existence and scope of the CAA when it enacted section 3004(n) of RCRA. There is no indication that Congress intended that all air regulations be issued within the confines of the CAA. On the contrary, when adding section 3004(n), Congress specifically recognized EPA's dual authority to regulate these air pollutants (S. Rep. 98-284, page 63).

The EPA has conducted an analysis of current State and Federal controls and concluded that further regulation under section 3004(n) is necessary to protect human health and the environment. The EPA examined State regulations, as well as existing Federal standards (and those under development), to determine the potential for overlapping rules and permitting requirements. The EPA found that 6 States have established air toxics programs, 21 States have established generic standards for VOC independent of Federal regulations, and several States have extended control techniques guidelines (CTG) for VOC to TSDF. However, the standards vary widely in scope and application and in many cases controls have not been required when emissions are below 40 ton/yr, even in the 37 States with ozone nonattainment areas. The EPA believes that today's action will help alleviate the nonuniformity among the States' efforts and will help achieve emission reductions necessary to protect human health and the environment.

A few commenters also argued that the standards would duplicate existing CAA standards that apply to the SOGMI and petroleum refineries. The EPA disagrees because the standards being promulgated today apply to waste management sources whereas the CAA

standards previously promulgated apply to the production process.

The EPA also disagrees with contentions that it is outside the province of RCRA to address VOC and ozone. As noted, section 3004(n) standards, like all RCRA subtitle C standards, are to protect "human health and the environment." VOC and ozone are threats to human health and the environment and thus are well within the regulatory scope of section 3004(n).

Organic emissions from TSDF contribute to ambient ozone formation. In fact, TSDF are estimated to emit nearly 12 percent of all VOC from stationary sources, and thus any reductions in these emissions will contribute to reducing ozone formation and associated health and environmental problems.

RCRA Authority Over Recycling

Comment: Several commenters argued that EPA does not have regulatory authority under RCRA to control solvent reclamation operations or units or equipment managing materials destined for reclamation such as spent solvent because they are producing or managing products and not wastes.

Response: The EPA disagrees with the commenters regarding EPA's authority to control solvent reclamation operations. In response to a court opinion (*American Mining Congress v. EPA*, 824 F.2d 1177, DC Circuit Court of Appeals, July 31, 1987) concerning the scope of EPA's RCRA authority, EPA proposed amendments to the RCRA definition of "solid waste" that would clarify when reclamation operations can be considered to be managing solid and hazardous wastes (53 FR 519, January 8, 1988). The EPA has accepted comments on its interpretation and proposed amendments. The EPA has not yet taken final action on this proposal. Thus, EPA is addressing the scope of its authority over reclamation operations under RCRA in the context of that rulemaking. This rule is based on EPA's current interpretation of its RCRA authority, as described in the January 1988 proposal.

The following summarizes EPA's proposed position. In general, the proposed amendments would exclude from RCRA control only those spent solvents reclaimed as part of a continuous, ongoing manufacturing process where the material to be reclaimed is piped (or moved by a comparably closed means of conveyance) to a reclamation device, any storage preceding reclamation is in a tank, and the material is returned after being reclaimed, to the original process where it was generated. (Other conditions on this exclusion relate to

duration and purpose of the reclamation process. See proposed § 261.4(a)(8).)

However, processes (or other types of recycling) involving an element of "discard" are (or can be) within RCRA subtitle C authority. When spent materials are being reclaimed, this element of discard can arise in two principal ways. First, when spent materials are reclaimed by someone other than the generator, normally in an off-site operation, the generator of the spent material is getting rid of the material and so is discarding it. In addition, the spent material itself, by definition, is used up and unfit for further direct use; the spent material must first be restored to a usable condition. This type of operation has been characterized by some of the worst environmental damage incidents involving recycling (50 FR 658-661, January 4, 1985). Moreover, storage preceding such reclamation has been subject to the part 264 and 265 standards since November 19, 1980. (See generally 53 FR 522 and underlying record materials.) The *American Mining Congress* opinion itself indicates that such materials are solid wastes (824 F.2d at 1187).

When a spent material is reclaimed on site in something other than a closed-loop process, EPA also considers that the spent material is discarded (i.e., spent solvents removed from the process, transferred to an on-site distillation unit, and regenerated have been removed from the production process). The EPA's reasoning is that these materials are no longer available for use in an ongoing process and have been disposed of from that operation, even if the reclamation operation is on site. Finally, EPA also considers that when hazardous secondary materials are reclaimed but then burned as fuels, the entire operation—culminating in thermal combustion—constitutes discarding via destructive combustion (53 FR 523). Consequently, under this reading, any intermediate reclamation step in these types of fuel production operations remains within EPA's subtitle C authority.

In summary, under EPA's current interpretation of the court's opinion, air emissions from distillation, fractionation, thin-film evaporation, solvent extraction, and stripping processes involving reclamation of spent solvent and other spent hazardous secondary materials can be regulated under RCRA subtitle C whenever the reclamation system is not part of the type of closed-loop reclamation system described in proposed part 261.4(a)(8). Any changes to this interpretation as

part of the solid waste definition final rule may affect the scope of this rule.

Selection of Source Category

Comment: Several commenters disagreed with the selection of TSDF and Waste Solvent Treatment Facility (WSTF) process vents and equipment leaks for regulation because they believed that (1) out-of-date data or extrapolated data were used in the analysis and, as a result, the estimate of the number of affected facilities nationwide and the number affected by the proposed rule is far too low; (2) the role of State regulations was not considered; (3) EPA should control larger, more hazardous air emission sources at TSDF, such as storage tanks, before controlling process vents and equipment leaks; and (4) air emissions from waste solvent reclamation operations do not pose a health risk warranting control.

Response: The EPA generally disagrees with the commenters that the selection of TSDF process vents and equipment leaks was inappropriate. However, EPA agrees that the standards will affect more than the 100 WSTF estimated at proposal. To respond to these and other comments, EPA conducted additional technical analyses. The EPA developed an industry profile using results of the 1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (hereafter called the "Screener Survey"). The Screener Survey data represent all of the TSDF active in 1985 with interim status or final RCRA permits, which totalled about 3,000 facilities. The Screener Survey data are for operations in 1985, the latest year for which such comprehensive data are available. A review of the Screener Survey data shows a total of about 450 facilities that need authorization to operate under RCRA section 3005 and report solvent recovery by operations such as batch distillation, fractionation, thin-film evaporation, or steam stripping at the facility; i.e., operations that would have process vents subject to the standards. The EPA used these facility counts together with the reported 1985 waste solvent throughputs as the basis for the final process vent standards impacts analyses. In addition, EPA estimates that about 1,000 on site and off site permitted TSDF that do not practice solvent recovery do manage hazardous waste streams containing 10 percent or more total organics and would be subject to the equipment leak requirements. In total, about 1,400 facilities are potentially subject to the provisions of subpart BB.

State and Federal regulations also were reviewed to help EPA better estimate baseline emission control levels. Although a few States have controls in place, it appears that there are no general control requirements for TSDF process vents. Moreover, because TSDF with solvent recycling generally are small operations, any new waste management units with process vents would likely have potential VOC emissions of less than 40 ton/yr; thus, prevention of significant deterioration (PSD) permit requirements would not apply. In addition, EPA sent section 3007 information requests to several large and small TSDF; respondents to the EPA section 3007 questionnaires did not indicate control requirements for process vents. Several of the facilities that were asked to provide information reported requirements for obtaining air contaminant source operating permits, but they reported no permit requirements for controlling process vent emissions. Therefore, the revised emission estimates (that are based on site-specific emission data) should reasonably reflect the current level of control of process vent emissions.

With respect to those commenters who argued that other air emission sources should be controlled instead of process vents and equipment leaks, it should be pointed out that section 3004(n) of RCRA requires EPA to promulgate regulations for the monitoring and control of air emissions from hazardous waste TSDF, *including but not limited to* open tanks, surface impoundments, and landfills, as may be necessary to protect human health and the environment. Organic emissions are generated from process vents on distillation and separation units such as air strippers, steam strippers, thin-film evaporators, fractionation columns, batch distillation units, pot stills, and condensers and distillate receiving vessels that vent emissions from these units. Distillation and separation processes may be found in solvent reclamation operations, wastewater treatment systems, and in other pretreatment processes. Organic emissions also are released from equipment leaks associated with these processes as well as from nearly all other hazardous waste management units.

As discussed in section III.D of this preamble, the EPA chose to develop the process vent and equipment leak portion of its TSDF rulemaking as the first phase of the TSDF air emission rules partly to prevent uncontrolled air emissions from LDR treatment technologies since these technologies were likely to have

increased use. In addition, EPA already had control technology information to support these regulations, and thus earlier development of these rules was possible. This is principally because effective controls now in place under the CAA to control emissions from the same types of emission points in chemical production facilities and petroleum refineries can be applied to reduce the health risk posed by air emissions from uncontrolled distillation, fractionation, thin-film evaporation, solvent extraction, and stripping processes and equipment leaks at TSDF. The EPA has limited the applicability of today's final standards to those types of process vents for which control techniques are well developed, i.e., those associated with processes designed to drive the organics from the waste, such as distillation, fractionation, thin-film evaporation, solvent extraction, and stripping operations.

Organic emissions also are generated from numerous other sources at TSDF. Preliminary estimates indicate that nationwide organic emissions (after control of process vents associated with distillation/separation units and equipment leaks) are about 1.8 million Mg/yr. The EPA is in the process of developing standards for these sources under section 3004(n) of RCRA, and the standards are scheduled for proposal in 1990. Source categories being examined include tanks, surface impoundments, containers, and miscellaneous units. These other TSDF source categories require different data and engineering evaluations; thus, standards for these other sources are on a separate rulemaking schedule. The emissions and risk analyses needed to support extension of the process vent standards to other closed (covered), vented tanks are also being developed in conjunction with this future rulemaking. These include vent emissions that are incidental to the process, such as emissions caused by loading or by agitation/aeration of the waste in a treatment tank.

The EPA has determined that organic emissions from TSDF/WSTF process vents and equipment leaks pose a significant risk to human health and the environment and that section 3004(n) provides authority to control TSDF air emissions from these sources. Therefore, EPA has decided to take measures to reduce the atmospheric release of organic air pollutants from these sources as quickly as possible. The fact that distillation, fractionation, thin-film evaporation, solvent extraction, and stripping processes and equipment leaks are regulated before other sources is not

germane. There is no reason to delay these rules while others are under development.

Other commenters criticized the selection of the source category for regulation because their process vent emissions either are already controlled or are low enough so as not to pose a threat to human health and the environment. However, EPA's analysis of process vent emissions and impacts indicates that for a large segment of the industry, TSDf process vent emissions can pose significant environmental and health risks. These facilities are the target of the subpart AA process vent standards. As discussed in section VI.B of this preamble, the final standards include facility process vent emission rate limits designed to avoid control of facilities where meaningful reductions in nationwide risk to human health and the environment cannot be achieved.

Several commenters also criticized the source category for regulation because emissions from generators who conduct on-site reclamation and off-site reclaimers with no prior storage (i.e., those recycling activities conducted at facilities not requiring a RCRA permit) would not be controlled.

The standards being promulgated today (under section 3004(n)) apply only to waste management facilities that need authorization to operate under section 3005 of RCRA. Air emissions from subtitle C waste management facilities that are excluded from RCRA permit requirements will be subject to regulation under either the CAA or RCRA authority as appropriate. Waste management facilities that fall under the requirements of subtitle D (i.e., nonhazardous waste operations) will also be subject to regulation under the CAA. The EPA limited the scope of the standards at proposal and in this final rule to facilities required to have a permit under RCRA to minimize disruption to the current permitting system (i.e., not expand the permit universe) and not impose a permit burden on facilities not otherwise subject to RCRA permits. Although EPA is controlling only some sources in this rule, other sources of significant levels of air emissions will also be controlled; i.e., it is a matter of timing rather than a decision not to control these other sources. This phased regulatory approach is discussed in section III.C of this preamble.

RCRA Decision Criteria

Comment: Several commenters alleged that the standards do not meet the mandate of RCRA section 3004(n) because (1) the standards are not protective in all cases; (2) the standards

are inconsistent with RCRA section 3004(m) that requires treatment standards based on best demonstrated available technology (BDAT); and (3) neither the RCRA statute nor its legislative history allows consideration of costs.

Response: The EPA believes that the standards promulgated today appreciably reduce health risks that are presented by air emissions at TSDf and provide protection to human health and the environment as required by section 3004(n) of RCRA, for the vast majority of the air emissions affected by these standards. The EPA's analysis of residual cancer risk after implementation of the standards for process vents indicates that maximum individual risk, even at the upper-bound emission rate, is well within the residual risk for other standards promulgated under RCRA, which historically has been in the range of 1×10^{-4} to 1×10^{-6} . On the other hand, the analysis indicates that residual cancer risk after implementing the equipment leak standards is higher than the residual risk for other standards promulgated under RCRA. However, EPA believes that the equipment leak standards achieve significant reductions in emissions and risk and, that after control, the vast majority of facilities are well within the risk range of other RCRA standards.

As was already described, EPA will be promulgating regulations to control TSDf air emissions in phases. Thus, in Phase III, EPA will be evaluating the need for additional control (e.g., control of individual toxic constituents after implementation of these standards) for cases where the risk from air emissions after implementation of the Phase I and II standards is higher than desirable. (This regulatory approach is discussed in section III.C of this preamble.) During the interim, permit writers should use EPA's omnibus permitting authority to require more stringent controls at facilities where a high residual risk remains after implementation of the standards for volatile organics. The permitting authority cited by section 3005 of RCRA and codified in § 270.32(b)(2) states that permits " . . . shall contain such terms and conditions as the Administrator or State Director determines necessary to protect human health and the environment." This section allows permit writers to require emission controls that are more stringent than those specified by a standard.

As has been described above, the approach that EPA is using to control TSDf air emissions is to proceed with promulgation of regulations to control

organic emissions as a class (Phases I and II) and to follow this with regulations that would require more stringent controls for cases where the risk after implementing the organic standards remains high. The EPA believes that this approach will ultimately be protective of human health and the environment for all TSDf air emissions on a nationwide basis.

The question of whether these standards implement the requirements of RCRA section 3004(m) is irrelevant. Regulations implementing section 3004(m), which is a pretreatment-based program that defines when hazardous wastes can be land-disposed, have been (and will continue to be) separately promulgated by EPA. For example, see 40 FR 268 (November 7, 1986) and 52 FR 25787 (July 8, 1987). In contrast, today's regulations under section 3004(n) of RCRA do not specify technology-based treatment levels for hazardous wastes but regulate air emissions from treatment units as necessary to protect human health and the environment. Therefore, in developing today's rule EPA has focused on achieving acceptable levels of health and environmental protection rather than on specifying pretreatment levels for hazardous wastes. The two regulatory efforts (i.e., 3004(m) and 3004(n) rules) are integrated and coordinated to the extent possible to reduce duplicate and conflicting regulations. Furthermore, today's rules are designed to ensure that treatment required under 3004(m) is protective of human health and the environment.

The role of costs as a decision criterion under RCRA in subtitle C is not explicitly addressed in the statute. The EPA's position is that it can consider cost information as a basis for choosing among alternatives either (1) when they all achieve protection of human health and the environment or (2) for alternatives that are estimated to provide substantial reductions in human health and environmental risks but do not achieve the historically acceptable levels of protection under RCRA, when they are equally protective. However, EPA does not believe that the cost burden on industry is a basis for reducing the stringency of standards EPA considers necessary to protect human health and the environment.

Total Organics Approach

Comment: Commenters argued that applicability should be limited to known or suspected carcinogens. In addition, several commenters argued that applicability of the standards should be based on volatility and not on total

organic content because the relative amount of organic content by weight does not determine potential air emissions and subsequent health effects.

Response: First, it should be pointed out that ozone presents a threat to human health and the environment that warrants control under RCRA. The EPA agrees that total organic content may not be a completely accurate gauge of potential environmental (e.g., ozone) or health (e.g., cancer) impacts for a source such as process vents, but it is a readily measurable indicator. In addition, the final rule's substantive control requirements do apply only to vents and equipment containing volatile components.

The final vent standard applies to certain process vents emitting organics if the vent is associated with one of the processes specified in the rule. A process vent is determined to be affected by the standard if the vent is part of a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping unit that manages wastes with 10 ppmw or more total organics; this includes vents on tanks (e.g., distillate receivers or hot wells) if emissions from the process operations are vented through the tank. Total organic content of the vent stream (i.e., the emissions to the atmosphere) is not a consideration in determining process vent applicability. As public commenters pointed out, the 10-percent total organics concentration cutoff for the vent stream does not limit total emissions or relate to emissions that escape capture by existing control devices and therefore was not included in the final rules.

Furthermore, the process vents covered by this rule are typically associated with distillation/separation processes used to recycle spent solvents and other organic chemicals. By definition, distillation is a process that consists of driving gas or vapor from liquids or solids by heating and then condensing the vapor(s) to liquid products. Wastes treated by distillation are expected to contain organics that are driven off in the process. Thus, by their nature, process vent emissions contain volatile organics.

Under the final standards, the term "organic emissions" is used in lieu of "volatile organic emissions" to avoid confusion with "volatile organic compounds." As at proposal, the final rule applies to total organics. Because of the hundreds of hazardous constituents that could be contained in and contacted by the equipment covered by today's rules, EPA recognizes the potential for the residual risk at some

facilities to remain higher than the residual risk for other standards promulgated under RCRA. Regulations based only on specific constituents will therefore be developed, as necessary, in Phase III of EPA's regulatory approach. The constituents to be evaluated will include those reported as being present in hazardous wastes managed by existing TSDF for which health effects have been established through the development of unit risk factors for carcinogens and reference doses for noncarcinogens.

As is discussed in section VI.B of this preamble, emission potential from equipment leaks also was considered by incorporating the light-liquid definition in the section 111 CAA standards. Light liquids exhibit much higher volatilities than do heavy liquids, which are relatively nonvolatile. Equipment leak rates and emissions have been shown to vary with stream volatility; emissions from heavy liquids are far less than those for lighter, more volatile streams. For example, EPA analyses indicate that emissions from valves in heavy-liquid service are more than 30 times lower than the emissions from valves in light-liquid service (see the BID, § 4.6). The EPA examined the emissions and risk associated with light- and heavy-liquid waste streams and found that light-liquid streams are the overwhelming contributors to both emissions and risk. Thus, the final standards take into account the volatility of emissions and the subsequent impact on health and the environment.

Application of CAA Equipment Leak Standards

Comment: Several commenters did not agree that the standards should be based on the transfer of technology from the section 112 standards for benzene (40 CFR, subpart V) because TSDF waste streams and processes differ from the chemical plants and petroleum refineries upon which the CAA standards are based.

Response: Data used in establishing the benzene fugitive standards under CAA section 112 are based on extensive emission and process data collected at a variety of petroleum refinery and SOCMI operating units. Data were obtained for equipment and chemical component mixtures that include many of the same organic compounds that are treated, stored, and disposed of in hazardous waste management units. Because hazardous waste management units such as distillation units have the same sources of fugitive organic emissions (such as pumps and valves) and handle the same chemicals as do chemical manufacturing plants and

petroleum refineries, it is reasonable to expect similar performance and efficiency of the technology for controlling organic emissions at hazardous waste management units. The EPA has no reason to believe that the equipment standards would not be applicable to TSDF. Moreover, although EPA has not conducted actual equipment leak testing at TSDF, observations of equipment during plant visits have confirmed that the assumptions and analyses used in other equipment leak standards apply to TSDF as well.

Changes have been made in the final standards and analyses to incorporate provisions included in the CAA standards that reflect the effect of volatility on emissions. As is discussed in section V of this preamble, the LDAR requirements for pumps and valves have been revised to include the light-liquid provisions in EPA's NSPS for VOC equipment leaks in the SOCMI. Correspondingly, the emission and health risk analyses have been revised to reflect this change to the standards. Additional information on the appropriateness of the CAA data on the SOCMI and petroleum refineries is presented in the next section.

B. Standards and Applicability

Standards for Accumulator Vessels

Comment: Commenters contended that the regulatory approach of applying a single standard to the wide varieties of accumulator vessels irrespective of the chemical constituents that are present and the size of the vessel is not appropriate because the proposed standards result in the control of already low emission rates at disproportionately high costs. Standards for tanks (whether accumulation or storage tanks) should be conditioned by the size of the vessel, the vapor pressure of the material being stored, and the type of units that pose a risk to human health and the environment. The EPA's approach should be similar to or consistent with the CAA NSPS for petroleum liquid storage vessels (40 CFR part 60, subpart Ka). These standards exempt vessels that store liquids less than 1.5 psia or that store less than 40,000 gal.

Response: Commenters recommending that the air emission standards be conditioned by the size of the tank and the vapor pressure of the material being stored have misinterpreted the applicability of the proposed standards. To clarify the applicability of the standards, the term "product accumulator vessel" has been dropped

from the promulgated rule, including the equipment definition, and the process vent definition has been revised to be specific to the applicable emission sources. "Process vent" is defined to mean "any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with distillation fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations." Similarly, the definition of "vented" has been revised to specifically exclude the passage of liquids, gases, or fumes "caused by tank loading and unloading (working losses)." Because tank working and breathing losses are not considered process emissions, the comments concerning vapor pressure and tank size exemptions are not relevant. (It should be noted, however, that EPA intends to regulate hazardous waste storage tanks, along with various other TSD air emission sources in the Phase II, section 3004(n), TSD air standards now being developed and evaluated by the Agency.)

In conducting the impact analysis of the WSTF/TSD process vent standards, EPA considered and took into account the relative size of WSTF process units and the wide range of chemicals processed in the WSTF industry. For example, three sizes of WSTF model units were defined for analysis of emissions, health risks, and economic impacts in the final rulemaking (see section VI.D). In addition, the final standards for process vents promulgated by EPA contain emission rate limits and require controls only at facilities whose total process vent emissions are greater than 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr). More detailed descriptions of the model units and the process vent emission rate limits are provided in chapters 5.0 and 7.0, respectively, of the BID.

Comment: Several commenters objected to the proposed standard for process vents that requires a fixed 95-percent emission reduction. They believe that the process vent standard is inequitable because some operations could reduce emissions by 95 percent and still have higher emissions than some small uncontrolled operations and because facilities would have to install control devices on all condenser and still vents regardless of emissions or risk posed to human health or the environment. A few commenters asked EPA to consider exemptions for small solvent operations that have low

emissions and thus pose little health risk.

Response: In response to these comments, EPA estimated the TSD/TSD air quality and health impacts using updated model unit, emission rate, and facility throughput data. Although total facility waste solvent throughputs were available, the data base did not contain any information on the number or capacities of process units at each site. Therefore, the risk analysis is based on overall facility operations and total facility process vent emissions as opposed to individual process vent emissions. The impacts analysis results show that nationwide reductions in emissions, maximum individual risk (MIR), and cancer incidence level off (i.e., yield only insubstantial incremental reductions) at a facility emission rate of about 2.8 Mg/yr (3.1 ton/yr). At a typical rate of 2,080 h/yr of operation, this annual emission rate corresponds to 1.4 kg/h (3 lb/h) of organic emissions. Control of facilities with process vent emissions less than these values does not result in further reductions of nationwide MIR or cancer incidence. At this emission level, larger facilities (i.e., those with uncontrolled emissions above the emission rate limit) that are controlled to a 95-percent emission reduction result in MIR values higher than the remaining uncontrolled small facilities (i.e., those with uncontrolled emissions below the limit). The same holds true for nationwide cancer incidence. The reduction in cancer incidence achieved by controlling facilities below the limit is not significant relative to the nationwide reductions achieved by controlling the larger facilities.

Consequently, the analysis results indicate that provision of small facility emission rate limits of 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr) for process vent emissions provides essentially the same level of protection for human health and the environment (in terms of risk, incidence, and emissions) as does covering all facilities. In addition, the MIR after control is within the range of residual risk for other standards promulgated under RCRA. As a result, the final rule requires control of only those facilities emitting greater than 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr) organic emissions from all process vents. A more detailed discussion of the process vent emission rate limits is contained in chapter 7.0 of the BID.

Because the final standards contain process vent emission rate limits, it is anticipated that small solvent recovery operations would not be substantially affected by the final process vent

standards. The EPA estimates, based on the high emission rates and 1985 waste solvent throughput data, indicate that about 45 percent of the WSTF identified in the industry profile will have process vent emissions of less than 2.8 Mg/yr (3.1 ton/yr). Consequently, it is expected that a large number of small facilities would not be required to install additional process vent controls.

Selection of 10-Percent Cutoff

Comment: Commenters believed that the 10-percent level proposed is comparable to 100,000 ppm and may be too high, particularly when compared to the 10,000-ppm level that defines an equipment leak, and that EPA should evaluate the health and environmental impacts associated with the proposed limit. The 10-percent limit will allow excessive emissions from leaking equipment and is based on costs, not technical limitations. Commenters also argued that the 10-percent limit does not adequately protect the environment because emissions could be substantial if there are numerous leaking components with relatively dilute streams and that controls, such as carbon adsorbers, are available to capture emissions from dilute streams.

Response: First, for clarification, the 10-percent organic content limit for equipment leaks in no way relates to the 10,000-ppm leak definition. The leak definition, which is a Method 21 instrument reading used to define when a leak is detected, is discussed in a later comment. As proposed, the 10-percent total organics cutoff level for applicability of the standards covered both equipment leak (fugitive) emissions and process vent emissions. Control technologies for fugitive emissions comprise the use of control equipment, inspection of equipment, and repair programs to limit or reduce emissions from leaking equipment. These control technologies have been studied and evaluated for equipment containing fluids with more than 10 percent organics (EPA-450/3-80-32b, EPA-450/3-80-33b, EPA-450/3-82-010, and EPA-450/3-88-002). The 10-percent criterion was chosen in EPA's original benzene/SOCMI studies to focus the analyses on air emissions from equipment containing relatively concentrated organics and presumably having the greatest potential for air emissions. Available data from the original benzene/SOCMI studies do not suggest that fugitive emissions from leaking equipment (e.g., pumps and valves) handling streams containing less than 10 percent organics are significant or that the 10-percent cutoff allows excessive emissions from dilute streams

However, to reevaluate this would require several years to conduct field studies to collect and analyze additional emissions and control effectiveness data for equipment leaks. Because available data support the need for, and effectiveness of, standards for equipment handling streams containing at least 10 percent organics, the EPA does not believe that a delay in rulemaking to assess emissions and controls for equipment handling streams containing less than 10 percent organics is warranted.

The effectiveness of fugitive emission control technologies has been thoroughly evaluated for equipment containing fluids with at least 10 percent organics, and fugitive emission standards have been proposed or established under both sections 111 and 112 of the CAA. (See 46 FR 1136, January 5, 1981; 46 FR 1165, January 5, 1981; 48 FR 279, January 4, 1983; 48 FR 37598, August 18, 1983; 48 FR 48328, October 18, 1983; 49 FR 22598, May 30, 1984; 49 FR 23498, June 6, 1984; and 49 FR 23522, June 6, 1984.) As elaborated in these rulemakings, a 10-percent cutoff deals with the air emissions from equipment most likely to cause significant human health and environmental harm.

With regard to process vent emissions, EPA agrees with the commenter. Emission test data show that the 10-percent cutoff potentially may allow significant emissions from process vents on a mass-per-unit-time basis (e.g., kg per hour or Mg per yr). As public commenters pointed out, the 10-percent cutoff for process vents does not limit total emissions, nor does it relate to emissions that escape capture by existing control devices. Therefore the 10-percent cutoff may not be appropriate; as a result, EPA has eliminated the 10-percent cutoff as it applies to process vents. The EPA believes that an emission rate limit more effectively relates to emissions, emission potential, and health risks than does a 10-percent organic concentration cutoff. Accordingly, a health-risk-based facility process vent emission rate limit has been added to the final rules in lieu of the 10-percent cutoff.

Because the emission rate limits (3 lb/h and 3.1 ton/yr) provide health-based limits, EPA considered dropping completely the organic content criterion (i.e., at least 10 percent total organics). However, EPA decided not to eliminate completely the organic content criterion because it is not clear that the same controls can be applied to very low concentration streams as can be applied to the higher concentration streams that generally are associated with emission

rates greater than the limits. For low-concentration streams, EPA questions whether controls are needed on a national or generic basis, but is unable to resolve this question at this time. Thus, EPA decided to defer controlling very low concentration streams until it is able to better characterize and assess these streams and the appropriate controls.

Once EPA decided to consider facilities that manage very low concentration organic wastes as a separate category, there remained the problem of determining the appropriate criterion. The EPA examined existing data on air strippers, the treatment device most commonly used with low-concentration streams; it appeared that the quantity of emissions and the risk associated with air strippers treating streams with concentrations below 10 ppmw may be relatively small, thus minimizing the potential harm of deferring control until a later time. Examples of facilities managing low-concentration wastes are sites where ground water is undergoing remedial action under CERCLA or corrective action pursuant to RCRA. Based on the limited set of precise data available, and the comments that the 10-percent criterion was too high, EPA determined that an appropriate criterion would be 10 ppm total organics in the waste by weight.

The 10-ppmw criterion is not an exemption from regulation; it is intended only as a way for EPA to divide the air regulations into phases. The EPA is deferring action on very low concentration streams (i.e., ones with less than 10 ppmw total organic content) from the final rule today but will evaluate and announce a decision later on whether to regulate these waste streams.

Exemptions

Comment: Several commenters disagreed with EPA's interpretation that the definition of "totally enclosed treatment units" (which are exempt from regulation) may in certain circumstances include on-site treatment units that use engineered controls to prevent the release of emissions. One commenter stated that on-site treatment facilities directly tied with process equipment have the same potential for emissions as do other sources not exempted by the proposed regulation.

Response: This rule does not create or modify any exemption for totally enclosed treatment facilities; rather, the existing definition of an exemption for totally enclosed treatment facilities remains in effect, and existing regulatory interpretations remain in

effect as well. Although the preamble to the proposed rule repeated the existing definition, it also contained a request for comments on an interpretation of the totally enclosed facility exemption whereby the "use of effective controls such as those required by the proposed standards" would meet the criteria of 40 CFR 260.10. Upon consideration of the comments, EPA has determined that this interpretation would have conflicted with the regulatory definition and previous interpretations of the exemption and, therefore, has decided to withdraw it.

As presented in the preamble to the proposed rule, under 40 CFR 264.1(g)(5) and 40 CFR 265.1(c)(9), totally enclosed treatment facilities are exempt from RCRA regulation. A "totally enclosed treatment facility" is a facility treating hazardous waste that is "directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or constituent thereof into the environment during treatment" (40 CFR 260.10). Therefore, as stated in the proposal preamble, process equipment designed to release air emissions are not "totally enclosed."

The EPA agrees with the commenter that on-site treatment facilities associated with process equipment generally are designed to release air emissions and, thus, are not "totally enclosed." The EPA specifically stated this in the preamble to the proposed rule. To be considered "totally enclosed," units must meet the test of preventing the release of any hazardous constituent from the unit not only on a routine basis but also during a process upset. Thus, the risks from these units are expected to be less than from units that are not totally enclosed.

Comment: Commenters stated that the exemption for tanks storing or treating hazardous wastes that are emptied every 90 days and that meet the tank standards of 40 CFR 262.34 is not justified based on risk, as RCRA requires. The exclusion of less-than-90-day storage tanks from air emission control requirements will increase the use of the 90-day storage exemption and the resultant air emissions.

Response: In 40 CFR part 270, hazardous waste generators who accumulate waste on site in containers or tanks for less than the time periods provided in § 262.34 are specifically excluded from RCRA permitting requirements. To qualify for the exclusions in § 262.34, generators who accumulate hazardous waste on site for up to 90 days must comply with 40 CFR

265, subpart I or J (depending on whether the waste is accumulated in containers or tanks) and with other requirements specified in § 262.34. Small-quantity generators (i.e., generators who generate more than 100 kilograms but less than 1,000 kilograms per calendar month) are allowed to accumulate waste on site for up to 180 days or, if they must ship waste off site for a distance of 200 miles or more, and if they meet certain other requirements set out in § 262.34, for up to 270 days.

The promulgated regulation does not create a new exemption for 90-day accumulation, nor does it modify the existing regulation. As the commenter notes, EPA is considering what changes (if any) should be made to § 262.34 (the "90-day rule") under a separate rulemaking (51 FR 25487, July 14, 1986). As part of that effort, EPA currently is evaluating whether air emissions from these and other accumulator tanks, mentioned above, at the generator site should be subject to additional control requirements. Preliminary analysis indicates that 90-day tanks and containers may have significant organic air emissions; consequently, as part of the second phase of TSD air emission regulations, EPA is considering proposing to modify the exemption to require that 90-day tanks meet the control requirements of the Phase I and II standards. (The multiphased standards development approach for regulating organic air emissions is discussed in section III.C of this preamble.) Until a final decision is made on regulating the emissions from these units, they will not be subject to additional controls. However, EPA does not believe that more generators will use the 90-day exemption if air emission controls are not imposed on these units. Those generators who are eligible for inclusion under § 262.34 are probably already taking advantage of the provision now by storing their hazardous wastes for less than 90 days.

LDAR Program

Comment: Several commenters criticized the incorporation of the national emission standard for hazardous air pollutants (NESHAP) for benzene because of differences in scope from the SOCM I NSPS in that (1) the NSPS distinguishes between light and heavy liquids and the proposed standards based on the benzene NESHAP do not; (2) the NSPS does not require testing of all SOCM I units because process fluid vapor pressure is the overriding consideration in predicting leak frequencies and leak rates (the proposed standards incorporating the NESHAP do not

recognize vapor pressure and require testing of all SOCM I units); and (3) the NSPS exempts facilities from routine fugitive emission monitoring, inspection, and repair provisions if a heavy-liquid product from a heavy-liquid raw material is produced and limits monitoring of equipment in heavy-liquid service only to where there is evidence of a potential leak.

Response: The EPA agrees with the commenters that the provisions for light and heavy liquids in the SOCM I NSPS should be incorporated in the section 3004(n) standards, even though the subpart V NESHAP does not contain the distinction. No distinction was made for the benzene NESHAP because benzene is a light liquid. By their nature, heavy liquids exhibit much lower volatilities than do light liquids and because equipment leak emissions have been shown to vary with stream volatility, emissions for heavy liquids are less than those for lighter and more volatile ones. As previously noted, EPA analyses have determined that the emission rate for a valve in heavy-liquid service is more than 30 times less than the emission rate for a valve in light-liquid service. In response to these comments, EPA examined the emission and risk associated with light- and heavy-liquid waste streams and found that light-liquid streams are the overwhelming contributors to both emissions and risk. Therefore, a routine LDAR monthly inspection is not necessary for heavy liquids.

Thus, the final regulations have been changed to incorporate the light/heavy-liquid service provisions for pumps and valves (40 CFR parts 264 and 265, subpart BB, §§ 264.1052, 264.1057, 265.1052, and 265.1057). Equipment is in light-liquid service if the vapor pressure of one or more of the components is greater than 0.3 kPa at 20 °C, if the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight, and if the fluid is a liquid at operating conditions. The 0.3-kPa vapor pressure criterion is based on fugitive emission data gathered in various EPA and industry studies (EPA-450/3-82-010). Equipment processing organic liquids with vapor pressures above 0.3 kPa leaked at significantly higher rates and frequencies than did equipment processing streams with vapor pressures below 0.3 kPa. Therefore, EPA elected to exempt equipment processing lower vapor pressure substances (i.e., heavy liquids) from the routine LDAR requirements of the standards. In addition, monitoring of equipment in heavy-liquid service is

required only where there is evidence by visual audible olfactory, or any other detection method of a potential leak.

Comment: Several commenters asked EPA to consider exemptions from fugitive emission monitoring for small facilities based on volume (as was done in the benzene NESHAP and the SOCM I NSPS), emission threshold, product applicability threshold or equipment component count, or equipment size. In support, the commenters pointed to similar exemptions in the CAA rules that were in the proposed standards.

Response: The commenters suggest that EPA consider other exemptions for fugitive emission monitoring that are applied in the benzene NESHAP or SOCM I NSPS (e.g., small facilities with the design capacity to produce less than 1,000 Mg/yr). The EPA recognizes that estimated emissions and health risks from small facilities should be considered in the final rules. With regard to the SOCM I NSPS small-facility exemption, the cutoff was based on a cost-effectiveness analysis. Under section 111 of the CAA, EPA may exempt units where costs of the standards are unreasonably high in comparison to the emission reduction achievable. Under RCRA, the statutory criterion is protection of human health and the environment. Therefore, any cutoff for RCRA standards must be risk-based. Cost effectiveness is only a relevant factor for choosing among alternatives either (1) when they all achieve protection of human health and the environment or (2) for alternatives that are estimated to provide substantial reductions in human health and environmental risks but do not achieve the historically acceptable levels of protection under RCRA, when they are equally protective.

In the benzene NESHAP (49 FR 23498, June 6, 1984), EPA concluded that control of units producing less than 1,000 Mg/yr did not warrant control based on the small health-risk potential. The benzene standards, however, did not have to deal with the many different pollutants covered by the TSD process vent and equipment leak standards, some of which are much more carcinogenic than benzene. In addition to unit size (or throughput), fugitive emissions are also a function of the chemical characteristics of the hazardous wastes being handled.

Typically, TSD have a variety of hazardous waste management processes (e.g., container storage, tank storage, treatment tanks, incinerators, injection wells, and terminal loading operations) located at the same facility, all of which have associated pumps, valves,

sampling connections, etc., and therefore, fugitive emissions from equipment leaks. Also, several different types of hazardous waste typically are managed at a facility. Because of the various factors affecting facility fugitive emissions from equipment leaks (e.g., equipment leak emissions are a function of component counts rather than waste throughput), it would be very difficult to determine a small-facility exemption based on risk but expressed as volume throughput. For these reasons, EPA did not include exemptions for fugitive emission monitoring such as those applied in the benzene NESHAP or SOCOMI NSPS (i.e., small process units with the design capacity to produce less than 1,000 Mg/yr).

Comment: Commenters stated that the TSDF fugitive emission standards should conform to the benzene NESHAP, which allows exemptions for vacuum systems, systems with no emissions, and systems whose leakage rate is demonstrated to be below 2 percent.

Response: The EPA has included in the final TSDF standards (§§ 264.1050 and 265.1050) the exemption for equipment "in vacuum service" found in the benzene NESHAP (40 CFR part 61, subpart V, 61.242-1). Also included are the identification requirements contained in the regulation, "In vacuum service" means that equipment is operating at an internal pressure that is at least 5 kPa below ambient pressure. The EPA has concluded that it is unnecessary to cover equipment "in vacuum service" because such equipment has little if any potential for emissions and, therefore, does not pose a threat to human health and the environment. Accordingly, this equipment has been excluded from the equipment leak fugitive emission requirements.

The proposed standards stated that owners and operators of facilities subject to the provisions of the rule must comply with the requirements of 40 CFR part 61, subpart V (equipment leak standards for hazardous air pollutants), except as provided in the rule itself. The provisions of the proposed rule did not exclude §§ 61.243-1 and 61.243-2 (alternative standards for valves in VHAP service), and the alternative standards have been incorporated as §§ 264.1061, 264.1062, 265.1061, and 265.1062 of the final rule. Therefore, an owner or operator may elect to have all valves within a TSDF hazardous waste management unit comply with an alternative standard that allows a percentage of valves leaking of equal to or less than 2 percent (§§ 264.1061 and

265.1061), or may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of §§ 264.1062 and 265.1062.

Comment: One commenter suggested that releases from pressure relief devices in gas service should be directed to control equipment at least equal in performance to those for other process sources or an alternative means provided to prevent an uncontrolled discharge. According to the commenter, rupture discs or closed-vent systems restrict small leaks but not major releases; a closed-vent system connected to a control device is needed to capture releases. The commenter concluded that EPA has provided no data to support exempting flanges and pressure relief devices in liquid service from LDAR requirements and should not rely on operators to see, hear or smell leaks from this equipment.

Response: Pressure relief devices allow the release of vapors or liquids until system pressure is reduced to the normal operating level. The standards are geared toward control of routine low-level equipment leaks that may occur independently of emergency discharges. Pressure relief discharges are an entirely different source of emissions than equipment leaks or process vents and were not covered in the original equipment leak standards under the CAA. The new subpart BB rules require that pressure relief devices in gas service be tested annually by Method 21 (and within 5 days of any relief discharge) to ensure that the device is maintained at no detectable emissions by means of a rupture disc. In addition, because a pressure discharge constitutes a process upset that in many cases can lead to hazardous waste management unit downtime and might also pose a risk to workers, a facility has the incentive to minimize the occurrence of these events.

The frequency, duration, and air emissions associated with such emergency discharges at TSDF waste management units currently cannot be estimated with any certainty on a nationwide basis. However, if a pressure discharge does occur, records and reports (maintained at the site under §§ 264.1054, 264.1064, 265.1054, and 265.1064 of subpart BB) will indicate the frequency of such discharges, the estimated volume of excess emissions and other relevant information. If pressure discharges appear to be a problem at any facility the RCRA permitting system provides State or EPA permit writers the flexibility to require

closed-vent systems for these discharges on a site-specific basis.

The LDAR program transferred from the CAA standards does not exempt pressure relief devices in light liquid or heavy liquid service and flanges, but requires formal monitoring of these sources if operators see, smell, or hear discharges. The EPA considers that this is the most practical way to manage these sources. Although scheduled routine maintenance may be a way of avoiding the need for formal monitoring, it may not be a successful method for all sites in eliminating leaks due to the numerous variables affecting leak occurrence. For example, flanges may become fugitive emission sources when leakage occurs due to improperly chosen gaskets, poorly assembled flanges, or thermal stress resulting in the deformation of the seal between the flange faces. In these situations, operators will be able to detect such leaks by sight, smell, or sound. Support for this approach was presented and evaluated in developing several CAA rulemakings (EPA-450/3-83-016b, EPA-450/3-80-033b, and EPA-450/3-81-015b).

Comment: One commenter stated that the LDAR program should require preventive maintenance, such as the periodic replacement of valve packings, before waiting for the valve to fail. In support, the commenter argued that EPA's own data show that directed maintenance could reduce leaks from valves to below 10,000 ppm. The commenter also criticized the 10,000-ppm leak definition as being too high and states that EPA must consider the level in terms of the health effects.

Response: The key criterion for selecting a leak definition is the overall mass emission reduction demonstrated to be achievable. The EPA has not concluded that an effective lower leak definition has been demonstrated. Most data developed for current CAA standards (EPA-450/3-82-010) on leak repair effectiveness have applied 10,000 ppm as the leak definition and therefore do not indicate the effectiveness of repair for leak definitions between 1,000 and 10,000 ppm. Even though limited data between these values were collected for support of CAA standards, they are not sufficient to support a leak definition below 10,000 ppm. Data are insufficient to determine at what screening value maintenance efforts begin to result in increased emissions.

As the commenter noted, although there is some evidence that directed maintenance is more effective, available data are insufficient to serve as a basis

for requiring directed maintenance for all sources.

(Note: In "directed maintenance" efforts, the tightening of the packing is monitored simultaneously and is continued only to the extent that it reduces emissions. In contrast, "undirected" repair means repairs such as tightening valve packings without simultaneously monitoring the result to determine whether the repair is increasing or decreasing emissions.)

The EPA's rationale for selecting the 10,000-ppmv leak definition and for not requiring directed maintenance under the CAA LDAR program also has been discussed in the proposal and promulgation BIDs for benzene emissions from coke by-product recovery plants (EPA-450/3-83-016 a and b), for SOCM fugitive emissions (EPA-450/3-80-033 a and b), for petroleum refinery fugitive emissions (EPA-450/3-81-015 a and b), and for benzene fugitive emissions (EPA-450/3-80-032 a and b). (See also the "Response to Public Comments on EPA's Listing of Benzene Under section 112" (EPA-450/5-82-003) "Fugitive Emission Sources of Organic Compounds—Additional Information on Emissions, Emission Reductions, and Costs" (EPA-450/3-82-010), and EPA's "Response to Petition for Reconsideration" (50 FR 34144, August 23, 1985).)

The commenter also criticizes EPA for not reanalyzing the health effects of the 10,000-ppmv level before applying the limit to TSDF under RCRA. Because section 112 of the CAA and 3004(n) of RCRA are comparable in their recognition of health risk as the predominant decision factor, the EPA believes that the leak definition has been adequately analyzed under the CAA and that further evaluation is not needed prior to transferring it as part of the LDAR program under RCRA. It must also be pointed out that transfer of the CAA equipment leak standards is only the first phase of EPA's regulatory actions related to control of TSDF air emissions. In this phase, EPA transferred a known technology to reduce emissions. If new data show that a lower leak definition is appropriate, EPA will then consider whether it is appropriate to change the rules.

C. Control Technology

Feasibility of Condensers

Comment: Several commenters did not agree that condensers provide a feasible means of meeting the 95-percent emission reduction requirement for affected process vents in the proposed standard. Problems cited by the commenters limiting the application of condensers included the presence of

water in the waste stream in the TSDF portion of the facility and the wide variety of waste solvents treated by WSTF. One commenter claimed that a higher emission reduction efficiency could be achieved through an increased condenser area or a different condenser refrigerant with a lower boiling point than was used in the analysis for the proposal.

Response: In response to this comment, the feasibility of using condensers to achieve a 95-percent reduction of emissions from WSTF process vent streams was reexamined using a state-of-the-art chemical engineering computerized process simulator that includes a refrigeration unit capable of producing a coolant at a temperature as low as -29°C (-20°F) and a primary water-cooled heat exchanger to remove water vapor from the vent stream.

A variety of chemical constituents and operating conditions were examined to determine the organic removal efficiency achievable through condensation. The constituents selected for the condenser analysis (toluene, methyl ethyl ketone (MEK), 1,1,1 trichloroethane (TCE), and methylene chloride) were judged to be representative of the solvents recycled by the WSTF industry, based on a review of a National Association of Solvent Recyclers (NASR) survey, numerous site-specific plant trip reports, and responses to EPA section 3007 information requests. Three of these four solvents had been used in the proposal analysis; methylene chloride, at the lower end of the solvent boiling point range (i.e., more difficult to condense), was added to provide a broader range of volatilities for the condenser analysis. A total of 40 WSTF model unit cases consisting of combinations of organic emission rates, concentrations, and exhaust gas flows representing the wide range of operating conditions found at WSTF were included in the condenser analysis.

The results of the condenser analysis indicate that condensers cannot universally achieve a 95-percent emission reduction when applied to WSTF process vents. With regard to increasing organic removal efficiency by increasing condenser area or changing the condenser refrigerant, the analysis shows that there are technical limits on condenser efficiency that go beyond the condenser design and operating parameters. Specifically, the physical properties of the solvents being condensed and the solvent concentration in the gas stream affect condenser efficiency. In some situations, the partial pressure of the organic

constituent in the vapor phase was too low to support a liquid phase thermodynamically regardless of the refrigerant used or condensation area; as a result, no appreciable condensation could occur. Therefore, the analysis shows that condensers are not universally applicable to the control of WSTF process vents. However, the facility process vent emission reduction requirements are not based solely on the use of condensers; carbon adsorption and incinerators/flares are capable of attaining a 95-percent control efficiency for all WSTF organics, including cases where condensation is not feasible. In summary, although condensers may not by themselves achieve a 95-percent emission reduction at all process vents, condensers do provide a practical and economic means of reducing process vent emissions, and these devices will likely be the initial choice of control technology for cases where condensation is feasible.

Feasibility of Carbon Adsorbers

Comment: Several commenters objected to the identification of carbon adsorption as a control technique because of technical and safety concerns related to the application of carbon adsorbers to low organic concentration and multicomponent solvent streams. However, one commenter did cite authorities that support a 98-percent removal for this type of control device.

Response: First it should be noted that carbon adsorption is one of several control technologies that could be used to attain the standards. Other technologies include condensers, flares, incinerators, and any other device that the owner or operator can show will meet the standards.

Regarding carbon adsorption applications, EPA acknowledges that safety is an important consideration, but concludes that any safety problems can be avoided through proper design and sorbent selection. Multicomponent systems potentially can lead to excessive heat buildup (hot spots), particularly in large carbon beds with low flow rates, which in turn can lead to fire and explosion hazards. Multicomponent vapor streams can also lead to reduced removal efficiencies for particular components. However, these technical and efficiency problems can be overcome through proper design, operation, and maintenance.

In general, coal-based carbons have fewer heat generation problems than do wood-based carbons, and small diameter beds promote good heat transfer. The bed must be designed with

consideration for the least heat adsorbent (or fastest) component in the mix, as well as the component concentrations and overall flow rate. Other considerations include component interaction, gas stream relative humidity, and close monitoring of the bed effluent for breakthrough.

In response to these comments, the EPA examined carbon adsorption design, operation, and performance data from a number of plants in a wide variety of industries; in addition, the EPA has reexamined, with the help of carbon manufacturers and custom carbon adsorption equipment designers, the elements that affect carbon adsorption efficiency. This analysis has reinforced EPA's original conclusion that a well-designed, -operated, and -maintained adsorption system can achieve a 95-percent control efficiency for all organics under a wide variety of stream conditions over both short-term and long-term averaging periods. The major factors affecting performance of an adsorption unit are temperature, humidity, organics concentration, volumetric flow rate "channelling" (nonuniform flow through the carbon bed), regeneration practices, and changes in the relative concentrations of the organics admitted to the adsorption system. The WSTF/TSDf process vent stream characteristics are typically well within design limits in terms of gas temperature, pressure, and velocity for carbon adsorbers. For example, the bed adsorption rate decreases sharply when gas temperatures are above 38 °C (100 °F); a review of plant field data showed no high-temperature streams in WSTF/TSDf process vents. If high-temperature gas streams are encountered, the gas stream can be cooled prior to entering the carbon bed. Also, gas velocity entering the carbon bed should be low to allow time for adsorption to take place. The WSTF/TSDf stream flows are typically quite low and, as a result, bed depth should not be excessive.

Therefore, EPA concluded that, for WSTF/TSDf process vent streams, carbon adsorption can reasonably be expected to achieve a 95-percent control efficiency provided the adsorber is supplied with an adequate quantity of high-quality activated carbon, the gas stream receives appropriate conditioning (e.g., cooling or filtering) before entering the carbon bed, and the carbon beds are regenerated or replaced before breakthrough. The data gathered in the EPA carbon adsorption performance study do not support a higher control efficiency (i.e., 98 percent as opposed to 95 percent) for carbon adsorption units applied to WSTF/TSDf

process vents on an industrywide basis, particularly in light of the design considerations related to controlling multicomponent vent streams when the organic mix is subject to frequent change.

When carbon adsorption is used to remove organics from a gas stream, the carbon must periodically be replaced or regenerated when the capacity of the carbon to adsorb organics is reached. When either regeneration or removal of carbon takes place, there is an opportunity for organics to be released to the atmosphere unless the carbon removal or regeneration is carried out under controlled conditions. There would be no environmental benefit in removing organics from an exhaust gas stream using adsorption onto activated carbon if the organics are subsequently released to the atmosphere during desorption or during carbon disposal. The EPA therefore expects that owners or operators of TSDf using carbon adsorption systems to control organic emissions take steps to ensure that proper emission control of regenerated or disposed carbon occurs. For on-site regenerable carbon adsorption systems, the owner or operator must account for the emission control of the desorption and/or disposal process in the control efficiency determination. In the case of off-site regeneration or disposal, the owner or operator should supply a certification, to be placed in the operating file of the TSDf, that all carbon removed from a carbon adsorption system used to comply with subparts AA and BB is either (1) regenerated or reactivated by a process that prevents the release of organics to the atmosphere. (Note: The EPA interprets "prevents" as used in this paragraph to include the application of effective control devices such as those required by these rules) or (2) incinerated in a device that meets the performance standards of subpart O.

Feasibility of Using Controls in Series

Comment: One commenter stated that EPA should evaluate carbon adsorption in series with a condenser because condensers work best with concentrated streams and carbon adsorbers with low concentration streams. The two systems together could yield an overall efficiency of 99 percent, even if each unit were only 90-percent effective.

Response: As discussed in section VII.E, the MIR from process vents after control (i.e., 4×10^{-9}) is within the range of what has been considered acceptable under RCRA. Consequently, no further control for process vents was considered necessary at this time. Nonetheless, in response to these

comments, EPA evaluated the feasibility of using a carbon adsorber in series with a condenser to control WSTF/TSDf process vent emissions. The objective of the analysis was to determine if the combination of control devices would yield an overall control efficiency greater than the 95 percent that is achievable using a single device. For example, if a 99-percent overall control efficiency is desired and it is assumed that the carbon adsorber is capable of achieving a 95-percent control efficiency in all cases (a reasonable assumption for a properly designed, operated, and maintained system), then a minimum efficiency of 80 percent would be required for the condenser followed in series by the 95-percent efficient carbon bed. However, in the EPA condenser analysis conducted for the WSTF model unit cases, an 80-percent control was not achieved for 16 of the 40 cases examined. (See section 7.7 of the BID.) In 7 of the 40 cases, the analysis showed that no appreciable condensation would occur because of low solvent concentration and/or the high volatility of some solvents. Because the model unit cases are considered representative of current WSTF operations, EPA does not believe that the use of carbon adsorption and condensation in series to achieve a 99-percent control is a technically feasible control option on an industrywide basis. Such control strategies will be considered further for Phase III standards for individual facilities, if necessary, should additional analyses reveal unexpectedly high risks in specific situations.

Feasibility of Flares

Comment: Several commenters objected to the use of flares at recycling facilities because of technical and safety concerns. A few commenters cite the requirement of a constant emission source for efficient flare operation, and other commenters contend that flares are not suitable on intermittent sources or the low-level emissions typical of recycling operations. With regard to safety, flares present the danger of explosion, especially if they malfunction; according to one commenter, many State laws prohibit the use of flares at recycling facilities.

Response: Available information on WSTF operations indicates that condensers, carbon adsorbers, and incinerators are the most widely used control technologies; therefore, they are expected to be the technologies of choice to reduce organic emissions at WSTF. The final technical analyses show that a 95-percent control efficiency can be achieved with secondary

condensers for many WSTF process vents or with carbon adsorbers in cases where secondary condensers are not feasible. Flares are not required controls, but are an available option for facilities so equipped provided they meet the criteria established in the final rules. Where State laws prohibit the use of flares at recycling facilities, other technologies are available.

With regard to the safety of flares, EPA has determined that the use of flares to combust organic emissions from TSDF process vents would not create safety problems if engineering precautions such as those used in the SOCM are taken in the design and operation of the system. The following are typical engineering precautions. First, the flare should not be located in such proximity to a process unit being vented that ignition of vapors is a threat to safety. In the analysis conducted for this standard at proposal, it was assumed that the flare would be located as far as 122 meters from the process unit. Second, controls such as a fluid seal or flame arrestor are available that would prevent flashback. These safety precautions were considered in EPA's analysis for the proposed rule. Finally, the use of a purge gas, such as nitrogen, plant fuel gas, or natural gas and/or the careful control of total volumetric flow to the flare would prevent flashback in the flare stack caused by low off-gas flow.

Feasibility of LDAR Program

Comment: One commenter opposed the fugitive standards as proposed because they failed to require the proper technology to control releases from pumps and valves. The commenter claimed that the standards should require a 100-percent control, based on what available technology (e.g., sealed bellows valves, sealless pumps, or dual mechanical seals for pumps) can achieve. According to the commenter, superior emission controls cannot be rejected under RCRA solely on the basis of cost effectiveness.

Response: Control technologies for fugitive emissions from equipment leaks, as required by the proposed standards, include the use of control equipment, inspection of process equipment, and repair programs to limit or reduce emissions from leaking equipment that handle streams with total organic concentrations of greater than 10 percent. These control technologies have been studied and evaluated extensively by EPA for equipment containing fluids with 10 percent or more organics and are similar to those required by national emission standards for chemical,

petrochemical, and refining facilities under the CAA.

A monthly LDAR program was proposed for WSTF/TSDF pumps and valves. Based on results of the EPA's LDAR model, once a monthly monitoring plan is in place, emission reductions of 73 percent and 59 percent can be expected for valves in gas and light liquid service, respectively, and a 61-percent reduction in emissions can be achieved for pumps in light-liquid service. For compressors, the use of mechanical seals with barrier fluid systems and control of degassing vents (95 percent) are required, although compressors are not expected to be commonly used at WSTF/TSDF. The use of control equipment (rupture disc systems or closed-vent systems to flares or incinerators) is the technical basis for control of pressure relief devices. Closed purge sampling is the required control for sampling connection systems and is the most stringent feasible control. For open-ended valves or lines the use of caps, plugs, or any other equipment that will close the open end is required; these are the most stringent controls possible. Flanges and pressure relief devices in liquid service are excluded from the routine LDAR requirements but must be monitored if leaks are indicated. For operations such as those expected at WSTF/TSDF, total reductions in fugitive emissions from equipment leaks of almost 75 percent are estimated for the entire program.

The EPA agrees with the commenter that the level of control required by the LDAR program does not result in the highest level of control that could be achieved for fugitive emissions from pumps and valves in certain applications. In some cases, there are more stringent, technologically feasible controls. For example, leakless equipment for valves, such as diaphragm and sealed bellows valves, when usable, eliminates the seals that allow fugitive emissions; thus, control efficiencies in such cases are virtually 100 percent as long as the valve does not fail. In appropriate circumstances, pumps can be controlled by dual mechanical seals that would capture nearly all fugitive emissions. An overall control efficiency of 95 percent could be achieved with dual mechanical seals based on venting of the degassing reservoir to a control device.

With regard to leakless valves, the applicability of these types of valves is limited for TSDF, as noted by EPA in the proposal preamble. The design problems associated with diaphragm valves are the temperature and pressure limitations of the elastomer used for the diaphragm.

It has been found that both temperature extremes and process liquids tend to damage or destroy the diaphragm in the valve. Also, operating pressure constraints will limit the application of diaphragm valves to low-pressure operations such as pumping and product storage facilities.

There are two main disadvantages to sealed bellows valves. First, they are, for the most part, only available commercially in configurations that are used for on/off valves rather than for flow control. As a result, they cannot be used in all situations. Second, the main concern associated with this type of valve is the uncertainty of the life of the bellows seal. The metal bellows are subject to corrosion and fatigue under severe operating conditions.

Over 150 types of industries are included in the TSDF community, and EPA does not believe that leakless valves can be used in an environmentally sound manner on the wide variety of operating conditions and chemical constituents found nationwide in TSDF waste streams, many of which are highly corrosive. Corrosivity is influenced by temperature and such factors as the concentration of corrosive constituents and the presence of inhibiting or accelerating agents. Corrosion rates can be difficult to predict accurately; underestimating corrosion can lead to premature and catastrophic failures. Even small amounts (trace quantities) of corrosives in the stream can cause corrosion problems for sealed bellows valves; these tend to aggressively attack the metal bellows at crevices and cracks (including welds) to promote rapid corrosion. Sealed bellows valves particularly are subject to corrosion because the bellows is an extremely thin metallic membrane.

At proposal, it was estimated that 20 percent of all plants process halogenated compounds, which tend to be highly corrosive. The subsequently obtained 1986 Screener Survey data show that, of the TSDF indicating solvent recovery operations, at least 33 percent of the total handle halogenated organics. Furthermore, of the 12 major chemicals determined from site-specific data to be commonly occurring in waste solvent streams, all of the chemicals determined to be carcinogenic are halogenated (i.e., methylene chloride, chloroform, and carbon tetrachloride). Similarly, of the 52 constituents in TSDF waste streams contributing to the emission-weighted unit risk factor, about 50 percent are halogenated and account for the vast majority of the estimated nationwide emissions of

carcinogens. Thus, TSDF are known to routinely handle and treat chemicals that may destroy sealed bellows and diaphragm valves.

The durability of metal bellows is highly questionable if the valve is operated frequently; diaphragm and bellows valves are not recommended in the technical literature for general service. The EPA does not believe that the application of sealed bellows and diaphragm valves is technologically feasible for all TSDF valve conditions or that their application would lead to a significant reduction in emissions and health risks. Valve sizes, configurations, operating temperatures and pressures, and service requirements are some of the areas in which diaphragm, pinch, and sealed bellows valves have limitations that restrict service. With regard to the emission reductions achieved by sealed bellows, diaphragm, and pinch valve technologies, these valves are not totally leakless. The technologies do eliminate the conventional seals that allow leaks from around the valve stem; however, these valves do fail in service from a variety of causes and, when failure occurs, these valves can have significant leakage. This is because these valves generally are not backed up with conventional stem seals or packing. The EPA currently is reevaluating the control efficiencies assigned to these technologies. Because these leakless types of equipment are limited in their applicability and in their potential for reducing health risks, EPA did not consider their use as an applicable control alternative at this time for nationwide TSDF standards. The EPA has requested, in a separate Federal Register notice (54 FR 30220, July 19, 1989), additional information on the applicability and use of leakless valves at TSDF.

For pumps, the most effective controls that are technologically feasible (e.g., dual seals) in some cases also were not selected as the basis for equipment leak standards. The impact analysis indicates that including LDAR results in less emission and risk reduction than does including equipment requirements for pumps. However, the difference in the emission and health risk reductions attributable to implementing a monthly LDAR program rather than the more stringent equipment standards for pumps appears to be small in comparison to the results of the overall standards (about 5 percent). The overall standards, including a LDAR program for pumps and valves, would achieve an expected emission reduction for TSDF equipment leaks of about 19,000 Mg/yr

(21,000 ton/yr). The estimated MIR from equipment leak emissions would be reduced to 1×10^{-3} from 5×10^{-3} based on the TSDF equipment leak emission-weighted unit risk factor; cancer incidence would be reduced to 0.32 case/yr from 1.1 cases/yr. In comparison, including dual seals for pumps could achieve an additional fugitive emission reduction of about 1,200 Mg/yr (1,320 ton/yr) and an additional incidence reduction of about 0.08 case/yr. The MIR, with leakless controls for pumps, at 1×10^{-3} would be unchanged from that achieved by the LDAR program.

Given the small magnitude and the imprecise nature of the estimated emission and risk reductions associated with including dual seals for pumps in the overall standard, EPA considers the two control alternatives (i.e., LDAR and dual seals) as providing essentially the same level of protection. The data and models on which the risk estimates are based are not precise enough to quantify risk meaningfully to a more exact level. The data and models include uncertainties from the emission estimates, the air dispersion modeling, and the risk assessment that involves unit risk factor, facility location, population, and meteorologic uncertainties (see section VII.E).

The EPA considered these factors when deciding whether to require TSDF to install dual seals on pumps to control air emissions rather than to rely on monthly LDAR. Considering the limited applicability of additional equipment controls and the low potential for additional reductions in health risks of applying equipment controls for valves at TSDF and the estimated emissions and risk reductions if leakless equipment for pumps were required, EPA is not requiring leakless equipment at this time.

In Phase III, EPA will further examine the feasibility and impacts of applying additional control technology beyond the level required by today's standards. For example, dual mechanical seals may be an appropriate emission control method when applied selectively to wastes with high concentrations of toxic chemicals. In such applications, the reduction in toxic emissions (and consequently the reduction in residual risk) may be significant for select situations. A summary of the health impacts is presented in section VII.E of this preamble.

D. Impact Analyses Methodologies

Environmental Impacts Analysis

Comment: Numerous commenters criticized the environmental impact

estimates for the proposed standards because (1) no actual data from operating facilities were used; (2) emission estimates were not supported by any technical data base; and (3) the waste constituents used in the analyses were not representative of waste solvent recycling operations and TSDF operations in general. Commenters also stated that the model plant solvent reclamation rates (throughputs), vent flow rates, and emission rates used at proposal were not representative of the industry.

Response: In response to these comments, EPA reviewed all available site-specific data on WSTF and TSDF, data submitted by commenters, and information generated through RCRA section 3007 questionnaires mailed to a limited number of small and large facilities. Based on all this information, EPA has revised both the TSDF model units and emission factors that serve as the bases for the impacts analyses.

With regard to the model unit revisions, the industry profile developed by EPA includes a frequency distribution of the waste volumes processed during 1985. Of the 450 facilities in the Screener Survey reporting solvent recovery by operations such as batch distillation, fractionation, or steam stripping that involved some form of hazardous waste, 365 reported the total quantity of waste recycled in 1985. The median facility throughput was slightly more than 189,000 L/yr (50,000 gal/yr); the mean throughput was about 4.5×10^6 L/yr (1.2×10^6 gal/yr). Based on the industry profile, three sizes of model units (small, medium, and large) were defined to facilitate the post-proposal analyses for control costs, emission reductions, health risks, and economic impacts.

The organic emission rates also were revised for the model units based on emission source testing conducted for EPA. The test data show that organic emission rates for primary condensers varied from a few hundredths of a kilogram (pound) to nearly 4.5 kg/h (10 lb/h), with six of the nine measurements less than 0.45 kg/h (1 lb/h). The two secondary condensers tested showed emission rates of 0.9 and 2.3 kg/h (2 and 5 lb/h), respectively.

The flow rate of 26 standard cubic feet per minute (scfm) used at proposal was found not to be generally valid for application to waste solvent recyclers. The flow rates specified for the revised model units, 3.9, 0.6, and 0.3 L/s, equivalent to 8.3, 1.2, and 0.6 scfm for the large, medium, and small model units, respectively, are based on a review of site-specific data from field

tests documented in site visit reports. The large and medium TSDF process vent unit flow rates also agree with those documented in the SOCM I Distillation NSPS BID (see Docket No. F-88-AESP, item S0008) as characterizing distillation units with low overhead gas flows. The revised impact analyses are based on actual data from the industry and provide a reasonable characterization of the industry's operations and environmental impacts.

The constituents selected for the analysis of control technologies are considered to be representative of the industry, based on a review of relevant information and literature, including (1) a survey of member companies submitted by NASR, (2) 23 site-specific plant visit reports, (3) responses to the EPA section 3007 Questionnaires from 6 small and 11 large facilities (two respondents provided information for 4 facilities each), (4) the Industrial Studies Data Base (ISDB) and (5) a data base created by the Illinois EPA. The NASR survey provided information on the types of solvents most frequently recycled at member facilities; the site-specific information and EPA survey responses included waste composition data. The ISDB is a compilation of data from ongoing, in-depth surveys by EPA's Office of Solid Waste (OSW) on designated industries that are major waste generators. The Illinois EPA data base contains information from about 35,000 permit applications. Generators must submit one application for each hazardous and special nonhazardous waste stream managed in the State of Illinois. Each of these data bases contains waste stream characterization data for numerous generic spent solvent waste streams (EPA Hazardous Wastes F001-F005) and D001 wastes (ignitable), which information from the Screener Survey indicates also are recycled.

The three constituents used for the model facilities in the proposal analysis were toluene (with a boiling point (bp) of 110 °C), MEK (bp of 79 °C), and TCE (bp of 74 °C). Methylene chloride (bp of 40 °C) was added to the list of constituents evaluated in the final analysis to provide an even greater range of solvent volatilities for the analysis. Therefore, the technical feasibility and costs of applying the recommended control techniques were evaluated for constituents representing the range of characteristics and volatilities of commonly recycled solvents at TSDF.

Comment: Commenters also stated that it is inappropriate to apply the fugitive emission factors to TSDF that were developed to estimate leaks from a

typical hydrocarbon plant because they do not relate to the design, operating conditions, maintenance practices, or controls associated with processing of waste solvents and other toxic wastes. According to the commenters, the emission factors and model units also need adjustment to account for volatility because not accounting for differences in vapor pressure overestimates risk as well as emissions and underestimates costs for controls.

Response: The EPA disagrees; the data used in establishing the fugitive emission standards for TSDF are based on emission and process data collected at a variety of petroleum refinery and SOCM I operating units. The EPA Industrial Environmental Research Laboratory (IERL) coordinated a study to develop information on fugitive emissions in the SOCM I. A total of 24 chemical process units were tested; these data covered thousands of screened sources (pumps, valves, flanges, etc.) and included units handling such chemicals as acetone, phenol, MEK, ethylene dichloride, TCE, trichloroethylene, and perchloroethylene.

Refinery studies on fugitives also include tests on units handling both toluene and xylene. These same chemicals are included in those listed by the NASR as solvents commonly recycled by member facilities and are found in other sources of waste solvent constituent information that are described in the BID. The chemicals commonly recycled at TSDF are those produced in SOCM I operating units and handled in petroleum refineries, and the equipment involved in these industries is typically the same (pumps, valves, etc.). Therefore, it is reasonable to conclude that the emissions associated with these chemicals and equipment are similar and to expect similar emission control performance and efficiencies at hazardous waste management units.

The EPA agrees that the equipment leak standards should take component volatility into consideration. Previous EPA and industry studies have shown that the volatility of stream components, as a process variable, does correlate with fugitive emission and leak rates. An analysis of the vapor pressures and emission rates has shown that substances with vapor pressures of 0.3 kPa or higher had significantly higher emission and leak rates than did those with lower vapor pressures (EPA-450/3-82-010). This result led to the separation of equipment component emissions by service: gas/vapor, light liquid, and heavy liquid. These classifications have been used in most CAA fugitive

emission standards to effectively direct the major effort toward equipment most likely to leak. Therefore the rules have been revised to account for volatility. For example, pumps and valves in heavy-liquid service must be monitored only if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method. The determination of light- and heavy-liquid service is based on the vapor pressure of the components in the stream (less than 0.3 kPa at 20 °C defines a heavy liquid).

All of the constituents used in the model unit analysis, representing the ranges of characteristics of commonly recycled solvents, are light liquids to which the benzene and SOCM I fugitive emission factors are applicable. Therefore, the revised risk and cost analyses for WSTF equipment leak fugitive emissions are based on the fugitive emission factors used in the proposal analysis. The analyses of risk and cost impacts on TSDF with affected fugitive emission sources also were revised after proposal to account for the differences in light and heavy liquids.

Health Risk Impacts Analysis

Comment: Several commenters objected to the limited support provided for selection and derivation of the unit risk factors used in the analysis of cancer risks and contend that the risk analysis and unit risk factors are not representative of the wide variety of wastes handled. A few of the commenters stated that the upper-bound risk factor was too high, and others stated it was too low.

Response: The selection of the range of unit risk factors (i.e., 2×10^{-7} and 2×10^{-8} ($\mu\text{g}/\text{m}^3$) $^{-1}$) used at proposal to estimate the cancer risk resulting from TSDF emissions was based on an analysis of the organic chemicals associated with TSDF operations. This analysis found that carbon tetrachloride is the organic chemical with the most individual impact vis-a-vis emissions and risk. Thus, it was used as the upper bound on the range of unit risk factors used to calculate health impacts (i.e., cancer risk) at proposal. However, this range of unit risk factors was not used in the final analysis.

Based on public comments, EPA revised its health risk impacts analysis. To estimate the cancer potency of TSDF air emissions in the revised analysis, an emission-weighted composite unit cancer risk estimate approach was used by EPA to address the problem of dealing with the large number of toxic chemicals that are present at many TSDF. Use of the emission-weighted

composite factor rather than individual component unit cancer risk factors simplifies the risk assessment so that calculations do not need to be performed for each chemical emitted. The composite unit cancer risk factor is combined with estimates of ambient concentrations of total organics and population exposure to estimate risk due to nationwide TSDF emissions. In calculating the emission-weighted average unit risk factor, the emission estimate for a compound is first multiplied by the unit cancer risk factor for that compound; then the emission-weighted average is computed by summing these products and dividing the sum by the total nationwide TSDF emission value, which includes both carcinogenic and noncarcinogenic organic emissions. Using this type of average would give the same results as calculating the risk for each chemical involved. However, only those carcinogens for which unit risk factors are available were included in the analysis of cancer risk under this approach.

Through use of the EPA's TSDF Waste Characterization Data Base (WCDB) (discussed in appendix D of the BID) and a computerized model developed for analysis of the regulatory options for TSDF emission sources, EPA estimated total nationwide TSDF organic emissions by specific waste constituent. Thirty-nine chemicals were identified as TSDF organic air pollutant emission constituents emitted from equipment leaks at all types of TSDF waste management processes. Unit cancer risk factors for these constituents were then averaged based on both individual constituent and total nationwide TSDF equipment leak organic emissions to calculate an emission-weighted composite mean TSDF cancer unit risk factor.

Numerous constituents with higher unit risk factors than carbon tetrachloride (including acrylonitrile and ethylene oxide) were included in the calculation of the emission-weighted unit cancer risk factor for TSDF equipment leaks. This emission-weighted unit risk factor value was determined to be $4.5 \times 10^{-6} (\mu\text{g}/\text{m}^3)^{-1}$ and was used to determine the health-related impacts associated with TSDF equipment leak (fugitive) emissions rather than the range of the unit cancer risk factors used at proposal that represented a limited number of chemical compounds emitted at WSTF. A more detailed discussion of the hazardous waste TSDF unit risk factor determination is contained in appendix B of the BID.

Characterization of WSTF waste streams in the final analysis indicates that the constituents used at proposal in the risk analysis are appropriate and representative of the waste solvent recycling industry. However, insufficient nationwide data on WSTF (a subset of the TSDF industry) waste stream chemical constituent quantities and concentrations were available to develop an emission-weighted, arithmetic mean cancer unit risk factor for WSTF process vents. While information on a small number of process vent streams was available for the revised analysis, the data were too limited to support the conclusion that the mix and percentage of constituents found were representative of the entire industry.

The WSTF waste streams and their associated process vent emissions were found to contain a variety of chemical constituents. Those constituents with established risk factors were, in all cases for the plant-specific data, the halogenated organics; these halogenated organic constituent concentrations tended to be quite low, generally less than 1 percent of organics emitted. Therefore, EPA judged, based on the limited data available, that use of a midrange unit risk factor would be appropriate in estimating nationwide health impacts associated with WSTF process vents. The unit cancer risk factor assumed at proposal, $2 \times 10^{-6} (\mu\text{g}/\text{m}^3)^{-1}$, was the geometric midrange between the highest and lowest unit risk factor for the constituents found in the WSTF process vent streams. The composite unit cancer risk factor calculated for the equipment leak emissions agrees favorably with the process vent number used at proposal. Because it is not unreasonable to assume a similar mix of constituents in process vents as in equipment leaks, and because available data do not suggest otherwise, for the purpose of estimating impacts, the same unit cancer risk factor was used for both process vents and equipment leaks, $4.5 \times 10^{-6} (\mu\text{g}/\text{m}^3)^{-1}$.

Comment: Several commenters also stated that the failure to address the weight of evidence for carcinogenicity is inconsistent with EPA's risk assessment guidelines and the principles for assessing cancer risk.

Response: Early in the rulemaking for TSDF, EPA looked at the contribution to total estimated risk (annual incidence) by weight of evidence. At that time, "C" carcinogens accounted for about 5 percent of the total risk, and "A" carcinogens about 10 percent. Thus, for all practical purposes, calculating

separate risk estimates for chemicals in each weight of evidence category adds little to the risk assessment. Moreover, EPA's Guidelines for Carcinogen Risk Assessment (51 FR 33992) and Guidelines for the Health Risk Assessment of Chemical Mixtures (51 FR 34014) do not describe a means to quantitatively incorporate weight of evidence into risk assessments. Thus, there is no inconsistency between the risk assessment guidelines and the presentation of health risk in this rulemaking.

Comment: Other commenters believed that the risk assessment for the proposed standards was flawed because EPA did not consider noncancer health effects and because large uncertainties are introduced when the additive or synergistic effects of carcinogens and the interindividual variability in response are not factored in.

Response: The EPA does recognize that health effects other than cancer may be associated with both short-term and long-term human exposure to the organic chemicals emitted to the air at WSTF/TSDF. The EPA believes, however, that a risk assessment based on cancer serves as the clearest basis for evaluating the health effects associated with exposure to air emissions from TSDF. A quantitative assessment of the potential nationwide noncancer health impacts (e.g., developmental, neurological, immunological, and respiratory effects) was not conducted due to deficiencies at this time in the health data base for these types of effects.

Although unable to numerically quantify noncancer health risks, EPA did conduct a screening analysis of the potential adverse noncancer health effects associated with short-term and long-term exposure to individual waste constituents emitted from TSDF. This analysis was based on a comparison of relevant health data to the highest short-term or long-term modeled ambient concentrations for chemicals at each of two selected TSDF. (A detailed presentation of the screening analysis is contained in the BID, appendix B.)

Results of this analysis suggest that adverse noncancer health effects are unlikely to be associated with acute or chronic inhalation exposure to TSDF organic emissions. It should be noted that the health data base for many chemicals was limited particularly for short-term exposures. The conclusions reached in this preliminary analysis should be considered in the context of the limitations of the health data; the uncertainties associated with the characterization of wastes at the

facilities; and the assumptions used in estimating emissions, ambient concentrations, and the potential for human exposure. Additional evaluation of noncancer health effects may be undertaken as part of the third phase of the TSDF regulatory program. To that effect, in the proposal preamble for the Phase II TSDF air rules, EPA is specifically requesting comments from the public on methodologies and use of health data for assessing the noncancer health effects of TSDF organic emissions. In addition, because there is a potential for cancer and noncancer health effects from TSDF chemicals from indirect pathways such as ingestion of foods contaminated by air toxics that have deposited in the soil, EPA will evaluate the need to include an indirect pathway element in the TSDF health risk analysis in the future.

The EPA is aware of the uncertainties inherent in predicting the magnitude and nature of toxicant interactions between individual chemicals in chemical mixtures. In the absence of toxicity data on the specific mixtures of concern, and with insufficient quantitative information on the potential interaction among the components (i.e., additivity, synergism, or antagonism), the EPA has assumed additivity to estimate the carcinogenicity of the mixtures of concern. This is consistent with guidance provided in the 1986 "EPA Guidelines for the Health Risk Assessment of Chemical Mixtures" (51 FR 34014).

The EPA also recognizes that there are uncertainties associated with the variability of individual human responses following exposures to toxicants. As stated in the 1986 "EPA Guidelines for Carcinogen Risk Assessment" (51 FR 33992) human populations are variable with respect to genetic constitution, diet, occupational and home environment, activity patterns, and other cultural factors. Because of insufficient data, however, the EPA is unable to determine the potential impact of these factors on the estimates of risk associated with exposure to carcinogens emitted from TSDF.

Cost Impacts Analysis

Comment: Various commenters questioned the cost estimates used in the analysis for carbon adsorbers and condensers as well as the nationwide recovery credits for WSTF and TSDF. Commenters contend that the costs for carbon adsorbers estimated at proposal are low because a device is needed for each vent if manifolding is not practiced as a result of (1) the potential for cross-contamination of new or recycled

materials and (2) additional incurred costs when the carbon is regenerated or disposed of.

Response: In response to these comments EPA evaluated controls for 40 model unit cases representing ranges and combinations of solvent physical properties, total flow rates, and organic concentrations in the vent stream. Both carbon canisters and fixed-bed regenerable carbon systems were costed for process vent streams where condensers would not achieve a 95-percent reduction because of stream conditions. The analysis showed that, for a stream with an emission rate greater than 0.45 kg/h (1 lb/h), a carbon bed can achieve the same emission reduction at lower cost than can a carbon canister. Thus, there is a level of emissions at which the facility owner or operator for economic reasons will switch from the use of replaceable carbon canisters to the use of a fixed-bed regenerable carbon adsorption system. The capital costs (1986 \$) of the fixed-bed regenerable carbon systems ranged from \$97,300 up to \$202,000, and annual operating costs ranged from \$40,200 to \$43,500 (from \$33,100 to \$43,100 when a recovery credit is included). The capital cost (1986 \$) of a carbon canister was \$1,050, and annual operating costs ranged from \$7,890 to \$24,800 (carbon canisters are not regenerated on site and a recovery credit is not included). The fixed-bed, regenerable carbon system operating costs include regeneration/disposal of spent carbon; carbon canister operating costs include carbon replacement and disposal. Thus, these costs were used in conducting the final impact analyses.

With regard to the requirement of a control device for each vent, EPA acknowledges that there are instances where vent manifolding is not allowed because of potential product contamination. However the product has already been recovered from the process prior to exhaust gases passing to the vents, which are sources of organic emissions to the atmosphere; therefore, manifolding of the vent streams should not lead to a product contamination problem.

In the absence of the site-specific information needed to determine control device requirements, for the purposes of estimating cost impacts, it was assumed in the revised analysis that one control device would be needed per WSTF. Although this assumption may underestimate the control cost for a facility that chooses to install carbon adsorbers on more than one vent, it is potentially a very small underestimate because the total annual cost of a

carbon canister, for example, is comprised almost totally of annual operating costs, which are directly proportional to the emissions removed. Thus the potential underestimate in total annual cost resulting from assuming one carbon adsorber per facility is not significant. Furthermore, the addition of the process vent emission limit to the rules based on the total facility emission rate lessens the likelihood that a facility will need to control multiple process vents to attain the allowable emission rate of 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 ton/yr).

Several commenters also questioned the nationwide cost credit for secondary condensers estimated at proposal, stating that secondary condensers actually would result in substantial costs and that the cost estimates do not account for the more sophisticated systems needed in high-humidity areas to allow for equipment deicing or water removal. In response to concerns regarding the estimated condenser yields and the requirement for more sophisticated systems in high-humidity areas, EPA utilized a state-of-the-art computerized process simulator known as the Advanced System for Process Engineering (ASPEN) for reevaluating analyses of condenser design and cost. The ASPEN condenser configuration included an optional primary water-cooled heat exchanger to reduce the size of the refrigeration unit and to remove water vapor in order to avoid freezing problems because the condenser temperature is low enough to cause ice buildup on heat transfer surfaces. Therefore, the revised cost estimates account for water removal.

The model unit cases represent industrywide ranges and combinations of vent stream characteristics. For the large model unit cases (3.9 L/s total flow rate), total annual cost with recovery credit ranged from a credit of \$4,980 up to a net of no cost. For the medium model unit cases (0.6 L/s total flow rate), the total annual cost with recovery credit ranged from \$630 up to \$2,000. For the small model unit cases (0.3 L/s total flow rate), the total annual cost with recovery credit ranged from \$1,770 up to \$2,000. Therefore, in many cases, the use of secondary condensers does result in positive costs; these costs, however do not result in adverse economic impacts.

The model unit control cost estimates and the WSTF industry profile were used to generate nationwide control cost estimates of implementing the process vent regulations. The cost estimates are for 73 large facilities and 167 medium facilities. The 208 small facilities (less than 189,000 L (50,000 gal) throughput/yr

as defined in the post-proposal analysis) would not have to install additional controls because their emissions are less than the facility process vent cutoff.

Because there was insufficient site-specific information available to determine which facilities could apply condensation rather than carbon adsorption, upper- and lower-bound estimates were generated. The upperbound cost estimate is based on the assumption that fixed-bed, regenerable carbon adsorption systems would be required to control process vents at all facilities with emissions above the emission rate cutoff. Similarly the lower-bound cost estimate is based on the assumption that condensers could be used to control process vents at all facilities with emissions above the emission rate cutoff. The range in estimates of nationwide total annual cost is from a credit of \$68,000 up to a cost of \$12.9 million, assuming the installation of one control device per facility.

Finally, EPA agrees that a recovery credit is not applicable to TSD in general because most of the hazardous wastes handled at TSD are destined for disposal. In contrast, at a WSTF, the air emissions resulting from equipment leaks are potentially recyclable solvents. Thus, no recovery credit was applied for TSD other than WSTF in the analyses for the final equipment leak standards.

E. Implementation and Compliance Test Methods

Comment: Commenters argued that the test methods proposed for use in determining whether waste streams contain more than 10 percent total organics are inappropriate primarily because they do not measure volatile organics. One commenter objected to the use of weight percent when defining "in VHAP service" based on liquid sample analyses.

Response: The EPA recognized that each of the various test methods proposed for determining the organic content of waste streams had limitations and that none was universally applicable. The determination of subpart BB applicability should not require precise measurement of the 10 percent total organics by weight in most cases. The EPA anticipates that most waste streams will have an organic content much lower or much higher than 10 percent. Furthermore, because the regulation requires control if the organic content of the waste stream ever equals or exceeds the 10-percent value, EPA believes that few owners or operators will claim that a waste stream is not

subject to the requirements of the standard based on a sample analysis with results near 10 percent. Therefore, a precise measurement of waste stream total organic content is not likely to be needed to determine applicability of the equipment leak standards.

If the facility does decide to test the waste, the choice of the appropriate method must be based on a knowledge of the process and waste. The EPA has prepared a guidance document that includes information to aid TSD owners/operators and enforcement and permitting personnel in implementing the regulations. Additional detail is provided in the guidance document to aid in choosing the most appropriate test method. (Refer to "Hazardous Waste TSD—Technical Guidance Document for RCRA Air Emission Standards for Process Vents and Equipment Leaks." EPA-450/3-89-21.)

In response to the commenters' concerns that volatility of the waste stream should be considered, the LDAR provisions of the regulation were changed to establish two potential levels of required monitoring. Those processes with the greater emission potential are designated to be in light-liquid service and are required to implement a more restrictive LDAR program. Those processes with a lesser emission potential are designated to be in heavy-liquid service and are required to implement a less restrictive LDAR program. The determination of being in light-liquid service is based on the concentration of organic components in a waste whose pure vapor pressure exceeds 0.3 kPa. This addresses the commenters' concerns that volatility of the waste stream should be considered. For the process vent portion of the regulation, if an organic is present at the vent, it is presumed to be volatile. Therefore, volatility is considered by virtue of where the determination of applicability is made.

With reference to the use of weight percent when defining "in VHAP service" (a term that has been dropped from the promulgated regulations), EPA believes that weight percentage is the unit of choice when the determination of organic content is made on a solid, liquid, or sludge waste. It is also commonly associated with those types of wastes. For gaseous streams that exceed 10 percent organics by weight, the commenter's point is well taken. Volume fractions are more commonly reported for gaseous streams. However, it is not easier to calculate the volume percent rather than weight percent. Additional information on the calibration standard used, the carrier gas in the standard, and both the

organic and other inorganic gases in the sample are required in both cases. For simplicity, the units of the standard are uniformly weight percent regardless of waste type.

Implementation Schedule

Comment: Several commenters objected to the time periods contained in the proposed standards for implementation schedules and requested that EPA not dictate a step-by-step schedule.

Response: The EPA agrees with the commenters that EPA should not dictate step-by-step implementation schedules for installing the control devices and closed-vent systems required to comply with these regulations because each affected facility needs some flexibility to budget funds, perform engineering evaluations, and complete construction. Therefore, EPA has dropped the interim dates in the schedule and retained only the final period of 2 years from the promulgation for completing engineering design and evaluation studies and for installing equipment. The final rules require that all affected facilities comply with the standards on the effective date; however, the rules allow up to 24 months from the promulgation date (i.e., 18 months after the effective date) for facilities to comply if they are required to install a control device and they can document that installation of the emission controls cannot reasonably be expected to be completed earlier. Existing waste management units that become newly regulated units subject to the provisions of subpart AA or BB because of a new statutory or regulatory amendment under RCRA (e.g., a new listing or identification of a hazardous waste) will have up to 18 months after the effective date of the statutory or regulatory amendments that render the facility subject to the provisions of subparts AA or BB to complete installation of the control device. New hazardous waste management units starting operation after the effective date of subparts AA and BB must meet the standards upon startup. This subject is discussed further in section IX. Implementation, of this preamble. The final standards require that both permitted and interim status facilities maintain the schedules and the accompanying documentation in their operating records. The implementation schedule must be in the operating record on the effective date of today's rule, which is 6 months after promulgation. No provisions have been made in the standards for extensions beyond 24 months after promulgation.

Permitting Requirements

Comment: Several commenters suggested that RCRA part B information requirements be limited to the units already included in the part B application. Units that must comply with this regulation because the facility is subject to RCRA permit requirements for other reasons should not be required to be added to the part B permit application. Other commenters objected to statements in the preamble regarding the role of the omnibus permitting authority under RCRA section 3005(c)(3). The commenters questioned the absence of criteria for establishing when such authority would be applied to require more stringent controls and argued that authorizing permit writers to impose more stringent controls based on unenforceable guidance is not a substitute for regulations.

Response: The EPA is aware that extending specific part B information requirements to those hazardous waste management units that are not subject to RCRA permitting but are located at facilities that are otherwise subject to RCRA permit requirements could result in the need for those facilities to modify RCRA permits or their part B applications. However, EPA believes that extending the part B information requirements to hazardous waste management units not subject to RCRA permitting is necessary to ensure compliance with the subpart AA and subpart BB standards.

The EPA also agrees that requiring a modification of RCRA permits (and part B applications) as part of this rule could result in delays in processing and issuing final RCRA permits. Therefore, the final rules do not require facilities to modify permits issued before the effective date of these rules. Consistent with 40 CFR 270.4, a facility with a final permit issued prior to the effective date is generally not required to comply with new part 264 standards until its permit is reissued or reviewed by the Regional Administrator. Hazardous waste management units and associated process vents and equipment affected by these standards must be added or incorporated into the facility permit when the permit comes up for review under § 270.50 or reissue under § 124.15. As previously noted, EPA intends to propose to modify this policy in the forthcoming Phase II rules such that permitted facilities must comply with the interim-status air rules.

Facilities that have obtained RCRA interim status, as specified in 40 CFR 270.70 (i.e., compliance with the requirements of section 3010(a) of RCRA pertaining to notification of hazardous

waste activity and the requirements of 40 CFR 270.10 governing submission of part A applications), will be subject to the part 265 standards on the effective date. Interim status facilities that have submitted their part B application prior to the effective date of the regulation will be required to modify their part B applications to incorporate today's requirements.

The omnibus permitting authority of § 270.32 allows permit writers to require, on a case-by-case basis, emission controls that are more stringent than those specified by a standard. The EPA has a mandate to use this authority for situations in which regulations have not been developed or in which special requirements are needed to protect human health and the environment. For example, this authority could be used in situations where, in the permit writers judgment, there is an unacceptably high risk after application of controls required by an emission standard. This aspect of the permitting process is discussed further in section IX of this preamble. The EPA is currently preparing guidance to be used by permit writers to help identify facilities that would potentially have high residual risk due to air emissions. The guidance will include procedures to be used to identify potentially high-risk facilities and will include guidance for making a formal, site-specific risk assessment.

Recordkeeping and Reporting

Comment: Commenters asked EPA to include a provision in the final standards to provide for the elimination of recordkeeping requirements that may be duplicative of State or Federal requirements for equipment leaks. Commenters also asked whether TSDF are subject to any notification requirements if their waste stream is less than 10 percent organics.

Response: The EPA agrees that duplicative recordkeeping and reporting should generally be eliminated to the extent possible. Because of the difficulties in foreseeing all situations in which this could occur, a provision to this effect has not been added to the final standards. However, when records and reports required by States are substantially similar, a copy of the information submitted to the State will generally be acceptable to EPA. When similar records and reports are required by other EPA programs (such as the visual observations required for pumps and valves associated with storage tanks and incinerators), EPA suggests that owners or operators of TSDF coordinate monitoring and recordkeeping efforts to reduce labor and costs. One set of records should be

maintained with emphasis on the more detailed monitoring records required by these standards. The EPA considers that the monitoring required for equipment leaks under these standards differs significantly from the monitoring required for ground water protection purposes under other RCRA rules. However, the monitoring and recordkeeping programs can be combined for efficiency.

There are no notification requirements in the equipment leak rules for waste streams that have been determined never to exceed 10 percent total organics by weight.

VII. Summary of Impacts of Final Standards

A. Overview of the Source Category

Hazardous waste TSDF are facilities that store, treat, or dispose of hazardous wastes. A TSDF may generate and manage hazardous waste on the same site, or it may receive and manage hazardous waste generated by others.

The EPA has conducted a number of surveys to collect information about the TSDF industry. The most recent of these surveys, the 1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities, lists more than 2,300 TSDF nationwide. Available survey data further indicate that the majority (96 percent) of waste managed at TSDF is generated and managed on the same site and identifies more than 150 different industries, primarily manufacturing, that generate hazardous waste. Approximately 500 TSDF are commercial facilities that manage hazardous waste generated by others.

The types of wastes managed at TSDF and the waste management processes used are highly variable from one facility to another. The physical characteristics of wastes managed at TSDF include dilute wastewaters (representing more than 90 percent by weight of the total waste managed), organic and inorganic sludges, and organic and inorganic solids. Waste management processes differ according to waste type and include storage and treatment in tanks, surface impoundments, and wastepiles; handling or storage in containers such as drums, tank trucks, tank cars, and dumpsters; and disposal of waste in landfills, surface impoundments, injection wells, and by land treatment. In addition, hazardous waste may be managed in "miscellaneous units" that do not meet the RCRA definition of any of the processes listed above. Hazardous waste may also be handled

in research, development, and demonstration units as described in 40 CFR 270.85.

The promulgated standards limit organic emissions from (1) hazardous waste management unit process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air and stream stripping operations that manage waste with 10 ppmw or greater total organics concentration, and (2) leaks from equipment at new and existing hazardous waste management units that contain or contact hazardous waste streams with 10 percent or more total organics. The final equipment leak standards apply to each pump valve, compressor, pressure relief device, sampling connection, open-ended valve or line, flange, or other connector associated with the affected hazardous waste management unit. About 1,400 facilities are estimated to be potentially subject to the equipment leak standards (i.e., TSDf managing hazardous waste containing at least 10 percent organics). Of these, 450 are estimated to have process vents subject to the vent standards in subpart AA.

B. Use of Models in the Regulatory Development Process

In estimating baseline (i.e., unregulated) emissions, emission impacts of the regulatory options, and control costs for the options for equipment leaks, EPA made use of a combination of analytical and physical models of waste management processes. This approach was selected because insufficient facility-specific data are available to conduct a site-specific characterization of the entire TSDf industry. For example, the physical models of waste management processes (or units) were used as simplified representations of the equipment component mix expected to be associated with each particular hazardous waste management process. The model unit provides an estimate of the number of pumps, valves, open-ended lines, pressure relief valves, and sampling connections that are used in the waste management process. Although these models are not exact for each type of process, they provide a reasonable approximation of what can be expected on average; precise equipment counts for each unit at each facility are not available.

In the absence of sufficient site-specific data, EPA developed a model to calculate nationwide health, environmental, and cost impacts associated with hazardous waste TSDf. Details of the national impacts model can be found in the BID, appendix D.

This national impacts model was used to estimate the nationwide impacts necessary for comparison of the various TSDf equipment leak emission control options. The national impacts model is a complex computer program that uses a wide variety of information and data concerning the TSDf industry to calculate nationwide impacts through summation of approximate individual facility results. Information processed by the model includes results of TSDf industry surveys as well as characterizations and simulations of TSDf processes and wastes, emission factors of each type of management unit, the efficiencies and costs of emission control technologies, and exposure and health impacts of TSDf pollutants. This information is contained in several independent data files developed by EPA for use as inputs to the model. These data files are briefly described below.

Industry profile data identify the name, location, primary standard industrial classification (SIC) code, waste management processes, waste types, and waste volumes for each TSDf. The industry data were obtained from three principal sources: A 1988 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities; the Hazardous Waste Data Management System's RCRA part A permit applications; and the 1981 National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA. The industry data are used in the model to define the location and the SIC code for each facility and to identify the waste management units at each facility as well as the types and quantities of waste managed in each unit.

The hazardous waste characterization consists of waste data representative of typical wastes handled by facilities in each SIC code. The waste data are linked to specific facilities by the SIC code and the RCRA waste codes identified for that facility in the industry profile. The waste characterization data include chemical properties information that consists of constituent-specific data on the physical, chemical, and biological properties of a group of surrogate waste constituents that were developed to represent the more than 4,000 TSDf waste constituents identified in the waste data base. The surrogate categories were defined to represent actual organic compounds based on a combination of their vapor pressures, Henry's law constants, and biodegradability. The use of surrogate properties was instituted to compensate

for a lack of constituent-specific physical and chemical property data and to reduce the number of chemicals to be assessed by the model.

The emission factors data consist of emission factors, expressed as emissions per unit of waste throughput, for each combination of surrogate waste constituent and model waste management process. Each model waste management process was, in effect, a "national average model unit" that represented a weighted average of the operating parameters of existing waste management units. The EPA's LDAR model was used to develop emission control efficiencies and emission reductions for the TSDf equipment leak emission factors used in the analysis. This LDAR model is based on the Agency's extensive experience with equipment leaks in the petrochemical and synthetic organic chemical manufacturing industries.

Incidence data consist of estimates of annual cancer incidence for the population within 50 km of each TSDf. This information was developed using EPA's Human Exposure Model, 1980 census data, and local meteorological data summaries. Because some of the data used in the national impacts model are based on national average values rather than actual facility-specific data, maximum risk numbers generated by the model are not considered to be representative of facility-specific risks. Maximum individual risk has meaning only at the facility level. Therefore, EPA chose to use another methodology for estimating MIR for equipment leaks. This is discussed further in section VII.E.

Data related to emission control technologies and costs include information that describes control efficiencies, capital investment, and annual operating costs for each emission control option that is applicable to a particular waste management process. These data were obtained through engineering analyses of control device operations and the development of engineering cost estimates.

To make use of all of these data, the national impacts model contains procedures that (1) identify TSDf facilities, their waste management processes, waste compositions, and annual waste throughputs; (2) assign chemical properties to waste constituents and assign control devices to process units; and (3) calculate uncontrolled emissions, emissions reductions, control costs, and health impacts. Results produced by the model include, on a nationwide basis, uncontrolled emissions, controlled

emissions, capital investment costs, annual operating costs, annualized costs for controls, and annual cancer incidence. As previously stated, these nationwide values are obtained by summing the results of individual facility analyses across all facilities.

The primary objective and intended use of the national impacts model are to provide reasonable estimates of TSDF impacts on a nationwide basis. Because of the complexity of the hazardous waste management industry and the current lack of detailed information for individual TSDF, the model was developed to utilize national average data where site-specific data are not available. As a result, the estimated emissions and cancer incidence from the model do not represent the impacts for a specific individual facility. However, with national average data values used where site-specific data were missing, EPA believes that the estimates are reasonable on a nationwide basis and are adequate for decisionmaking.

C. Emission Impacts

Since proposal in February 1987, EPA has reviewed all available site-specific information and data on WSTF and TSDF, much of which has only become available since proposal. For example, EPA is conducting a multiyear project to collect information on the Nation's generation of hazardous waste and the capacity available to treat, store, dispose of, and recycle that waste. The initial phase of the project was the 1988 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities, which identified and collected summary information from all hazardous waste treatment, storage, disposal, and recycling facilities in the United States. The results of this "Screener Survey" together with data from other existing data bases (such as the Hazardous Waste Data Management System's RCRA part A applications; the National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981; the Industry Studies Database; a data base of 40 CFR 261.32 hazardous wastes from specific sources; the WET Model Hazardous Waste Data Base; and a data base created by the Illinois EPA) were used to support the development and analysis of these air emission regulations for hazardous waste TSDF. Additional sources of data on TSDF and waste solvent recycling operations included EPA field reports on hazardous waste facilities and responses to RCRA section 3007 information requests sent to a limited number of both large and small facilities. Based on all of this

information, EPA has revised and expanded the impact analyses, including estimates of emissions, risks, costs, and the economic impact on small businesses and on the industry as a whole.

Using the revised impact analyses, nationwide (unregulated) baseline equipment leak organic emissions from TSDF waste streams of 10 percent or greater total organics are estimated at 26,200 Mg/yr. This estimate includes equipment leak emissions from waste solvent treatment facilities and from other TSDF with hazardous waste management processes handling wastes with organic concentrations of 10 percent or greater, a total of about 1,400 facilities. The bases for these estimates are contained in the BID, appendix D.

Nationwide (unregulated) organic emissions from process vents at about 450 TSDF with solvent recovery operations range from 300 Mg/yr (based on lower-bound emission rates) to 8,100 Mg/yr (based on upper-bound emission rates). This wide emission range occurs because of variations in primary condenser recovery efficiencies and the use of secondary condensers at some sites. The lower-bound rate represents high recovery efficiencies at all facilities, and the upper-bound rate represents low recovery efficiencies at all facilities. Actual nationwide emissions should fall between these values.

With the implementation of the standards, nationwide TSDF equipment leak emissions will be reduced to about 7,200 Mg/yr; nationwide organic emissions from process vents will be reduced to a range from 270 Mg/yr (lower-bound emission rates) to 900 Mg/yr (upper-bound emission rates).

D. Ozone Impacts

Reductions in organic emissions from TSDF sources will have a positive impact on human health and the environment by reducing atmospheric ozone formation as a result of reductions in emissions of ozone precursors, primarily organic compounds. Ozone is a major problem in most larger cities, and EPA has estimated that more than 100 million people live in areas that are in violation of the ambient ozone standards. Ozone is a pulmonary irritant that can impair the normal functions of human lungs, may increase susceptibility to bacterial infections, and can result in other detrimental health effects. In addition, ozone can reduce the yields of citrus, cotton, potatoes, soybeans, wheat, spinach, and other crops, and can cause damage to conifer forests and a reduction in the fruit and seed diets of

wildlife. Because TSDF organic emissions account for about 12 percent of total nationwide organic emissions from stationary sources, today's rules will contribute to a reduction in ozone-induced health and environmental effects and will assist in attainment and maintenance of the ambient air quality standards for ozone. Table 1 summarizes the emissions and health risk impact estimates.

Ozone precursors and chlorofluorocarbons, whose emissions will be reduced by this rulemaking, are both considered greenhouse gases (i.e., gases whose accumulation in the atmosphere has been related to global warming). Although the regulation's direct impact on global warming has not been quantified, the direction being taken is a positive one. Implementation of these rules will reduce tropospheric ozone, which contributes to global warming.

E. Health Risk Impacts

Human health risks posed by exposure to TSDF air emissions are typically quantified in two forms: Annual cancer incidence and MIR. Annual cancer incidence is the estimated number of cancer cases per year due to exposure to TSDF emissions nationwide. The MIR, on the other hand, represents the potential risk to the one hypothetical individual who lives closest to a reasonable worst-case TSDF for a lifetime of 70 years. The MIR is derived from modeling a reasonable worst-case scenario and is not based on actual measurement of risk. It is not representative of the entire industry, and, in fact, may be experienced by few, if any, individuals. As explained in appendix B of the BID, there are great uncertainties in both these types of health risk estimates. These two health risk forms were used as an index to quantify health impacts related to TSDF emissions and emission controls. As discussed in section VI.D., an equipment-leak-specific, emission-weighted unit risk factor of 4.5×10^{-6} ($\mu\text{g}/\text{m}^3$)⁻¹ was used to estimate the nationwide annual cancer incidence and the MIR of contracting cancer associated with TSDF equipment leak organic emissions. See appendix B of the BID for a detailed analysis of the health risk impacts.

At proposal, order-of-magnitude health impacts were estimated for cancer risks from exposure to organic air emissions from WSTF and TSDF. The Human Exposure Model (HEM) was used to calculate the magnitude of risks posed by WSTF at both typical and maximum emission rates. Based on an

estimated urban/rural distribution, EPA selected six WSTF to represent the nationwide WSTF industry in performing the risk assessment. Using the results of the analysis of these "typical" facilities, health impacts were extrapolated to all WSTF and TSDF in general to provide nationwide estimates.

In the revised health impacts analysis for the final rules, annual cancer incidence and MIR were again used to quantify health impacts for the control alternatives for process vents and equipment leaks. However, in this followup analysis, the HEM was run using site-specific data on facility waste throughputs, emission rates, meteorology, and population density for each WSTF and TSDF nationwide identified in the various data bases.

The facility-specific information was obtained from three principal sources. Waste quantity and solvent recycling data were taken from the 1986 National Screener Survey; waste management

processing schemes and waste types managed in each facility were based on the Hazardous Waste Data Management System's (HWDMS) RCRA part A applications; the National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981 (Westat Survey); and the 1986 National Screener Survey.

In revising the methodology applied in assessing cancer risks, EPA conducted facility-specific HEM computer runs for nearly all of the 443 WSTF that reported, in the 1986 National Screener Survey, recycling and/or reuse of solvents and other organic compounds (i.e., TSDF expected to have the specified process vents) and for each of the more than 1,400 TSDF in the industry profile of 2,300 TSDF that were determined to manage wastes with at least 10 percent organic content. These HEM results were used to estimate nationwide cancer incidence for both

TSDF equipment leaks and process vents.

The nationwide annual incidence resulting from uncontrolled TSDF equipment leaks is estimated at 1.1 cases of cancer per year. Based on the estimated lower-bound emission rates, the nationwide cancer incidence from uncontrolled process vents is 0.015 case/yr. Based on the upper-bound emission rate, the incidence from process vents is 0.33 case/yr. With the application of the final process vent standards, based on lower-bound emission rates, the annual cancer incidence will be reduced to 0.001 from 0.015 case/yr. Based on upper-bound emission rates, annual incidence will be reduced to 0.027 case/yr from 0.33 case/yr. With the implementation of the LDAR program for equipment leak emissions, the annual cancer incidence associated with fugitive emissions will be reduced to about 0.32 case/yr.

TABLE 1. SUMMARY OF NATIONWIDE ENVIRONMENTAL AND HEALTH RISK IMPACTS OF TSDF AIR EMISSION REGULATIONS

ESDF source category	Nationwide emissions, Mg/yr		Annual incidence*, cases/yr		Maximum individual risk*	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Process vents*						
Lower bound.....	300	270	0.015	0.001	3×10^{-6}	2×10^{-6}
Upper bound.....	8,100	900	0.33	0.027	8×10^{-6}	4×10^{-6}
Equipment leaks.....	26,200	7,200	1.1	0.32	5×10^{-5}	1×10^{-5}

* Annual incidence and MIR are based on an emission-weighted average unit risk factor for TSDF.

* The lower- and upper-bound process vent emission estimates reflect the range of primary condensers' removal efficiencies and the use of secondary condensers on some primary condenser vents.

The HEM results were also used to estimate the MIR for process vents. For estimates of MIR associated with TSDF equipment leaks, a separate methodology was used for reasons discussed below.

There are three major problems in applying the methodology used to estimate cancer incidence, a nationwide value, to estimate MIR from equipment leaks, a site-specific value. The first problem concerns the emission estimation technique. Equipment count, and not the amount of waste handled, is the major determining factor for emission estimates from equipment leaks. Equipment counts do not double or triple accordingly as throughput is increased. Because the size of the model plant (and thus the equipment count) assigned to a waste management process was based on the amount of waste handled, emissions from equipment leaks will be overstated for larger facilities and understated for smaller facilities. This averages out on a nationwide basis, but individual facility

estimates are not considered accurate for estimates of MIR.

The second problem deals with the waste compositions and forms (e.g., wastewater and concentrated organics) attributed to each RCRA waste code (e.g., F001). A waste code may involve wastes in several forms. The determination of impacts was based on the national average waste form distribution for each particular waste code occurring at each facility. For example, if on average across the Nation, a particular organic waste solvent appears as an aqueous waste (very dilute organics) 20 percent of the time, as a sludge 50 percent of the time, and as an organic liquid 30 percent of the time, those percentages were applied to every facility that was identified to handle that type of waste regardless of the actual percentages of waste form found at the facility. In some cases, this resulted in larger facilities being assigned a much greater percentage of an organic liquid form than would actually be the case. Again, this

averages out on a nationwide basis, but for site-specific estimates such as MIR more refined determinations are required.

The third problem with using the HEM for equipment leaks is that the HEM does not model area sources directly; it collocates all emission sources at one central point and models the emissions as point sources. This is appropriate for estimates for process vents that are actual point sources, but not for equipment leaks. A typical TSDF would have several hundred equipment components with the potential for leaks that could be located over the entire facility area.

In estimating MIR for equipment leaks, EPA based its hypothetical, reasonable worst-case facility, in large part, on an actual facility. The EPA was able to characterize the facility in sufficient detail that dispersion estimates could be generated using a true area source dispersion model. This was possible because more detailed site-specific information has become

available on a limited basis since proposal. The preliminary results of a multiyear project to collect information on the Nation's generation of hazardous waste and the capacity available to treat, store, dispose of, and recycle that waste were used as the basis of the analysis. In the survey, all active treatment, storage, disposal, and recycling facilities (TSDR) were sent a detailed package of questionnaires appropriate to the processes they operate. The completed questionnaires were reviewed for technical accuracy; after independent verification, the information collected was entered into a complex data base. The TSDR survey questionnaire responses contain the most detailed up-to-date nationwide information regarding the hazardous waste management technologies each facility has on site. For each facility, detailed information is available in the data base, including facility area, numbers of hazardous waste management units by process type (i.e., number of surface impoundments, incinerators, recycling units), annual throughput by process unit, and types of waste (i.e., RCRA waste codes) managed by each unit at the facility. The availability of this information in computerized format made it possible to use the TSDR survey data base to identify facilities that represent the population of worst-case facilities with regard to equipment leak emissions and the potential for high MIR values. A detailed discussion of the health impacts methodologies is presented in appendix B of the BID.

The MIR estimate was made first by screening detailed TSDR Survey data for more than 1,400 TSDF to identify the facility that has the highest potential equipment leak emissions and the highest potential for these emissions to result in high ambient air concentrations (i.e., high emissions on a small facility area). Next, it was assumed that this facility handles hazardous wastes that have carcinogens with an emission-weighted potency equal to that of the nationwide average and that an individual was residing at the shortest distance from the TSDF management units to the nearest apparent residence. The highest annual-average ambient concentration, resulting from this high emission-rate facility, predicted to occur at the residence nearest the facility was then determined by dispersion modeling. The Industrial Source Complex Long-Term (ISCLT) dispersion model was used in the equipment leak MIR analysis to model the worst-case facility as a true area source with the actual facility area of about 1 acre as input. The highest

annual average out of the results of 5 years of meteorological data modeled for each of the eight cities used to characterize nationwide meteorology was selected for use in the MIR calculation. Thus, this MIR estimate is considered a reasonable worst-case estimate for the industry and should not be interpreted to represent a known risk posed by any actual facility in the industry.

The MIR resulting from TSDF baseline (or uncontrolled) equipment leak emissions is estimated at 5×10^{-3} , i.e., 5 chances in 1,000. Based on the estimated lower-bound emission rates for process vents, the MIR for uncontrolled process vents is about 3 chances in 100,000 (3×10^{-5}); based on the upper-bound emission rate, the MIR is 8×10^{-4} . Because of the uncertainties inherent in nationwide emission and risk estimates that must characterize the many different constituents present in a variety of TSDF operations, EPA considered the upper-bound estimates in its decisionmaking.

With the application of the final process vent standards, based on lower-bound emission rates, the MIR will be reduced to 2×10^{-6} from 3×10^{-5} . Based on the upper-bound emission rates, the MIR will be reduced to 4×10^{-6} from 8×10^{-4} . With the implementation of control requirements for equipment leak emissions that include monthly LDAR requirements for pumps and valves, caps for open-ended lines, closed-purge sampling, and rupture discs for pressure relief devices, the MIR associated with fugitive emissions will be reduced to about 1×10^{-5} from 5×10^{-3} . Appendix B of the BID, EPA 450/3-89-009, presents a detailed explanation of the derivation of these risk estimates.

The MIR estimate for equipment leaks is sensitive to several factors. Emissions are the most obvious factor controlling risk. The facility associated with the reported MIR for equipment leaks is one of the highest emitting TSDF in terms of equipment leaks, in the upper 99.5 percent for potential equipment leak emissions. If the analysis were to use the 85-percentile emissions (i.e., 85 percent of the TSDF nationwide have lower equipment leak emissions than this value), then MIR would drop from 1×10^{-3} to 5×10^{-4} with all other factors held constant.

Another factor affecting the MIR estimates is area of the emitting source. For these types of sources, risk is inversely proportional to the area of the emitting source. For example, given equal emissions, a facility located over 10 acres generally poses less risk than a facility on 1 acre. For the facility

presenting the highest risk in this rule, the MIR would drop from 1×10^{-3} to 2×10^{-4} if 10 acres were used in the estimate rather than 1 acre. It should also be pointed out that for the more than 1,400 TSDF surveyed in the EPA 1987 TSDR Survey, the median facility area was greater than 50 acres.

Distance to the nearest resident is another key variable in the risk estimate. The actual distance to the nearest residence (i.e., 250 ft) for the worst-case facility was used in calculating the reported MIR value; however, the median distance in a random sample of distances to the nearest residence reported in a survey of the hazardous waste generators was 1,000 ft. If this median distance were used in the estimate, even with the high emissions and the small area, the maximum risk value would drop from 1×10^{-3} to 2×10^{-4} . Meteorology is also a factor; the worst-case dispersion was used in the reported estimate. If an average case were used, then risk would drop to 6×10^{-4} with all other factors held constant.

As the above examples show, facilities with anything other than the combined worst-case factors would pose significantly less risk than the MIR reported for equipment leaks. The MIR estimates presented are, for the most part, based on worst-case or conservative assumptions; the one exception is the weighted-average cancer potency value, or unit risk factor (URF), used. The EPA believes it is unreasonable to make all worst-case assumptions for a single facility. However, because of the overall conservative nature of the analysis, for the industry as a whole, the vast majority of TSDF would pose significantly lower risk from equipment leak emissions than the reported reasonable, worst-case value.

F. Cost Impacts

The EPA developed a detailed estimate of the total capital investment, annual operating costs, and total annual costs of each emission control technology applied to each affected waste management unit. Total capital investment represents the total original cost of the installed control device. Total annual cost represents the total payment each year to repay the capital investment for the control device as well as to pay for the control device (or work practice) operating and maintenance expenses. The costs of attaining the 95-percent control or emission reduction for process vents are based on the use of condensers to control process vent streams for which condensation is

technically feasible and on the use of carbon adsorption systems to control the remaining process vent streams subject to the regulations. Because site-specific information was insufficient to determine which facilities could apply condensers rather than carbon adsorbers industry-wide, upper- and lower-bound cost estimates were generated for process vent controls. The upper-bound cost estimates are based on the assumption that fixed-bed, regenerable carbon adsorption systems would be required to control process vents at all facilities with emissions above the emission rate limit. Similarly, the lower-bound cost estimate is based on the assumption that condensers could be used to control process vents at all facilities with emissions above the emission rate limit.

The nationwide capital investment and total annual cost of implementing the requirements of today's rule for process vent controls are estimated at \$24.6 million and \$12.9 million/year, respectively, for the upper-bound case. For the lower-bound case, capital investment is \$1.5 million and total annual costs represent a small savings of \$70,000/yr. These costs are based on an industry profile that includes 73 large recycling facilities and 167 medium-sized recycling facilities. The more than 200 small recycling facilities are not included in the cost estimates because they are projected not to have to install additional controls to meet the facility emission rate limit.

The capital investment and total annual costs of controlling TSDf equipment leak emissions with the LDAR program together with some equipment specifications are estimated at \$126.6 million and \$32.9 million/yr, respectively. Table 2 summarizes capital and annual costs associated with the final rules.

Further information on the economic impacts of the final standards for organic control from TSDf process vents and equipment leaks is presented in section VIII of this preamble. Details of the analysis are presented in the BID, chapter 9.0.

TABLE 2.—SUMMARY OF NATIONWIDE COST IMPACTS OF TSDf AIR EMISSION REGULATIONS

TSDf source category	Nation-wide capital cost, \$ millions (1986)	Nation-wide annualized cost*, \$ millions/yr
Process vents*		
Lower bound.....	1.5	(0.1)

TABLE 2.—SUMMARY OF NATIONWIDE COST IMPACTS OF TSDf AIR EMISSION REGULATIONS—Continued

TSDf source category	Nation-wide capital cost, \$ millions (1986)	Nation-wide annualized cost*, \$ millions/yr
Upper bound.....	24.6	12.9
Equipment leaks.....	126.6	32.9

() indicates a cost credit.

* Includes a recovery credit for recycling. No recovery credit was applied for TSDf without recycling processes.

† The lower-bound cost estimates assume that condensers could be used to control process vents at all facilities with emissions above the emission rate limit; the upper-bound cost estimates assume that carbon adsorbers would be required to control process vents at all facilities with emissions above the emission rate limit.

VIII. State Authorization

A. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized States have primary enforcement responsibility under section 7002.

Prior to the HSWA of 1984, a State with final authorization administered its hazardous waste program entirely in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities in the State that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified timeframes. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under section 3006(g)(1) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. The EPA is directed to carry out those requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final

authorization, the HSWA requirements apply in authorized States in the interim.

B. Effect on State Authorizations

Today's rule is promulgated pursuant to section 3004(n) of RCRA, a provision added by HSWA. Therefore, EPA is adding the requirements to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1, as discussed in this section of the preamble.

The EPA will implement today's rule in authorized States until (1) they modify their programs to adopt these rules and receive final authorization for the modification or (2) they receive interim authorization as described below. Because this rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under section 3006(g)(2) or section 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations will expire automatically on January 1, 1993 (see 40 CFR 271.24(c)).

Section 271.21(e)(2) requires that authorized States must modify their programs to reflect Federal program changes and must subsequently submit the modifications to EPA for approval. The deadline for State program modifications for this rule is July 1, 1991 (or July 1, 1992, if a State statutory change is needed). These deadlines can be extended in certain cases [40 CFR 271.21(e)(3)]. Once EPA approves the modification, the State requirements become subtitle C RCRA requirements.

A State that submits its official application for final authorization less than 12 months after the effective date of these standards is not required to include standards equivalent to these standards in its application. However, the State must modify its program by the deadlines set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their applications. Section 271.3 sets forth the requirements a State must meet when submitting its final authorization application.

States that are authorized for RCRA may already have requirements under State law similar to those in today's rules. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

IX. Implementation

As proposed, the air emission standards for process vents and equipment leaks were included as subpart C of part 269, Air Emission Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities. Part 269 was to be added to the CFR with the promulgation of these standards. For consistency with standards for other TSDF sources under RCRA, the final standards have been incorporated into parts 264 and 265. Subpart AA applies to process vents and subpart BB to equipment leaks. In addition, whereas at proposal the equipment leak requirements of 40 CFR part 61, subpart V, were incorporated by reference, these provisions have been included in subpart BB with revisions appropriate for a standard promulgated under RCRA authority rather than CAA authority.

Under the current RCRA permitting system, a facility that has received a final permit must comply with all of the following requirements as specified in 40 CFR 270.4: (1) The specific conditions written into the permit (including conditions that demonstrate compliance with part 264 regulations); (2) self-implementing statutory requirements; and (3) regulations promulgated under 40 CFR part 268 restricting the placement of hazardous waste in or on the land. When new regulations are promulgated after the issuance of a permit, EPA may reopen the permit to incorporate the new requirements as stated in § 270.41. Otherwise, the new regulatory requirements are incorporated into a facility's permit at the time of permit reissuance, or at the 5-year review for land disposal facilities.

Facilities that have not been issued a final permit and that have fully complied with the requirements for interim status must comply with the regulations specified in CFR part 265. New regulations that are added to part 265 become applicable to interim status facilities on their effective dates.

Although EPA has the authority to reopen permits to incorporate the requirements of new standards, EPA is concerned about the resource burdens of this approach. To reopen permits for each new regulation at the time it is promulgated would impose a large administrative burden on both EPA and the regulated community because a major permit modification would generally require the same administrative procedures as are required for initial permits (e.g., development of a draft permit, public notice, and opportunity for public hearing). As a consequence, the requirements of new standards are usually incorporated into a permit when it is renewed. For standards implemented through the RCRA permit system, the effect of this policy is to "shield" facilities that have been issued a final permit from any requirements promulgated after the issuance of the permit until the time that the permit must be renewed and the new requirements are written into the permit. Thus, this policy is often referred to as the "permit-as-a-shield" policy. Although this policy is generally applied, EPA may evaluate the need to accelerate the implementation of standards developed under RCRA and, if warranted, make exceptions to the permit-as-a-shield policy. In today's rules, the permit-as-a-shield provision applies to control of air emissions from process vents and equipment leaks regulated under section 3004(n). However, as previously noted, in the Phase 11 TSDF air rules, EPA intends to propose modifications to permit-as-a-shield provisions as they apply to control of air emissions under these new subparts. With this proposed action, air rules promulgated under RCRA section 3004(n) would be applicable to all facilities, regardless of permit status.

Both interim status and permitted facilities must comply with the substantive control requirements of the final standards. However, facilities that have already been issued a final permit prior to the effective date of today's final rules are not required to comply with the rules until such time as the permit is reviewed or is reissued. Interim status facilities that have submitted their part B permit application are required to modify their part B

applications to incorporate the requirements of today's rules.

The EPA considers that the part 265 standards promulgated here can be satisfied without the need for detailed explanation or negotiation between the facility owner/operator and EPA and therefore, interim status facilities can comply without awaiting permit action. The self-implementing nature of these rules is achieved by including specific criteria for facility owners or operators to identify waste management units that are subject to the regulation and by clearly specifying the emission control and administrative requirements of the rules.

The criteria for applicability are that certain hazardous waste management units at new and existing TSDF that need authorization to operate under RCRA section 3005 are covered by the rules. The applicability includes all hazardous waste management units and recycling units at facilities that require RCRA permits. For the equipment leak standards to apply, the equipment must contain or contact hazardous wastes with a 10-percent-or-more total organics concentration. For the process vent standards to apply, the vents must be associated with specific hazardous waste management units, i.e., distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage wastes with 10 ppmw or greater total organics concentration.

Control requirements in the final regulation include specific design requirements for equipment and specific performance criteria (i.e., a weight-percent reduction and a volume concentration limit) for emission control devices. Provisions of the final standards also list specific types of equipment required. Owners and operators who use one of the listed types of equipment within the specified design and operational parameters would therefore be in compliance with the regulation as long as the required design, inspection, monitoring, and maintenance provisions were met. Specifications for emission controls that achieve at least a 95-weight-percent reduction in volatile organic emissions are somewhat less specific, but engineering design practices are sufficiently established that the combination of a good control device design and subsequent monitoring of operating parameters, as required by the final regulation, would offer reasonable assurance that the specified emission reduction is being achieved. Regardless of the type of control selected, owners and operators must maintain their own

records of control device design, installation, and monitoring and must submit reports identifying exceeders of monitored control device parameters. Periodic review of the required reports and records by EPA may be used to ensure compliance.

Because today's rules are promulgated under HSWA, all affected facilities must comply with these requirements on the effective date of the rule, regardless of the authorization status of the State in which they are located. In addition, because EPA will implement these rules in every State on the effective date, all reports should be sent to the EPA Regional Offices until the State receives authorization to implement these rules. Therefore, owners and operators of TSDF with existing waste management units subject to the provisions of subparts AA and BB must achieve compliance with the process vent and equipment leak control and monitoring requirements on the effective date of these rules (i.e., 6 months following promulgation) except where compliance would require the installation of a closed-vent system and control device. Information developed under other EPA regulations has shown that in some cases, the design, construction, and installation of a closed-vent system and control device can take as long as 24 months to complete. As a result, EPA is allowing up to 24 months from the promulgation date of the regulation for existing facilities to complete installation if they are required to install a closed-vent system and control device and if they can document that installation of the emission controls cannot reasonably be expected to be completed earlier. In these circumstances, owners/operators are required to develop an implementation schedule that indicates dates by which the design, construction, and operation of the necessary emission controls will be completed. This implementation schedule must document that installation of closed-vent systems and control devices required by the final standards would be achieved within a period of no more than 2 years from today and must be included as part of the facility's operating record on the effective date of these final rules (i.e., 6 months after promulgation). Changes in the implementation schedule are allowed within the 24-month timeframe if the owner or operator documents that the change cannot reasonably be avoided.

This extension would also apply to those existing facilities that are brought under regulation because of new statutory or regulatory amendments

under RCRA that render the facility subject to the provisions of subpart AA or BB (e.g., units handling wastes newly listed or identified as hazardous by EPA). That is, the owner or operator may be allowed up to 18 months from the effective date of the statutory or regulatory amendment to complete installation of a control device. However, for facilities adding new waste management units, EPA believes that the lead time involved in such actions provides adequate time for owners and operators to design, procure, and install the required controls. Therefore, all new units must comply with the rules immediately (i.e., must have control equipment installed and operating upon startup of the unit).

Under the approach discussed above, the standards promulgated today for process vents and equipment leaks would be implemented on the following schedule for existing TSDF:

- 180 days following promulgation, the new subparts AA and BB standards become effective; all facilities become subject to the new standards.
- On the effective date of the standards, compliance with the standards is required. Each facility that does not have the control devices required by the standards in place and operating must have one of the following in the facility's operating record: (1) An implementation schedule indicating when the controls will be installed, or (2) a process vent emission rate determination that documents that the emission rate limit is not exceeded (therefore, controls are not required).
- No later than 18 months following the effective date (2 years following promulgation), any control devices required by the standards for process vents and equipment leaks must be installed at all facilities.
- All permits issued after the effective date must incorporate the standards.

An existing solid waste management unit may become a hazardous waste management unit requiring a RCRA permit when a waste becomes newly listed or identified as hazardous. Owners and operators of facilities not previously requiring a RCRA permit who have existing units handling newly listed or identified hazardous waste can submit a part A application and obtain interim status. The air emission standards promulgated today would be implemented at these newly regulated facilities on the following schedule:

- 180 days following the date the managed waste is listed or identified as hazardous, the standards become effective; facilities become subject to the subpart AA and/or BB standards.

—On the effective date of the standards, each facility that does not have the control devices required by the process and/or equipment leak standards in place must have one of the following in the facility's operating record: (1) An implementation schedule indicating when the controls will be installed, or (2) a process vent emission rate determination that documents that the emission rate limit is not exceeded (therefore, controls are not required).

—No later than 18 months following the effective date (2 years following promulgation), the controls required by the standards must be installed at all facilities.

Newly constructed TSDF are required to submit part A and part B permit applications and to receive a final permit prior to construction as required by § 270.10. Following the effective date of the standards promulgated today, a part B application for a new facility must demonstrate compliance with the standards as contained in part 264, if applicable. Therefore, all controls required by the standards would have to be in place and operating upon startup.

Similarly, new waste management units added to existing facilities would have to be equipped with the required controls prior to startup. For a new unit added to an existing permitted facility, a permit modification would be necessary. Where a new unit is added to a facility in interim status, the owner or operator must submit a revised part A application (§ 270.72(c)), including an explanation of the need for the new unit, and then receive approval from the permitting authority.

For facilities with hazardous waste management units that previously were not subject to control requirements because the wastes in the units did not contain organics in concentrations greater than the applicability criterion of 10 ppmw or 10 percent, the owner or operator would be required to comply with all subpart AA or BB requirements on the date that the facility or waste management unit becomes affected by the rules (i.e., the date the facility begins to manage wastes in the units with organic concentrations greater than 10 ppmw for subpart AA or greater than 10 percent for subpart BB) irrespective of any change in permit status that is required by the change in waste concentration. In this situation, should the facility owner or operator elect to use a control device to comply with the process vent or equipment leak provisions, the control device must be installed and operating on the date when the unit becomes subject to the

rules; the 24-month extension is not applicable in this case. For the process vent emission rate limit, the situation is somewhat different. TSDF process vents associated with the distillation/separation operations specified in the rule that manage wastes with organics concentrations of 10 ppmw or greater are affected by the regulation regardless of whether the facility emissions are above or below the emission rate limit. Therefore, any change in the facility operations that results in a TSDF going above or below the emission rate limit does not cause a change in the applicability of the facility to subpart AA. The rules require that affected TSDF reduce total process vent organic emissions from all affected vents by 95 percent or reduce the facility's total process vent emissions to or below 1.4 kg/h and 2.8 Mg/yr. One of these conditions must be met at all times; the facility's emission rate determination, which documents the facility's status regarding compliance with the process vent standards, must also at all times reflect current design and operation and wastes managed in the affected units.

The permitting authority cited by section 3005 of RCRA and codified in § 270.32(b)(2) states that permits issued under this section " . . . shall contain such terms and conditions as the Administrator or State Director determines necessary to protect human health and the environment." This section, in effect, allows permit writers to require, on a case-by-case basis, emission controls that are more stringent than those specified by a standard. This omnibus authority could be used in situations where, in the permit writer's judgment, there is an unacceptably high residual risk after application of controls required by an emission standard. As has been stated, the approach that EPA is using in today's regulatory action is to proceed with promulgation of regulations to control organic emissions and to follow this with regulations that would require more stringent controls for individual hazardous constituents or would otherwise reduce risk where necessary. Until then, permit writers should use their omnibus permitting authority to require more stringent controls at facilities where a high residual risk remains after implementation of the standards for volatile organics.

X. Administrative Requirements

A. Regulatory Impact Analysis

Executive Order No. 12291 (E.O. 12291) requires each Federal agency to determine whether a regulation is a

"major" rule as defined by the order and, "to the extent permitted by law," to prepare and consider a Regulatory Impact Analysis (RIA) in connection with every major rule. Major rules are defined as those likely to result in:

1. An annual cost to the economy of \$100 million or more; or
2. A major increase in costs or prices for consumers or individual industries; or
3. Significant adverse effects on competition, employment, investment, productivity, innovation, or international trade.

The final rule establishes the specific emission levels and emission control programs that facilities must meet in reducing air emissions from hazardous waste management units. A complete assessment of the costs, impacts, and benefits of these rules has been conducted by EPA. This analysis indicates that the requirements of the rules for TSDF equipment leaks and process vents result in none of the economic effects set forth in section 1 of the E.O. 12291 as grounds for finding a regulation to be major. The industry-wide annualized costs of the standards are estimated to be \$46 million, which is less than the \$100 million established as the first criterion for a major regulation in E.O. 12291. Price increases associated with the final standards are not considered a "major increase in costs or prices" specified as the second criterion in E.O. 12291. The final standard's effect on the industry would not result in any significant adverse effects on competition, investment, productivity, employment, innovation, or the ability of U.S. firms to compete with foreign firms (the third criterion in E.O. 12291).

The final rule was submitted to the Office of Management and Budget (OMB) for review as required by E.O. 12291.

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act, whenever an Agency publishes any proposed or final rule in the Federal Register, it must prepare a Regulatory Flexibility Analysis (RFA) that describes the impact of the rule on small entities (i.e., small businesses, organizations, and governmental jurisdictions). This analysis is not necessary, however, if the Agency's Administrator certifies that the rule will not have a significant economic impact on a substantial number of small entities. The EPA has established guidelines for determining whether an RFA is required to accompany a rulemaking package. The guidelines state that if at least 20 percent of the universe of "small entities" is affected

by the rule, then an RFA is required. In addition, the EPA criteria are used to evaluate if a regulation will have a "significant impact" on small entities. If any one of the following four criteria is met, the regulation should be assumed to have a "significant impact":

1. Annual compliance costs increase the relevant production costs for small entities by more than 5 percent.
2. The ratio of compliance costs to sales will be 10 percent higher for small entities than for large entities.
3. Capital costs of compliance will represent a significant portion of the capital available to small entities, taking into account internal cash flow plus external financing capabilities.
4. The costs of the regulation will likely result in closures of small entities.

At proposal, EPA's Administrator certified that the rule would not have a significant impact on small businesses because the only entities subject to the rule are those required to have a permit for treatment, storage, and disposal of hazardous waste. Few, if any, of these facilities are small entities. Based on comments received at proposal, EPA reviewed this conclusion in light of the revisions made to the proposed standards and closely examined the potential impacts on the industry segment comprised primarily of small commercial recyclers. As a result of the revisions made to exempt small facilities from having to install control devices, EPA again concluded that the economic impact on small businesses will be minimal and did not prepare a formal RFA in support of the rule.

Accordingly, I hereby certify that this regulation will not have a significant impact on a substantial number of small entities. Therefore, this regulation does not require an RFA.

C. Paperwork Reduction Act

The information collection requirements contained in this rule have been approved by OMB under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. and have been assigned OMB control number 2060-0195.

Public reporting burden resulting from this rulemaking is estimated to be about 9 hours per response (on average), including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Recordkeeping requirements are estimated to require 180 hours a year for each facility.

Send comments regarding the burden estimate or any other aspect of this

collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs (Paperwork Reduction Project (2060-0195)), Office of Management and Budget, Washington, DC 20503, marked "Attention: Desk Officer for EPA."

D. Supporting Documentation

The dockets for this rulemaking (Docket No. F-86-AESP-FFFFF, which covers the development of the rules up to proposal, and Docket No. F-90-AESP-FFFFF, which covers development of the final rules from proposal to promulgation) are available for public inspection at the EPA RCRA Docket Office (OS-300) in room 2427M of the U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. The docket room is open from 9 a.m. to 4 p.m., Monday through Friday, except for Federal holidays. The public must make an appointment to review docket materials and should call (202) 475-9327 for appointments. Docket A-79-27, containing support information used in developing the National Emission Standard for Hazardous Air Pollutants; Benzene Fugitive Emissions, is available for public inspection and copying between 8 a.m. and 4 p.m., Monday through Friday, at EPA's Central Docket Section, room 2903B, Waterside Mall, 401 M Street SW., Washington, DC 20460. The public may copy a maximum of 50 pages of material from any one regulatory docket at no cost. Additional copies cost \$0.20/page. The docket contains a copy of all references cited in the BID for the proposed and final rules, as well as other relevant reports and correspondence.

E. List of Subjects

40 CFR Part 260

Air stripping operation, Closed-vent system, Condenser, Control device, Distillation operation, Equipment, Fractionation operation, Process vent, Solvent extraction operation, Steam stripping operation, Thin-film evaporation operation, Vapor incinerator, Vented, Incorporation by reference.

40 CFR Part 261

Hazardous waste, Recyclable materials, Recycling, Hazardous waste management units.

40 CFR Parts 264 and 265

Hazardous waste, Treatment, storage, and disposal facilities, Air emission standards for process vents, Air emission standards for equipment leaks, Incorporation by reference, Process vents, Closed-vent systems, Control devices' Pumps, Valves, Pressure relief devices, Sampling connection systems, Open-ended lines, Alternative standards, Test methods, Recordkeeping requirements, Reporting requirements.

40 CFR Part 270

Administrative practices and procedures, Hazardous waste permit program, Process vents, Equipment leaks, Reporting and recordkeeping requirements.

40 CFR Part 271

Hazardous waste, State hazardous waste programs, Process vent and equipment leak air emission standards for TSDF.

Dated June 13, 1990.

William K. Reilly,
Administrator.

For the reasons set out in the preamble, chapter I, title 40, of the Code of Federal Regulations, parts 260, 261, 264, 265, 270, and 271, are amended as follows.

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930, 6934, 6935, 6937, 6938, and 6939.

2. Section 260.11 is amended by adding the following references to paragraph (a):

§ 260.11 References.

(a) * * *

"ASTM Standard Method for Analysis of Reformed Gas by Gas Chromatography," ASTM Standard D 1946-82, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method)," ASTM Standard D 2382-83, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis," ASTM Standard E 169-87, available from American Society for Testing and

Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Practices for General Techniques of Infrared Quantitative Analysis," ASTM Standard E 168-88, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Practice for Packed Column Gas Chromatography," ASTM Standard E 260-85, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Test Method for Aromatics in Light Naphthas and Aviation Gasolines by Gas Chromatography," ASTM Standard D 2267-88, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"ASTM Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteriscope," ASTM Standard D 2879-86, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

"APTI Course 415: Control of Gaseous Emissions," EPA Publication EPA-450/2-81-005, December 1981, available from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

3. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6921, 6922, and 6937.

Subpart A—General

4. In § 261.6, paragraph (c)(1) is revised and paragraphs (c)(2)(iii) and (d) are added to read as follows:

§ 261.6 Requirements for recyclable materials.

(c)(1) Owners or operators of facilities that store recyclable materials before they are recycled are regulated under all applicable provisions of subparts A through L, AA, and BB of parts 264 and 265, and under parts 124, 266, 268, and 270 of this chapter and the notification requirements under section 3010 of RCRA, except as provided in paragraph (a) of this section. (The recycling process itself is exempt from regulation except as provided in § 261.6(d).)

(2) * * *

(iii) Section 261.6(d) of this chapter.

(d) Owners or operators of facilities subject to RCRA permitting requirements with hazardous waste management units that recycle hazardous wastes are subject to the requirements of subparts AA and BB of part 264 or 265 of this chapter.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

5. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

Subpart B—General Facility Standards

6. Section 264.13 is amended by revising paragraph (b)(6) to read as follows:

§ 264.13 General waste analysis.

(b) * * *

(6) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in §§ 264.17, 264.314, 264.341, 264.1034(d), 264.1063(d), and 268.7 of this chapter.

7. Section 264.15 is amended by revising the last sentence of paragraph (b)(4) to read as follows:

§ 264.15 General inspection requirements.

(b) * * *

(4) * * * At a minimum, the inspection schedule must include the terms and frequencies called for in §§ 264.174, 264.194, 264.228, 264.253, 264.254, 264.303, 264.347, 264.602, 264.1033, 264.1052, 264.1053, and 264.1058, where applicable.

Subpart E—Manifest System, Recordkeeping, and Reporting

8. Section 264.73 is amended by revising paragraphs (b)(3) and (b)(6) to read as follows:

§ 264.73 Operation record.

(b) * * *

(3) Records and results of waste analyses performed as specified in §§ 264.13, 264.17, 264.314, 264.341, 264.1034, 264.1063, 268.4(a), and 268.7 of this chapter.

(6) Monitoring, testing or analytical data, and corrective action where

required by subpart F and §§ 264.228, 264.253, 264.254, 264.276, 264.278, 264.280, 264.303, 264.309, 264.347, 264.602, 264.1034(c)—264.1034(f), 264.1035, 264.1063(d)—264.1063(i), and 264.1064.

9. Section 264.77 is amended by revising paragraph (c) to read as follows:

§ 264.77 Additional reports.

(c) As otherwise required by subparts F, K through N, AA, and BB.

10. 40 CFR part 264 is amended by adding subpart AA to read as follows:

Subpart AA—Air Emission Standards for Process Vents

264.1030 Applicability.
264.1031 Definitions.
264.1032 Standards: Process vents.
264.1033 Standards: Closed-vent systems and control devices.
264.1034 Test methods and procedures.
264.1035 Recordkeeping requirements.
264.1036 Reporting requirements.
264.1037–264.1049 [Reserved]

Subpart AA—Air Emission Standards for Process Vents

§ 264.1030 Applicability.

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in § 264.1).

(b) Except for §§ 264.1034(d) and 264.1035(e), this subpart applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10-ppmw, if these operations are conducted in:

- (1) Units that are subject to the permitting requirements of part 270, or
- (2) Hazardous waste recycling units that are located on hazardous waste management facilities otherwise subject to the permitting requirements of part 270.

(c) If the owner or operator of process vents subject to the requirements of §§ 264.1032 through 264.1036 has received a permit under section 3005 of RCRA prior to December 21, 1990 the requirements of §§ 264.1032 through 264.1036 must be incorporated when the permit is reissued under § 124.15 or reviewed under § 270.50.

[Note: The requirements of §§ 264.1032 through 264.1036 apply to process vents on hazardous waste recycling units previously exempt under paragraph 261.6(c)(1). Other exemptions under §§ 261.4, 262.34, and 264.1(g) are not affected by these requirements.]

§ 264.1031 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and parts 260–266.

Air stripping operation is a desorption operation employed to transfer one or more volatile components from a liquid mixture into a gas (air) either with or without the application of heat to the liquid. Packed towers, spray towers, and bubble-cap, sieve, or valve-type plate towers are among the process configurations used for contacting the air and a liquid.

Bottoms receiver means a container or tank used to receive and collect the heavier bottoms fractions of the distillation feed stream that remain in the liquid phase.

Closed-vent system means a system that is not open to the atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

Condenser means a heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase.

Connector means flanged, screwed, welded, or other joined fittings used to connect two pipelines or a pipeline and a piece of equipment. For the purposes of reporting and recordkeeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

Continuous recorder means a data-recording device recording an instantaneous data value at least once every 15 minutes.

Control device means an enclosed combustion device, vapor recovery system, or flare. Any device the primary function of which is the recovery or capture of solvents or other organics for use, reuse, or sale (e.g., a primary condenser on a solvent recovery unit) is not a control device.

Control device shutdown means the cessation of operation of a control device for any purpose.

Distillate receiver means a container or tank used to receive and collect liquid material (condensed) from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units.

Distillation operation means an operation, either batch or continuous, separating one or more feed stream(s) into two or more exit streams, each exit stream having component concentrations different from those in the feed stream(s). The separation is

achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

Double block and bleed system means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

Equipment means each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange, and any control devices or systems required by this subpart.

Flame zone means the portion of the combustion chamber in a boiler occupied by the flame envelope.

Flow indicator means a device that indicates whether gas flow is present in a vent stream.

First attempt at repair means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

Fractionation operation means a distillation operation or method used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.

Hazardous waste management unit shutdown means a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit. An unscheduled work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit for less than 24 hours is not a hazardous waste management unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping operation are not hazardous waste management unit shutdowns.

Hot well means a container for collecting condensate as in a steam condenser serving a vacuum-jet or steam-jet ejector.

In gas/vapor service means that the piece of equipment contains or contacts a hazardous waste stream that is in the gaseous state at operating conditions.

In heavy liquid service means that the piece of equipment is not in gas/vapor service or in light liquid service.

In light liquid service means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the components in the stream is greater than 0.3 kilopascals (kPa) at 20 °C, the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than

20 percent by weight, and the fluid is a liquid at operating conditions.

In situ sampling systems means nonextractive samplers or in-line samplers.

In vacuum service means that equipment is operating at an internal pressure that is at least 5 kPa below ambient pressure.

Malfunction means any sudden failure of a control device or a hazardous waste management unit or failure of a hazardous waste management unit to operate in a normal or usual manner, so that organic emissions are increased.

Open-ended valve or line means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

Pressure release means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

Process heater means a device that transfers heat liberated by burning fuel to fluids contained in tubes, including all fluids except water that are heated to produce steam.

Process vent means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

Repaired means that equipment is adjusted, or otherwise altered, to eliminate a leak.

Sensor means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

Separator tank means a device used for separation of two immiscible liquids.

Solvent extraction operation means an operation or method of separation in which a solid or solution is contacted with a liquid solvent (the two being mutually insoluble) to preferentially dissolve and transfer one or more components into the solvent.

Startup means the setting in operation of a hazardous waste management unit or control device for any purpose.

Steam stripping operation means a distillation operation in which vaporization of the volatile constituents of a liquid mixture takes place by the introduction of steam directly into the charge.

Surge control tank means a large-sized pipe or storage reservoir sufficient

to contain the surging liquid discharge of the process tank to which it is connected.

Thin-film evaporation operation means a distillation operation that employs a heating surface consisting of a large diameter tube that may be either straight or tapered, horizontal or vertical. Liquid is spread on the tube wall by a rotating assembly of blades that maintain a close clearance from the wall or actually ride on the film of liquid on the wall.

Vapor incinerator means any enclosed combustion device that is used for destroying organic compounds and does not extract energy in the form of steam or process heat.

Vented means discharged through an opening, typically an open-ended pipe or stack, allowing the passage of a stream of liquids, gases, or fumes into the atmosphere. The passage of liquids, gases, or fumes is caused by mechanical means such as compressors or vacuum-producing systems or by process-related means such as evaporation produced by heating and not caused by tank loading and unloading (working losses) or by natural means such as diurnal temperature changes.

§ 264.1032 Standards: Process vents.

(a) The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations managing hazardous wastes with organic concentrations of at least 10 ppmw shall either:

(1) Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or

(2) Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

(b) If the owner or operator installs a closed-vent system and control device to comply with the provisions of paragraph (a) of this section the closed-vent system and control device must meet the requirements of § 264.1033.

(c) Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests must conform with the requirements of § 264.1034(c).

(d) When an owner or operator and the Regional Administrator do not agree on determinations of vent emissions and/or emission reductions or total organic compound concentrations achieved by add-on control devices based on engineering calculations, the procedures in § 264.1034(c) shall be used to resolve the disagreement.

§ 264.1033 Standards: Closed-vent systems and control devices.

(a)(1) Owners or operators of closed-vent systems and control devices used to comply with provisions of this part shall comply with the provisions of this section.

(2) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this subpart on the effective date that the facility becomes subject to the provisions of this subpart must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 18 months after the effective date that the facility becomes subject to this subpart for installation and startup. All units that begin operation after December 21, 1990, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 2-year implementation schedule does not apply to these units.

(b) A control device involving vapor recovery (e.g., a condenser or adsorber) shall be designed and operated to recover the organic vapors vented to it with an efficiency of 95 weight percent or greater unless the total organic emission limits of § 264.1032(a)(1) for all affected process vents can be attained at an efficiency less than 95 weight percent.

(c) An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall be designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater; to achieve a total organic compound concentration of 20 ppmv, expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen; or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C. If a boiler or process heater is used as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

(d)(1) A flare shall be designed for and operated with no visible emissions

as determined by the methods specified in paragraph (e)(1) of this section, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) A flare shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f)(2)(iii) of this section.

(3) A flare shall be used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (e)(2) of this section.

(4)(i) A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, less than 18.3 m/s (60 ft/s), except as provided in paragraphs (d)(4) (ii) and (iii) of this section.

(ii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) is allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, less than the velocity, V_{max} , as determined by the method specified in paragraph (e)(4) of this section and less than 122 m/s (400 ft/s) is allowed.

(5) An air-assisted flare shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in paragraph (e)(5) of this section.

(6) A flare used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(e)(1) Reference Method 22 in 40 CFR part 60 shall be used to determine the compliance of a flare with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \left[\sum_{i=1}^n C_i H_i \right]$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mol is 20 °C;

K = Constant, 1.74×10^{-7} (1/ppm) (g mol/scm) (MJ/kcal) where standard temperature for (g mol/scm) is 20 °C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60 and measured for hydrogen and carbon monoxide by ASTM D 1946-82 (incorporated by reference as specified in § 260.11); and

H_i = Net heat of combustion of sample component i , kcal/9 mol at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D 2382-83 (incorporated by reference as specified in § 260.11) if published values are not available or cannot be calculated.

(3) The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D in 40 CFR part 60 as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

(4) The maximum allowed velocity in m/s, V_{max} , for a flare complying with paragraph (d)(4)(iii) of this section shall be determined by the following equation:

$$\log_{10}(V_{max}) = (H_T + 28.8)/31.7$$

where:

28.8 = Constant.

31.7 = Constant.

H_T = The net heating value as determined in paragraph (e)(2) of this section.

(5) The maximum allowed velocity in m/s, V_{max} , for an air-assisted flare shall be determined by the following equation:

$$V_{max} = 8.706 + 0.7084 (H_T)$$

where:

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(2) of this section.

(f) The owner or operator shall monitor and inspect each control device required to comply with this section to ensure proper operation and maintenance of the control device by implementing the following requirements:

(1) Install, calibrate, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control

device inlet but before the point at which the vent streams are combined.

(2) Install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor control device operation as specified below:

(i) For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.

(ii) For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

(iii) For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.

(iv) For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.

(v) For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.

(vi) For a condenser, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser, or

(B) A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. One temperature sensor shall be installed at a location in the exhaust vent stream

from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

(vii) For a carbon adsorption system that regenerates the carbon bed directly in the control device such as a fixed-bed carbon adsorber, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed, or

(B) A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

(3) Inspect the readings from each monitoring device required by paragraphs (1) and (2) of this section at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

(g) An owner or operator using a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon at a regular, predetermined time interval that is no longer than the carbon service life established as a requirement of § 264.1035(b)(4)(iii)(F).

(h) An owner or operator using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

(1) Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of § 264.1035(b)(4)(iii)(G), whichever is longer.

(2) Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of § 264.1035(b)(4)(iii)(G).

(i) An alternative operational or process parameter may be monitored if it can be demonstrated that another

parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.

(j) An owner or operator of an affected facility seeking to comply with the provisions of this part by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system is required to develop documentation including sufficient information to describe the control device operation and identify the process parameter or parameters that indicate proper operation and maintenance of the control device.

(k)(1) Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as § 264.1034(b).

(2) Closed-vent systems shall be monitored to determine compliance with this section during the initial leak detection monitoring, which shall be conducted by the date that the facility becomes subject to the provisions of this section, annually, and at other times as requested by the Regional Administrator.

(3) Detectable emissions, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected.

(4) A first attempt at repair shall be made no later than 5 calendar days after the emission is detected.

(l) Closed-vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 264.1034 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) When a closed-vent system is tested for compliance with no detectable emissions, as required in § 264.1033(k), the test shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the

procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The background level shall be determined as set forth in Reference Method 21.

(6) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(7) The arithmetic difference between

the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(c) Performance tests to determine compliance with § 264.1032(a) and with the total organic compound concentration limit of § 264.1033(c) shall comply with the following:

(1) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:

(i) Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.

(ii) Method 18 in 40 CFR part 60 for organic content.

(iii) Each performance test shall consist of three separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

(iv) Total organic mass flow rates shall be determined by the following equation:

$$E_n = Q_{ad} \left\{ \sum_{i=1}^n C_i MW_i \right\} [0.0416] [10^{-9}]$$

where:

E_n = Total organic mass flow rate, kg/h;

Q_{ad} = Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;

n = Number of organic compounds in the vent gas;

C_i = Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;

MW_i = Molecular weight of organic compound i in the vent gas, kg/kg-mol;

0.0416 = Conversion factor for molar volume, kg-mol/m³ (@ 293 K and 760 mm Hg);

10⁻⁹ = Conversion from ppm, ppm⁻¹.

(v) The annual total organic emission rate shall be determined by the following equation:

$$E_A = (E_n)(H)$$

where:

E_A = Total organic mass emission rate, kg/y;

E_n = Total organic mass flow rate for the process vent, kg/h;

H = Total annual hours of operations for the affected unit, h.

(vi) Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates (E_n as determined in paragraph (c)(1)(iv) of this section) and by summing the annual total organic mass emission rates (E_A as determined in paragraph (c)(1)(v) of this section) for all affected process vents at the facility.

(2) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute

representative conditions for the purpose of a performance test.

(3) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(i) Sampling ports adequate for the test methods specified in paragraph (c)(1) of this section.

(ii) Safe sampling platform(s).

(iii) Safe access to sampling platform(s).

(iv) Utilities for sampling and testing equipment.

(4) For the purpose of making compliance determinations, the time-weighted average of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Regional Administrator's approval, be determined using the average of the results of the two other runs.

(d) To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this subpart, the owner or operator must make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the waste management unit is less than

10 ppmw using one of the following two methods:

(1) Direct measurement of the organic concentration of the waste using the following procedures:

(i) The owner or operator must take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

(ii) For waste generated onsite, the grab samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples must be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

(iii) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060 or 8240 of SW-846 (incorporated by reference under § 260.11).

(iv) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-

weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(2) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(e) The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:

(1) By the effective date that the facility becomes subject to the provisions of this subpart or by the date when the waste is first managed in a waste management unit, whichever is later, and

(2) For continuously generated waste, annually, or

(3) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

(f) When an owner or operator and the Regional Administrator do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8240 may be used to resolve the dispute.

§ 264.1035 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping

system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For facilities that comply with the provisions of § 264.1033(a)(2), an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule must also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule must be in the facility operating record by the effective date that the facility becomes subject to the provisions of this subpart.

(2) Up-to-date documentation of compliance with the process vent standards in § 264.1032, including:

(i) Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan).

(ii) Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates, or vent stream organic compounds and concentrations) that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. If the owner or operator takes any action (e.g., managing a waste of different composition or increasing operating hours of affected waste management units) that would result in an increase in total organic emissions from affected process vents at the facility, then a new determination is required.

(3) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan. The test plan must include:

(i) A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at

the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.

(ii) A detailed engineering description of the closed-vent system and control device including:

(A) Manufacturer's name and model number of control device.

(B) Type of control device.

(C) Dimensions of the control device.

(D) Capacity.

(E) Construction materials.

(iii) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(4) Documentation of compliance with § 264.1033 shall include the following information:

(i) A list of all information references and sources used in preparing the documentation.

(ii) Records including the dates of each compliance test required by § 264.1033(k).

(iii) If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" (incorporated by reference as specified in § 260.11) or other engineering texts acceptable to the Regional Administrator that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with paragraphs (b)(4)(iii)(A) through (b)(4)(iii)(C) of this section may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as specified below.

(A) For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

(B) For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average

temperatures across the catalyst bed inlet and outlet.

(C) For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.

(D) For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also consider the requirements specified in § 264.1033(d).

(E) For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream, and design average temperatures of the coolant fluid at the condenser inlet and outlet.

(F) For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

(G) For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(iv) A statement signed and dated by the owner or operator certifying that the

operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(v) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit of § 264.1032(a) is achieved at an efficiency less than 95 weight percent or the total organic emission limits of § 264.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

(vi) If performance tests are used to demonstrate compliance, all test results.

(c) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of this part shall be recorded and kept up-to-date in the facility operating record. The information shall include:

(1) Description and date of each modification that is made to the closed-vent system or control device design.

(2) Identification of operating parameter, description of monitoring device, and diagram of monitoring sensor location or locations used to comply with § 264.1033 (f)(1) and (f)(2).

(3) Monitoring, operating, and inspection information required by paragraphs (f) through (k) of § 264.1033.

(4) Date, time, and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as specified below:

(i) For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 second at a minimum temperature of 760 °C. period when the combustion temperature is below 760 °C.

(ii) For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 weight percent or greater period when the combustion zone temperature is more than 28 °C below the design average combustion zone temperature established as a requirement of paragraph (b)(4)(iii)(A) of this section.

(iii) For a catalytic vapor incinerator, period when:

(A) Temperature of the vent stream at the catalyst bed inlet is more than 28 °C below the average temperature of the inlet vent stream established as a requirement of paragraph (b)(4)(iii)(B) of this section, or

(B) Temperature difference across the catalyst bed is less than 80 percent of the design average temperature difference established as a requirement of paragraph (b)(4)(iii)(B) of this section.

(iv) For a boiler or process heater, period when:

(A) Flame zone temperature is more than 28 °C below the design average flame zone temperature established as a requirement of paragraph (b)(4)(iii)(C) of this section, or

(B) Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of paragraph (b)(4)(iii)(C) of this section.

(v) For a flare, period when the pilot flame is not ignited.

(vi) For a condenser that complies with § 264.1033(f)(2)(vi)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20 percent greater than the design outlet organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(vii) For a condenser that complies with § 264.1033(f)(2)(vi)(B), period when:

(A) Temperature of the exhaust vent stream from the condenser is more than 6 °C above the design average exhaust vent stream temperature established as a requirement of paragraph (b)(4)(iii)(E) of this section; or

(B) Temperature of the coolant fluid exiting the condenser is more than 6 °C above the design average coolant fluid temperature at the condenser outlet established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(viii) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 264.1033(f)(2)(vii)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20 percent greater than the design exhaust vent stream organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(ix) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 264.1033(f)(2)(vii)(B),

period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(5) Explanation for each period recorded under paragraph (4) of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.

(6) For a carbon adsorption system operated subject to requirements specified in § 264.1033(g) or § 264.1033(h)(2), date when existing carbon in the control device is replaced with fresh carbon.

(7) For a carbon adsorption system operated subject to requirements specified in § 264.1033(h)(1), a log that records:

(i) Date and time when control device is monitored for carbon breakthrough and the monitoring device reading.

(ii) Date when existing carbon in the control device is replaced with fresh carbon.

(8) Date of each control device startup and shutdown.

(d) Records of the monitoring, operating, and inspection information required by paragraphs (c)(3)-(c)(8) of this section need be kept only 3 years.

(e) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Regional Administrator will specify the appropriate recordkeeping requirements.

(f) Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in § 264.1032 including supporting documentation as required by § 264.1034(d)(2) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

(Approved by the Office of Management and Budget under control number 2060-0195)

§ 264.1036 Reporting requirements.

(a) A semiannual report shall be submitted by owners and operators subject to the requirements of this subpart to the Regional Administrator by dates specified by the Regional Administrator. The report shall include the following information:

(1) The Environmental Protection Agency identification number, name, and address of the facility.

(2) For each month during the semiannual reporting period, dates

when the control device exceeded or operated outside of the design specifications as defined in § 264.1035(c)(4) and as indicated by the control device monitoring required by § 264.1033(f) and such exceedances were not corrected within 24 hours, or that a flare operated with visible emissions as defined in § 264.1033(d) and as determined by Method 22 monitoring, the duration and cause of each exceedance or visible emissions, and any corrective measures taken.

(b) If, during the semiannual reporting period, the control device does not exceed or operate outside of the design specifications as defined in § 264.1035(c)(4) for more than 24 hours or a flare does not operate with visible emissions as defined in § 264.1033(d), a report to the Regional Administrator is not required.

(Approved by the Office of Management and Budget under control number 2060-0195)

§§ 264.1037-264.1049 [Reserved].

11. 40 CFR part 264 is amended by adding subpart BB to read as follows:

Subpart BB—Air Emission Standards for Equipment Leaks

- 264.1050 Applicability.
- 264.1051 Definitions.
- 264.1052 Standards: Pumps in light liquid service.
- 264.1053 Standards: Compressors.
- 264.1054 Standards: Pressure relief devices in gas/vapor service.
- 264.1055 Standards: Sampling connecting systems.
- 264.1056 Standards: Open-ended valves or lines.
- 264.1057 Standards: Valves in gas/vapor service or in light liquid service.
- 264.1058 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors.
- 264.1059 Standards: Delay of repair.
- 264.1060 Standards: Closed-vent systems and control devices.
- 264.1061 Alternative standards for valves in gas/vapor service or in light liquid service: percentage of valves allowed to leak.
- 264.1062 Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair.
- 264.1063 Test methods and procedures.
- 264.1064 Recordkeeping requirements.
- 264.1065 Reporting requirements.
- 264.1066-264.1079 [Reserved]

Subpart BB—Air Emission Standards for Equipment Leaks

§ 264.1050 Applicability.

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of

hazardous wastes (except as provided in § 264.1).

(b) Except as provided in § 264.1064(k), this subpart applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in:

(1) Units that are subject to the permitting requirements of part 270, or

(2) Hazardous waste recycling units that are located on hazardous waste management facilities otherwise subject to the permitting requirements of part 270.

(c) If the owner or operator of equipment subject to the requirements of §§ 264.1052 through 264.1065 has received a permit under section 3005 of RCRA prior to December 21, 1990, the requirements of §§ 264.1052 through 264.1065 must be incorporated when the permit is reissued under § 124.15 or reviewed under § 270.50.

(d) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

(e) Equipment that is in vacuum service is excluded from the requirements of § 264.1052 to § 264.1060 if it is identified as required in § 264.1064(g)(5).

[Note: The requirements of §§ 264.1052 through 264.1065 apply to equipment associated with hazardous waste recycling units previously exempt under § 261.6(c)(1). Other exemptions under §§ 261.4, 262.34, and 264.1(g) are not affected by these requirements.]

§ 264.1051 Definitions.

As used in this subpart, all terms shall have the meaning given them in § 264.1031, the Act, and parts 260-266.

§ 264.1052 Standards: Pumps in light liquid service.

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in § 264.1063(b), except as provided in paragraphs (d), (e), and (f) of this section.

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) If a instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is

detected, except as provided in § 264.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a) of this section, *provided* the following requirements are met:

(1) Each dual mechanical seal system must be:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure, or

(ii) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of § 264.1060, or

(iii) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.

(2) The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(3) Each barrier fluid system must be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump must be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(5)(i) Each sensor as described in paragraph (d)(3) of this section must be checked daily or be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly.

(ii) The owner or operator must determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii) of this section, a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(iii) A first attempt at repair (e.g., relapping the seal) shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 264.1064(g)(2), for no detectable emissions, as indicated by an

instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump meets the following requirements:

(1) Must have no externally actuated shaft penetrating the pump housing.

(2) Must operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in § 264.1063(c).

(3) Must be tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(f) If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 264.1060, it is exempt from the requirements of paragraphs (a) through (e) of this section.

§ 264.1053 Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except as provided in paragraphs (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) of this section shall be:

(1) Operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure, or

(2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of § 264.1060, or

(3) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to atmosphere.

(c) The barrier fluid must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(d) Each barrier fluid system as described in paragraphs (a) through (c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly unless the compressor is located within the boundary of an unmanned plant site, in which case the sensor must be checked daily.

(2) The owner or operator shall determine, based on design considerations and operating

experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of § 264.1060, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in § 264.1064(g)(2), for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of paragraphs (a) through (h) of this section if the compressor:

(1) Is determined to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 264.1063(c).

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

§ 264.1054 Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 264.1063(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but not later than 5 calendar days after each pressure release, except as provided in § 264.1059.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as

measured by the method specified in § 264.1063(c).

(c) Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in § 264.1060 is exempt from the requirements of paragraphs (a) and (b) of this section.

§ 264.1055 Standards: Sampling connecting systems.

(a) Each sampling connection system shall be equipped with a closed purge system or closed-vent system.

(b) Each closed-purge system or closed-vent system as required in paragraph (a) shall:

(1) Return the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to atmosphere, or

(2) Collect and recycle the purged hazardous waste stream with no detectable emissions to atmosphere, or

(3) Be designed and operated to capture and transport all the purged hazardous waste stream to a control device that complies with the requirements of § 264.1060.

(c) *In situ* sampling systems are exempt from the requirements of paragraphs (a) and (b) of this section.

§ 264.1056 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the hazardous waste stream end is closed before the second valve is closed.

(c) When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) of this section at all other times.

§ 264.1057 Standards: Valves in gas/vapor service or in light liquid service.

(a) Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in § 264.1063(b) and shall comply with paragraphs (b) through (e) of this section, except as provided in paragraphs (f), (g), and (h) of this section, and §§ 264.1061 and 264.1062.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for two successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in § 264.1059.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

(1) Tightening of bonnet bolts.

(2) Replacement of bonnet bolts.

(3) Tightening of packing gland nuts.

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 264.1064(g)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) of this section if the valve:

(1) Has no external actuating mechanism in contact with the hazardous waste stream.

(2) Is operated with emissions less than 500 ppm above background as determined by the method specified in § 264.1063(c).

(3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(g) Any valve that is designated, as described in § 264.1064(h)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section.

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 264.1064(h)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve cannot be

monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(2) The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 264.1058 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors.

(a) Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors shall be monitored within 5 days by the method specified in § 264.1063(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 264.1057(e).

§ 264.1059 Standards: Delay of repair.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment shall occur before the end of the next hazardous waste management unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair.

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with § 264.1060.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next hazardous waste management unit shutdown will not be allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

§ 264.1060 Standards: Closed-vent systems and control devices.

Owners or operators of closed-vent systems and control devices shall comply with the provisions of § 264.1033.

§ 264.1061 Alternative standards for valves in gas/vapor service or in light liquid service: percentage of valves allowed to leak.

(a) An owner or operator subject to the requirements of § 264.1057 may elect to have all valves within a hazardous waste management unit comply with an alternative standard that allows no greater than 2 percent of the valves to leak.

(b) The following requirements shall be met if an owner or operator decides to comply with the alternative standard of allowing 2 percent of valves to leak:

(1) An owner or operator must notify the Regional Administrator that the owner or operator has elected to comply with the requirements of this section.

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Regional Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 264.1057(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves subject to the requirements in § 264.1057 within the hazardous waste management unit shall be monitored within 1 week by the methods specified in § 264.1063(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves subject to the requirements in § 264.1057 for which leaks are detected by the total number of valves subject to the requirements in § 264.1057 within the hazardous waste management unit.

(d) If an owner or operator decides to comply with this section no longer, the owner or operator must notify the Regional Administrator in writing that the work practice standard described in § 264.1057(a) through (e) will be followed.

§ 264.1062 Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair.

(a)(1) An owner or operator subject to the requirements of § 264.1057 may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of this section.

(2) An owner or operator must notify the Regional Administrator before implementing one of the alternative work practices.

(b)(1) An owner or operator shall comply with the requirements for valves, as described in § 264.1057, except as described in paragraphs (b)(2) and (b)(3) of this section.

(2) After two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves subject to the requirements in § 264.1057.

(3) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves subject to the requirements in § 264.1057.

(4) If the percentage of valves leaking is greater than 2 percent, the owner or operator shall monitor monthly in compliance with the requirements in § 264.1057, but may again elect to use this section after meeting the requirements of § 264.1057(c)(1).

(Approved by the Office of Management and Budget under control number 2060-0185)

§ 264.1063 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) Leak detection monitoring, as required in §§ 264.1052-264.1062, shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 264.1052(e), 264.1053(i), 264.1054, and 264.1057(f), the test shall comply with the following requirements:

(1) The requirements of paragraphs (b)(1) through (4) of this section shall apply.

(2) The background level shall be determined as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d) In accordance with the waste analysis plan required by § 264.13(b), an owner or operator of a facility must determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight using the following:

(1) Methods described in ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (incorporated by reference under § 260.11);

(2) Method 9060 or 8240 of SW-846 (incorporated by reference under § 260.11); or

(3) Application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced. Documentation of a waste determination by knowledge is required. Examples of documentation that shall

be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to have a total organic content less than 10 percent, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(e) If an owner or operator determines that a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the determination can be revised only after following the procedures in paragraph (d)(1) or (d)(2) of this section.

(f) When an owner or operator and the Regional Administrator do not agree on whether a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the procedures in paragraph (d)(1) or (d)(2) of this section can be used to resolve the dispute.

(g) Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.

(h) To determine if pumps or valves are in light liquid service, the vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-88 (incorporated by reference under § 260.11).

(i) Performance tests to determine if a control device achieves 95 weight percent organic emission reduction shall comply with the procedures of § 264.1034(c)(1) through (c)(4).

§ 264.1064 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For each piece of equipment to which Subpart BB of Part 264 applies:

(i) Equipment identification number and hazardous waste management unit identification.

(ii) Approximate locations within the facility (e.g., identify the hazardous waste management unit on a facility plot plan).

(iii) Type of equipment (e.g., a pump or pipeline valve).

(iv) Percent-by-weight total organics in the hazardous waste stream at the equipment.

(v) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).

(vi) Method of compliance with the standard (e.g., "monthly leak detection and repair" or "equipped with dual mechanical seals").

(2) For facilities that comply with the provisions of § 264.1033(a)(2), an implementation schedule as specified in § 264.1033(a)(2).

(3) Where an owner or operator chooses to use test data to demonstrate the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan as specified in § 264.1035(b)(3).

(4) Documentation of compliance with § 264.1060, including the detailed design documentation or performance test results specified in § 264.1035(b)(4).

(c) When each leak is detected as specified in §§ 264.1052, 264.1053, 264.1057, and 264.1058, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with § 264.1058(a), and the date the leak was detected, shall be attached to the leaking equipment.

(2) The identification on equipment, except on a valve, may be removed after it has been repaired.

(3) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in §§ 264.1057(c) and no leak has been detected during those 2 months.

(d) When each leak is detected as specified in §§ 264.1052, 264.1053, 264.1057, and 264.1058, the following information shall be recorded in an inspection log and shall be kept in the facility operating record:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date evidence of a potential leak was found in accordance with § 264.1058(a).

(3) The date the leak was detected and the dates of each attempt to repair the leak.

(4) Repair methods applied in each attempt to repair the leak.

(5) "Above 10,000" if the maximum instrument reading measured by the methods specified in § 264.1063(b) after each repair attempt is equal to or greater than 10,000 ppm.

(6) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(7) Documentation supporting the delay of repair of a valve in compliance with § 264.1059(c).

(8) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.

(9) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(10) The date of successful repair of the leak.

(e) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of § 264.1060 shall be recorded and kept up-to-date in the facility operating record as specified in § 264.1035(c). Design documentation is specified in § 264.1035(c)(1) and (c)(2) and monitoring, operating, and inspection information in § 264.1035(c)(3)-(c)(8).

(f) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Regional Administrator will specify the appropriate recordkeeping requirements.

(g) The following information pertaining to all equipment subject to the requirements in §§ 264.1052 through 264.1060 shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 264.1052(e), 264.1053(i), and 264.1057(f).

(ii) The designation of this equipment as subject to the requirements of §§ 264.1052(e), 264.1053(i), or 264.1057(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with § 264.1054(a).

(4)(i) The dates of each compliance test required in §§ 264.1052(e), 264.1053(i), 264.1054, and 264.1057(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(h) The following information pertaining to all valves subject to the requirements of § 264.1057 (g) and (h) shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(i) The following information shall be recorded in the facility operating record for valves complying with § 264.1062:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(j) The following information shall be recorded in a log that is kept in the facility operating record:

(1) Criteria required in § 264.1052(d)(5)(ii) and § 264.1053(e)(2) and an explanation of the design criteria.

(2) Any changes to these criteria and the reasons for the changes.

(k) The following information shall be recorded in a log that is kept in the facility operating record for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis determining the design capacity of the hazardous waste management unit.

(2) A statement listing the hazardous waste influent to and effluent from each hazardous waste management unit subject to the requirements in §§ 264.1052 through 264.1060 and an analysis determining whether these hazardous wastes are heavy liquids.

(3) An up-to-date analysis and the supporting information and data used to determine whether or not equipment is subject to the requirements in §§ 264.1052 through 264.1060. The record shall include supporting documentation as required by § 264.1063(d)(3) when application of the knowledge of the

nature of the hazardous waste stream or the process by which it was produced is used. If the owner or operator takes any action (e.g., changing the process that produced the waste) that could result in an increase in the total organic content of the waste contained in or contacted by equipment determined not to be subject to the requirements in §§ 264.1052 through 264.1060, then a new determination is required.

(l) Records of the equipment leak information required by paragraph (d) of this section and the operating information required by paragraph (e) of this section need be kept only 3 years.

(m) The owner or operator of any facility that is subject to this subpart and to regulations at 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to determine compliance with this subpart by documentation either pursuant to § 264.1064 of this subpart, or pursuant to those provisions of 40 CFR part 60 or 61, to the extent that the documentation under the regulation at 40 CFR part 60 or part 61 duplicates the documentation required under this subpart. The documentation under the regulation at 40 CFR part 60 or part 61 shall be kept with or made readily available with the facility operating record.

(Approved by the Office of Management and Budget under control number 2060-0195)

§ 264.1065 Reporting requirements.

(a) A semiannual report shall be submitted by owners and operators subject to the requirements of this subpart to the Regional Administrator by dates specified by the Regional Administrator. The report shall include the following information:

(1) The Environmental Protection Agency identification number, name, and address of the facility.

(2) For each month during the semiannual reporting period:

(i) The equipment identification number of each valve for which a leak was not repaired as required in § 264.1057(d).

(ii) The equipment identification number of each pump for which a leak was not repaired as required in § 264.1052 (c) and (d)(6).

(iii) The equipment identification number of each compressor for which a leak was not repaired as required in § 264.1053(g).

(3) Dates of hazardous waste management unit shutdowns that occurred within the semiannual reporting period.

(4) For each month during the semiannual reporting period, dates when the control device installed as required by § 264.1052, 264.1053,

264.1054, or 264.1055 exceeded or operated outside of the design specifications as defined in § 264.1064(e) and as indicated by the control device monitoring required by § 264.1060 and was not corrected within 24 hours, the duration and cause of each exceedance, and any corrective measures taken.

(b) If, during the semiannual reporting period, leaks from valves, pumps, and compressors are repaired as required in §§ 264.1057 (d), 264.1052 (c) and (d)(6), and 264.1053 (g), respectively, and the control device does not exceed or operate outside of the design specifications as defined in § 264.1064(e) for more than 24 hours, a report to the Regional Administrator is not required.

(Approved by the Office of Management and Budget under control number 2060-0195)

§§ 264.1066-264.1079 [Reserved]

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

12. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6095, 6912(a), 6924, 6925, and 6935.

Subpart B—General Facility Standards

13. Section 265.13 is amended by revising paragraph (b)(6) to read as follows:

§ 265.13 General waste analysis.

• • • • •

(b) • • •

(6) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in §§ 265.193, 265.225, 265.252, 265.273, 265.314, 265.341, 265.375, 265.402, 265.1034(d), 265.1063(d), and 268.7 of this chapter.

14. Section 265.15 is amended by revising the last sentence of paragraph (b)(4) to read as follows:

§ 265.15 General inspection requirements.

• • • • •

(b) • • •

(4) • • • At a minimum, the inspection schedule must include the terms and frequencies called for in §§ 265.174, 265.193, 265.195, 265.226, 265.347, 265.377, 265.403, 265.1033, 265.1052, 265.1053, and 265.1058.

• • • • •

Subpart E—Manifest System, Recordkeeping, and Reporting

15. Section 265.73 is amended by revising paragraphs (b)(3) and (b)(6) to read as follows:

§ 265.73 Operating record.

(b) * * *

(3) Records and results of waste analyses and trial tests performed as specified in §§ 265.13, 265.193, 265.225, 265.252, 265.273, 265.314, 265.341, 265.375, 265.402, 265.1034, 265.1063, 268.4(a), and 268.7 of this chapter.

(6) Monitoring, testing or analytical data when required by §§ 265.90, 265.94, 265.191, 265.193, 265.195, 265.276, 265.278, 265.280(d)(1), 265.347, 265.377, 265.1034(c)—265.1034(f), 265.1035, 265.1063(d)—265.1063(i), and 265.1064.

16. Section 265.77 is amended by adding paragraph (d) as follows:

§ 265.77 Additional reports.

(d) As otherwise required by Subparts AA and BB.

17. 40 CFR part 265 is amended by adding Subpart AA to read as follows:

Subpart AA—Air Emission Standards for Process Vents

265.1030 Applicability.
265.1031 Definitions.
265.1032 Standards: Process vents.
265.1033 Standards: Closed-vent systems and control devices.
265.1034 Test methods and procedures.
265.1035 Recordkeeping requirements.
265.1036—265.1049 [Reserved]

Subpart AA—Air Emission Standards for Process Vents**§ 265.1030 Applicability.**

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in § 265.1).

(b) Except for §§ 265.1034(d) and 265.1035(d), this subpart applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw, if these operations are conducted in:

- (1) Units that are subject to the permitting requirements of part 270, or
- (2) Hazardous waste recycling units that are located on hazardous waste management facilities otherwise subject to the permitting requirements of part 270.

[Note: The requirements of §§ 265.1032 through 265.1036 apply to process vents on hazardous waste recycling units previously exempt under paragraph 261.6(c)(1). Other exemptions under §§ 261.4, 262.34, and 265.1(c) are not affected by these requirements.]

§ 265.1031 Definitions.

As used in this subpart, all terms shall have the meaning given them in § 264.1031, the Act, and parts 260–268.

§ 265.1032 Standards: Process vents.

(a) The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction or air or steam stripping operations managing hazardous wastes with organic concentrations at least 10 ppmw shall either:

(1) Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or

(2) Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

(b) If the owner or operator installs a closed-vent system and control device to comply with the provisions of paragraph (a) of this section, the closed-vent system and control device must meet the requirements of § 265.1033.

(c) Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests must conform with the requirements of § 265.1034(c).

(d) When an owner or operator and the Regional Administrator do not agree on determinations of vent emissions and/or emission reductions or total organic compound concentrations achieved by add-on control devices based on engineering calculations, the test methods in § 265.1034(c) shall be used to resolve the disagreement.

§ 265.1033 Standards: Closed-vent systems and control devices.

(a)(1) Owners or operators of closed-vent systems and control devices used to comply with provisions of this part shall comply with the provisions of this section.

(2) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this subpart on the effective date that the

facility becomes subject to the provisions of this subpart must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 18 months after the effective date that the facility becomes subject to this subpart for installation and startup. All units that begin operation after December 21, 1990 must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 2-year implementation schedule does not apply to these units.

(b) A control device involving vapor recovery (e.g., a condenser or adsorber) shall be designed and operated to recover the organic vapors vented to it with an efficiency of 95 weight percent or greater unless the total organic emission limits of § 265.1032(a)(1) for all affected process vents can be attained at an efficiency less than 95 weight percent.

(c) An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall be designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater; to achieve a total organic compound concentration of 20 ppmv, expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen; or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C. If a boiler or process heater is used as the control device, then the vent stream shall be introduced into the flame combustion zone of the boiler or process heater.

(d)(1) A flare shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (e)(1) of this section, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) A flare shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f)(2)(iii) of this section.

(3) A flare shall be used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater, if the flare is steam-assisted or air-assisted; or if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (e)(2) of this section.

(4)(i) A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, of less than 18.3 m/s (60 ft/s), except as provided in paragraphs (d)(4)(ii) and (iii) of this section.

(ii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) is allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, less than the velocity, V_{max} , as determined by the method specified in paragraph (e)(4) of this section, and less than 122 m/s (400 ft/s) is allowed.

(5) An air-assisted flare shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in paragraph (e)(5) of this section.

(6) A flare used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(e)(1) Reference Method 22 in 40 CFR part 60 shall be used to determine the compliance of a flare with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \left[\sum_{i=1}^n C_i H_i \right]$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mol is 20 °C;

K = Constant, 1.74×10^{-7} (1/ppm) (g mol/scm) (MJ/kcal) where standard temperature for (g mol/scm) is 20 °C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60 and measured for hydrogen and carbon monoxide by ASTM D 1946-82 (incorporated by reference as specified in § 260.11); and

H_i = Net heat of combustion of sample component i , kcal/g mol at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D 2382-83 (incorporated by reference as specified in § 260.11) if published values are not available or cannot be calculated.

(3) The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D in 40 CFR part 60 as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

(4) The maximum allowed velocity in m/s, V_{max} , for a flare complying with paragraph (d)(4)(iii) of this section shall be determined by the following equation:

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

where:

H_T = The net heating value as determined in paragraph (e)(2) of this section.

28.8 = Constant.

31.7 = Constant.

(5) The maximum allowed velocity in m/s, V_{max} , for an air-assisted flare shall be determined by the following equation:

$$V_{max} = 8.706 + 0.7084 (H_T)$$

where:

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(2) of this section.

(f) The owner or operator shall monitor and inspect each control device required to comply with this section to ensure proper operation and maintenance of the control device by implementing the following requirements:

(1) Install, calibrate, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet, but before being combined with other vent streams.

(2) Install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor control device operation as specified below:

(i) For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in °C or ± 0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.

(ii) For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in °C or ± 0.5 °C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

(iii) For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.

(iv) For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in °C or ± 0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.

(v) For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.

(vi) For a condenser, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser; or

(B) A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in °C or ± 0.5 °C, whichever is greater. One temperature sensor shall be installed at a location in the exhaust vent stream from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

(vii) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly in the control device, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed, or

(B) A monitoring device equipped with a continuous recorder to measure a

parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

(3) Inspect the readings from each monitoring device required by paragraphs (f) (1) and (2) of this section at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

(g) An owner or operator using a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device, shall replace the existing carbon in the control device with fresh carbon at a regular, predetermined time interval that is no longer than the carbon service life established as a requirement of § 265.1035(b)(4)(iii)(F).

(h) An owner or operator using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

(1) Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of § 265.1035(b)(4)(iii)(G), whichever is longer.

(2) Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of § 265.1035(b)(4)(iii)(G).

(i) An owner or operator of an affected facility seeking to comply with the provisions of this part by using a control device other than a thermal vapor incinerator, catalytic vapor

incinerator, flare, boiler, process heater, condenser, or carbon adsorption system is required to develop documentation including sufficient information to describe the control device operation and identify the process parameter or parameters that indicate proper operation and maintenance of the control device.

(j)(1) Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as § 265.1034(b).

(2) Closed-vent systems shall be monitored to determine compliance with this section during the initial leak detection monitoring which shall be conducted by the date that the facility becomes subject to the provisions of this section, annually, and at other times as requested by the Regional Administrator.

(3) Detectable emissions, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected.

(4) A first attempt at repair shall be made no later than 5 calendar days after the emission is detected.

(k) Closed-vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 265.1034 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) When a closed-vent system is tested for compliance with no detectable emissions, as required in § 265.1033(j), the test shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The background level shall be determined as set forth in Reference Method 21.

(6) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(7) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(c) Performance tests to determine compliance with § 265.1032(a) and with the total organic compound concentration limit of § 265.1033(c) shall comply with the following:

(1) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:

(i) Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.

(ii) Method 18 in 40 CFR part 60 for organic content.

(iii) Each performance test shall consist of three separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

(iv) Total organic mass flow rates shall be determined by the following equation:

$$E_o = Q_{vm} \left[\sum_{i=1}^n C_i MW_i \right] [0.0416] [10^{-9}]$$

where:

E_o = Total organic mass flow rate, kg/h;

Q_{vm} = Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;

n = Number of organic compounds in the vent gas;

C_i = Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;

MW_i = Molecular weight of organic compound i in the vent gas, kg/kg-mol;

0.0418 = Conversion factor for molar volume, kg-mol/m³ (@ 293 K and 760 mm Hg);
10⁻⁶ = Conversion from ppm, ppm⁻¹.

(v) The annual total organic emission rate shall be determined by the following equation:

$$E_A = (E_n) (H)$$

where:

E_A = Total organic mass emission rate, kg/y;

E_n = Total organic mass flow rate for the process vent, kg/h;

H = Total annual hours of operations for the affected unit, h.

(vi) Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates (E_n , as determined in paragraph (c)(1)(v) of this section) and by summing the annual total organic mass emission rates (E_A , as determined in paragraph (c)(1)(v) of this section) for all affected process vents at the facility.

(2) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(3) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(i) Sampling ports adequate for the test methods specified in paragraph (c)(1) of this section.

(ii) Safe sampling platform(s).

(iii) Safe access to sampling platform(s).

(iv) Utilities for sampling and testing equipment.

(4) For the purpose of making compliance determinations, the time-weighted average of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Regional Administrator's approval, be determined using the average of the results of the two other runs.

(d) To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this subpart, the owner or operator must make an initial determination that the time-weighted, annual average total organic

concentration of the waste managed by the waste management unit is less than 10 ppmw using one of the following two methods:

(1) Direct measurement of the organic concentration of the waste using the following procedures:

(i) The owner or operator must take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

(ii) For waste generated onsite, the grab samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples must be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

(iii) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060 or 8240 of SW-846 (incorporated by reference under § 260.11).

(iv) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(2) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that

could affect the waste total organic concentration.

(e) The determination that distillation fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted annual average total organic concentrations less than 10 ppmw shall be made as follows:

(1) By the effective date that the facility becomes subject to the provisions of this subpart or by the date when the waste is first managed in a waste management unit, whichever is later; and

(2) For continuously generated waste, annually; or

(3) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

(f) When an owner or operator and the Regional Administrator do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8240 can be used to resolve the dispute.

§ 265.1035 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For facilities that comply with the provisions of § 265.1033(a)(2), an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule must also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule must be in the facility operating record by the effective date that the facility becomes subject to the provisions of this subpart.

(2) Up-to-date documentation of compliance with the process vent standards in § 265.1032, including:

(i) Information and data identifying all affected process vents, annual

throughput end operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan); and

(ii) Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates or vent stream organic compounds and concentrations) that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. If the owner or operator takes any action (e.g., managing a waste of different composition or increasing operating hours of affected waste management units) that would result in an increase in total organic emissions from affected process vents at the facility, then a new determination is required.

(3) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan. The test plan must include:

(i) A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.

(ii) A detailed engineering description of the closed-vent system and control device including:

(A) Manufacturer's name and model number of control device.

(B) Type of control device.

(C) Dimensions of the control device.

(D) Capacity.

(E) Construction materials.

(iii) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(4) Documentation of compliance with § 265.1033 shall include the following information:

(i) A list of all information references and sources used in preparing the documentation.

(ii) Records including the dates of each compliance test required by § 265.1033(j).

(iii) If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" (incorporated by reference as specified in § 260.11) or other engineering texts acceptable to the Regional Administrator that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with paragraphs (b)(4)(iii)(A) through (b)(4)(iii)(G) of this section may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as specified below.

(A) For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

(B) For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

(C) For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.

(D) For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also consider the requirements specified in § 265.1033(d).

(E) For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic

compound concentration level, design average temperature of the condenser exhaust vent stream, and design average temperatures of the coolant fluid at the condenser inlet and outlet.

(F) For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

(G) For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(iv) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(v) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit of § 265.1032(a) is achieved at an efficiency less than 95 weight percent or the total organic emission limits of § 265.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

(vi) If performance tests are used to demonstrate compliance, all test results.

(c) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of this part shall be recorded and kept up-to-date in the facility operating record. The information shall include:

(1) Description and date of each modification that is made to the closed-vent system or control device design.

(2) Identification of operating parameter, description of monitoring device, and diagram of monitoring sensor location or locations used to comply with § 265.1033(f)(1) and (f)(2).

(3) Monitoring, operating and inspection information required by paragraphs (f) through (j) of § 265.1033.

(4) Date, time, and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as specified below:

(i) For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C, period when the combustion temperature is below 760 °C.

(ii) For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 percent or greater, period when the combustion zone temperature is more than 28 °C below the design average combustion zone temperature established as a requirement of paragraph (b)(4)(iii)(A) of this section.

(iii) For a catalytic vapor incinerator, period when:

(A) Temperature of the vent stream at the catalyst bed inlet is more than 28 °C below the average temperature of the inlet vent stream established as a requirement of paragraph (b)(4)(iii)(B) of this section; or

(B) Temperature difference across the catalyst bed is less than 80 percent of the design average temperature difference established as a requirement of paragraph (b)(4)(iii)(B) of this section.

(iv) For a boiler or process heater, period when:

(A) Flame zone temperature is more than 28 °C below the design average flame zone temperature established as a requirement of paragraph (b)(4)(iii)(C) of this section; or

(B) Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of paragraph (b)(4)(iii)(C) of this section.

(v) For a flare, period when the pilot flame is not ignited.

(vi) For a condenser that complies with § 265.1033(f)(2)(vi)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20 percent greater than the design outlet organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(vii) For a condenser that complies with § 265.1033(f)(2)(vi)(B), period when:

(A) Temperature of the exhaust vent stream from the condenser is more than 6 °C above the design average exhaust vent stream temperature established as a requirement of paragraph (b)(4)(iii)(E) of this section; or

(B) Temperature of the coolant fluid exiting the condenser is more than 6 °C above the design average coolant fluid temperature at the condenser outlet established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(viii) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 265.1033(f)(2)(vii)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20 percent greater than the design exhaust vent stream organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(ix) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 265.1033(f)(2)(vii)(B), period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(5) Explanation for each period recorded under paragraph (3) of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.

(6) For carbon adsorption systems operated subject to requirements specified in § 265.1033(g) or § 265.1033(h)(2), date when existing carbon in the control device is replaced with fresh carbon.

(7) For carbon adsorption systems operated subject to requirements specified in § 265.1033(h)(1), a log that records:

(i) Date and time when control device is monitored for carbon breakthrough and the monitoring device reading.

(ii) Date when existing carbon in the control device is replaced with fresh carbon.

(8) Date of each control device startup and shutdown.

(d) Records of the monitoring, operating, and inspection information required by paragraphs (c)(3) through (c)(8) of this section need be kept only 3 years.

(e) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, monitoring and inspection information indicating proper operation and maintenance of the control device must be recorded in the facility operating record.

(f) Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in § 265.1032 including supporting documentation as required by § 265.1034(d)(2) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

(Approved by the Office of Management and Budget under control number 2060-0195)

§§ 265.1036-265.1049 [Reserved]

18. 40 CFR part 265 is amended by adding subpart BB to read as follows:

Subpart BB—Air Emission Standards for Equipment Leaks

- 265.1050 Applicability.
- 265.1051 Definitions.
- 265.1052 Standards: Pumps in light liquid service.
- 265.1053 Standards: Compressors.
- 265.1054 Standards: Pressure relief devices in gas/vapor service.
- 265.1055 Standards: Sampling connecting systems.
- 265.1056 Standards: Open-ended valves or lines.
- 265.1057 Standards: Valves in gas/vapor service or in light liquid service.
- 265.1058 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors.
- 265.1059 Standards: Delay of repair.
- 265.1060 Standards: Closed-vent systems and control devices.
- 265.1061 Alternative standards for valves in gas/vapor service or in light liquid service: percentage of valves allowed to leak.
- 265.1062 Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair.
- 265.1063 Test methods and procedures.
- 265.1064 Recordkeeping requirements.
- 265.1065-265.1079 [Reserved]

Subpart BB—Air Emission Standards for Equipment Leaks**§ 265.1050 Applicability.**

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in § 265.1).

(b) Except as provided in § 265.1064(j), this subpart applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in:

(1) Units that are subject to the permitting requirements of part 270, or

(2) Hazardous waste recycling units that are located on hazardous waste management facilities otherwise subject to the permitting requirements of part 270.

(c) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

(d) Equipment that is in vacuum service is excluded from the requirements of § 265.1052 to § 265.1060 if it is identified as required in § 265.1064(g)(5).

[Note: The requirements of §§ 265.1052 through 265.1064 apply to equipment associated with hazardous waste recycling units previously exempt under paragraph 261.6(c)(1). Other exemptions under §§ 261.4, 262.34, and 265.1(c) are not affected by these requirements.]

§ 265.1051 Definitions.

As used in this subpart, all terms shall have the meaning given them in § 264.1031, the Act, and parts 260–266.

§ 265.1052 Standards: Pumps in light liquid service.

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in § 265.1063(b), except as provided in paragraphs (d), (e), and (f) of this section.

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 265.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a), *provided* the following requirements are met:

(1) Each dual mechanical seal system must be:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure, or

(ii) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of § 265.1060, or

(iii) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.

(2) The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(3) Each barrier fluid system must be equipped with a sensor that will detect failure of the seal system, the barrier fluid system or both.

(4) Each pump must be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(5)(i) Each sensor as described in paragraph (d)(3) of this section must be checked daily or be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly.

(ii) The owner or operator must determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii) of this section, a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 265.1059.

(iii) A first attempt at repair (e.g., relapping the seal) shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 265.1064(g)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and

(d) of this section if the pump meets the following requirements:

(1) Must have no externally actuated shaft penetrating the pump housing.

(2) Must operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in § 265.1063(c).

(3) Must be tested for compliance with paragraph (a)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(f) If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 265.1060, it is exempt from the requirements of paragraphs (a) through (e) of this section.

§ 265.1053 Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except as provided in paragraphs (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) of this section shall be:

(1) Operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure, or

(2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of § 265.1060, or

(3) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to atmosphere.

(c) The barrier fluid must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(d) Each barrier fluid system as described in paragraphs (a) through (c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly unless the compressor is located within the boundary of an unmanned plant site, in which case the sensor must be checked daily.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates

failure of the seal system, the barrier fluid system or both.

(f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 265.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of § 265.1060, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in § 265.1064(g)(2), for no detectable emission as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of paragraphs (a) through (h) of this section if the compressor:

(1) Is determined to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 265.1063(c).

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

§ 265.1054 Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 265.1063(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but not later than 5 calendar days after each pressure release, except as provided in § 265.1059.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 265.1063(c).

(c) Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in § 265.1060 is exempt from the requirements of paragraphs (a) and (b) of this section.

§ 265.1055 Standards: Sampling connecting systems.

(a) Each sampling connection system shall be equipped with a closed-purge system or closed-vent system.

(b) Each closed-purge system or closed-vent system as required in paragraph (a) shall:

(1) Return the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to atmosphere, or

(2) Collect and recycle the purged hazardous waste stream with no detectable emissions to atmosphere, or

(3) Be designed and operated to capture and transport all the purged hazardous waste stream to a control device that complies with the requirements of § 265.1060.

(c) *In situ* sampling systems are exempt from the requirements of paragraphs (a) and (b) of this section.

§ 265.1056 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the hazardous waste stream end is closed before the second valve is closed.

(c) When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) of this section at all other times.

§ 265.1057 Standards: Valves in gas/vapor service or in light liquid service.

(a) Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in § 265.1063(b) and shall comply with paragraphs (b) through (e) of this section, except as provided in paragraphs (f), (g), and (h) of this section and §§ 265.1061 and 265.1062.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected, except as provided in § 265.1059.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

- (1) Tightening of bonnet bolts.
- (2) Replacement of bonnet bolts.
- (3) Tightening of packing gland nuts.
- (4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 265.1064(g)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) of this section if the valve:

(1) Has no external actuating mechanism in contact with the hazardous waste stream.

(2) Is operated with emissions less than 500 ppm above background as determined by the method specified in § 265.1063(c).

(3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(g) Any valve that is designated, as described in § 265.1064(h)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section.

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 265.1064(h)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve cannot be monitored without elevating the

monitoring personnel more than 2 meters above a support surface.

(2) The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 265.1058 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors.

(a) Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors shall be monitored within 5 days by the method specified in § 265.1063(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 265.1059.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 265.1057(e).

§ 265.1059 Standards: Delay of repair.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment shall occur before the end of the next hazardous waste management unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair.

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with § 265.1060.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next hazardous waste management unit shutdown will not be allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

§ 265.1060 Standards: Closed-vent systems and control devices.

Owners or operators of closed-vent systems and control devices shall comply with the provisions of § 265.1033.

§ 265.1061 Alternative standards for valves in gas/vapor service or in light liquid service: percentage of valves allowed to leak.

(a) An owner or operator subject to the requirements of § 265.1057 may elect to have all valves within a hazardous waste management unit comply with an alternative standard which allows no greater than 2 percent of the valves to leak.

(b) The following requirements shall be met if an owner or operator decides to comply with the alternative standard of allowing 2 percent of valves to leak:

(1) An owner or operator must notify the Regional Administrator that the owner or operator has elected to comply with the requirements of this section.

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Regional Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 265.1057 (d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves subject to the requirements in § 265.1057 within the hazardous waste management unit shall be monitored within 1 week by the methods specified in § 265.1063(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of

valves subject to the requirements in § 265.1057 for which leaks are detected by the total number of valves subject to the requirements in § 265.1057 within the hazardous waste management unit.

(d) If an owner or operator decides no longer to comply with this section, the owner or operator must notify the Regional Administrator in writing that the work practice standard described in § 265.1057 (a) through (e) will be followed.

§ 265.1062 Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair.

(a)(1) An owner or operator subject to the requirements of § 265.1057 may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of this section.

(2) An owner or operator must notify the Regional Administrator before implementing one of the alternative work practices.

(b)(1) An owner or operator shall comply with the requirements for valves, as described in § 265.1057, except as described in paragraphs (b)(2) and (b)(3) of this section.

(2) After two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves subject to the requirements in § 265.1057.

(3) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves subject to the requirements in § 265.1057.

(4) If the percentage of valves leaking is greater than 2 percent, the owner or operators shall monitor monthly in compliance with the requirements in § 265.1057, but may again elect to use this section after meeting the requirements of § 265.1057(c)(1).

§ 265.1063 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) Leak detection monitoring, as required in §§ 265.1052-265.1062, shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR Part 60.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 265.1052(e), 265.1053(i), 265.1054, and 265.1057(f), the test shall comply with the following requirements:

(1) The requirements of paragraphs (b) (1) through (4) of this section shall apply.

(2) The background level shall be determined, as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d) In accordance with the waste analysis plan required by § 265.13(b), an owner or operator of a facility must determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight using the following:

(1) Methods described in ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (incorporated by reference under § 260.11);

(2) Method 9060 or 8240 of SW-846 (incorporated by reference under § 260.11); or

(3) Application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced. Documentation of a waste determination by knowledge is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility

that has previously been demonstrated by direct measurement to have a total organic content less than 10 percent, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(e) If an owner or operator determines that a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the determination can be revised only after following the procedures in paragraph (d)(1) or (d)(2) of this section.

(f) When an owner or operator and the Regional Administrator do not agree on whether a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the procedures in paragraph (d)(1) or (d)(2) of this section can be used to resolve the dispute.

(g) Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.

(h) To determine if pumps or valves are in light liquid service, the vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86 (incorporated by reference under § 260.11).

(i) Performance tests to determine if a control device achieves 95 weight percent organic emission reduction shall comply with the procedures of § 265.1034 (c)(1) through (c)(4).

§ 265.1064 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For each piece of equipment to which subpart BB of part 265 applies:

(i) Equipment identification number and hazardous waste management unit identification.

(ii) Approximate locations within the facility (e.g., identify the hazardous

waste management unit on a facility plot plan).

(iii) Type of equipment (e.g., a pump or pipeline valve).

(iv) Percent-by-weight total organics in the hazardous waste stream at the equipment.

(v) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).

(vi) Method of compliance with the standard (e.g., "monthly leak detection and repair" or "equipped with dual mechanical seals").

(2) For facilities that comply with the provisions of § 265.1033(a)(2), an implementation schedule as specified in § 265.1033(a)(2).

(3) Where an owner or operator chooses to use test data to demonstrate the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan as specified in § 265.1035(b)(3).

(4) Documentation of compliance with § 265.1060, including the detailed design documentation or performance test results specified in § 265.1035(b)(4).

(c) When each leak is detected as specified in §§ 265.1052, 265.1953, 265.1057, and 265.1058, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with § 265.1058(a), and the date the leak was detected, shall be attached to the leaking equipment.

(2) The identification on equipment, except on a valve, may be removed after it has been repaired.

(3) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in § 265.1057(c) and no leak has been detected during those 2 months.

(d) When each leak is detected as specified in §§ 265.1052, 265.1053, 265.1057, and 265.1058, the following information shall be recorded in an inspection log and shall be kept in the facility operating record:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date evidence of a potential leak was found in accordance with § 265.1058(a).

(3) The date the leak was detected and the dates of each attempt to repair the leak.

(4) Repair methods applied in each attempt to repair the leak.

(5) "Above 10,000" if the maximum instrument reading measured by the methods specified in § 265.1063(b) after

each repair attempt is equal to or greater than 10,000 ppm.

(6) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(7) Documentation supporting the delay of repair of a valve in compliance with § 265.1059(c).

(8) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.

(9) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(10) The date of successful repair of the leak.

(e) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of § 265.1060 shall be recorded and kept up-to-date in the facility operating record as specified in § 265.1035(c). Design documentation is specified in § 265.1035 (c)(1) and (c)(2) and monitoring, operating, and inspection information in § 265.1035 (c)(3)-(c)(8).

(f) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, monitoring and inspection information indicating proper operation and maintenance of the control device must be recorded in the facility operating record.

(g) The following information pertaining to all equipment subject to the requirements in §§ 265.1052 through 265.1060 shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 265.1052(e), 265.1053(i), and 265.1057(f).

(ii) The designation of this equipment as subject to the requirements of §§ 265.1052(e), 265.1053(i), or 265.1057(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with § 265.1054(a).

(4)(i) The dates of each compliance test required in §§ 265.1052(e), 265.1053(i), 265.1054, and 265.1057(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(h) The following information pertaining to all valves subject to the requirements of § 265.1057 (g) and (h) shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(i) The following information shall be recorded in the facility operating record for valves complying with § 265.1062:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(j) The following information shall be recorded in a log that is kept in the facility operating record:

(1) Criteria required in §§ 265.1052(d)(5)(ii) and 265.1053(e)(2) and an explanation of the criteria.

(2) Any changes to these criteria and the reasons for the changes.

(k) The following information shall be recorded in a log that is kept in the facility operating record for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis determining the design capacity of the hazardous waste management unit.

(2) A statement listing the hazardous waste influent to and effluent from each hazardous waste management unit subject to the requirements in §§ 265.1052 through 265.1060 and an analysis determining whether these hazardous wastes are heavy liquids.

(3) An up-to-date analysis and the supporting information and data used to determine whether or not equipment is subject to the requirements in §§ 265.1052 through 265.1060. The record shall include supporting documentation as required by § 265.1063(d)(3) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used. If the owner or operator takes any action (e.g., changing the process that produced the waste) that could result in an increase in the total organic content of the waste contained in or contacted

by equipment determined not to be subject to the requirements in §§ 265.1052 through 265.1060, then a new determination is required.

(l) Records of the equipment leak information required by paragraph (d) of this section and the operating information required by paragraph (e) of this section need be kept only 3 years.

(m) The owner or operator of any facility that is subject to this subpart and to regulations at 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to determine compliance with this subpart by documentation either pursuant to § 265.1064 of this subpart, or pursuant to those provisions of 40 CFR part 60 or 61, to the extent that the documentation under the regulation at 40 CFR part 60 or part 61 duplicates the documentation required under this subpart. The documentation under the regulation at 40 CFR part 60 or part 61 shall be kept with or made readily available with the facility operating record.

(Approved by the Office of Management and Budget under control number 2060-0195)

§§ 265.1065-265.1079 [Reserved]

PART 270—EPA-ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

19. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6921-6927, 6930, 6934, 6935, 6937-6939, and 6974.

Subpart B—Permit Application

20. Section 270.14 is amended by revising the last sentence of paragraph (b)(5) and by revising paragraphs (b)(8)(iv), (v), and by adding paragraph (b)(8)(vi) to read as follows:

§ 270.14 Contents of Part B: General requirements

• • • • •

(b) • • •

(5) • • • Include, where applicable, as part of the inspection schedule, specific requirements in §§ 264.174, 264.193(i), 264.195, 264.226, 264.254, 264.273, 264.303, 264.602, 264.1033, 264.1052, 264.1053, and 264.1058.

• • • • •

(8) • • •

(iv) Mitigate effects of equipment failure and power outages;

(v) Prevent undue exposure of personnel to hazardous waste (for example, protective clothing); and

(vi) Prevent releases to atmosphere.

• • • • •

Section 270.24 is added to read as follows:

§ 270.24 Specific Part B information requirements for process vents.

Except as otherwise provided in § 264.1, owners and operators of facilities that have process vents to which subpart AA of part 264 applies must provide the following additional information:

(a) For facilities that cannot install a closed-vent system and control device to comply with the provisions of 40 CFR 264 subpart AA on the effective date that the facility becomes subject to the provisions of 40 CFR 264 or 265 subpart AA, an implementation schedule as specified in § 264.1033(a)(2).

(b) Documentation of compliance with the process vent standards in § 264.1032, including:

(1) Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan).

(2) Information and data supporting estimates of vent emissions and emission reduction achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, estimates of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates, or concentrations) that represent the conditions that exist when the waste management unit is operating at the highest load or capacity level reasonably expected to occur.

(3) Information and data used to determine whether or not a process vent is subject to the requirements of § 264.1032.

(c) Where an owner or operator applies for permission to use a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system to comply with the requirements of § 264.1032, and chooses to use test data to determine the organic removal efficiency or the total organic compound concentration achieved by the control device, a performance test plan as specified in § 264.1035(b)(3).

(d) Documentation of compliance with § 264.1033, including:

(1) A list of all information references and sources used in preparing the documentation.

(2) Records including the dates of each compliance test required by § 264.1033(k).

(3) A design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" (incorporated by reference as specified in § 260.11) or other engineering texts acceptable to the Regional Administrator that present basic control device design information. The design analysis shall address the vent stream characteristics and control device operation parameters as specified in § 264.1035(b)(4)(iii).

(4) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(5) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 weight percent or greater unless the total organic emission limits of § 264.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent.

(Approved by the Office of Management and Budget under control number 2060-0195)

22. Section 270.25 is added as follows:

§ 270.25 Specific part B information requirements for equipment.

Except as otherwise provided in § 264.1, owners and operators of facilities that have equipment to which subpart BB of part 264 applies must provide the following additional information:

(a) For each piece of equipment to which subpart BB of part 264 applies:

(1) Equipment identification number and hazardous waste management unit identification.

(2) Approximate locations within the facility (e.g., identify the hazardous waste management unit on a facility plot plan).

(3) Type of equipment (e.g., a pump or pipeline valve).

(4) Percent by weight total organics in the hazardous waste stream at the equipment.

(5) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).

(6) Method of compliance with the standard (e.g., "monthly leak detection and repair" or "equipped with dual mechanical seals").

(b) For facilities that cannot install a closed-vent system and control device to comply with the provisions of 40 CFR 264 subpart BB on the effective date that the facility becomes subject to the provisions of 40 CFR 264 or 265 subpart BB, an implementation schedule as specified in § 264.1033(a)(2).

(c) Where an owner or operator applies for permission to use a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system and chooses to use test data to determine the organic removal efficiency or the total organic compound concentration achieved by the control device, a performance test plan as specified in § 264.1035(b)(3).

(d) Documentation that demonstrates compliance with the equipment standards in §§ 264.1052 to 264.1059. This documentation shall contain the records required under § 264.1064. The Regional Administrator may request further documentation before deciding if compliance has been demonstrated.

(e) Documentation to demonstrate compliance with § 264.1060 shall include the following information:

(1) A list of all information references and sources used in preparing the documentation.

(2) Records including the dates of each compliance test required by § 264.1033(j).

(3) A design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "ATPI Course 415: Control of Gaseous Emissions" (incorporated by reference as specified in § 260.11) or other engineering texts acceptable to the Regional Administrator that present basic control device design information. The design analysis shall address the vent stream characteristics and control device operation parameters as specified in § 264.1035(b)(4)(iii).

(4) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur.

(5) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 weight percent or greater.

(Approved by the Office of Management and Budget under control number 2060-0915)

**PART 271—REQUIREMENTS FOR
AUTHORIZATION OF STATE
HAZARDOUS WASTE PROGRAMS**

23. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6925.

**Subpart A—Requirements for Final
Authorization**

24. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication:

§ 271.1 Purpose and scope.

• • • • •

(j) • • •

**TABLE 1. REGULATIONS IMPLEMENTING
THE HAZARDOUS AND SOLID WASTE
AMENDMENTS OF 1984**

Promul- gation date	Title of regulation	Federal Register refer- ence	Effective date
[Insert date of publi- cation].	Process Vent and Equipment Leak Organic Air Emission Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.	[Insert FR ref- erence on date of publi- cation].	[Insert effec- tive date.]

[FR Doc. 90-14260 Filed 6-20-90; 8:45 am]

BILLING CODE 5560-50-M

ATTACHMENT B

Consolidated Land Disposal Restrictions Checklist

CONSOLIDATED CHECKLIST
for the
Land Disposal Restrictions as of June 30, 1990

1) This checklist consolidates the changes to Federal Code addressed by the following Land Disposal Restrictions (LDR) checklists: Revision Checklist 34 [51 FR 40572 (November 7, 1986), 52 FR 21010 (June 4, 1987)], Revision Checklist 39 [52 FR 25760 (July 8, 1987), 52 FR 41295 (October 27, 1987)], Revision Checklist 50 [53 FR 31138 (August 17, 1988), 54 FR 8264 (February 27, 1989)], Revision Checklist 62 [54 FR 18836 (May 2, 1989)], Revision Checklist 63 [54 FR 26594 (June 23, 1989)], Revision Checklist 66 [54 FR 36967 (September 6, 1989), 55 FR 23935 (June 13, 1990)], and Revision Checklist 78 [55 FR 22520 (June 1, 1990)]. The "LDR Checklist Reference" column indicates which of these checklists have affected each listed citation. Subsequent to promulgation of the first LDR rule (i.e., the rule addressed by Revision Checklist 34), checklists other than the LDR checklists have also affected certain sections of code addressed by the LDR checklists. The effects of these subsequent checklists are indicated in footnotes. Of special note are 270.42(o)&(p) and 270.72(e). In both cases, subsequent checklists, either removed or redesignated these sections of code. The section numbering found in the associated LDR final rule for these paragraphs is used, rather than the new numbering found in the subsequent checklists.

An exception to the footnoting procedure is the effect which the Toxicity Characteristics Rule had on the TCLP procedure. Because the new TCLP procedure is integral to the Third Third Rule requirements (see Note 4 below), this change made by Revision Checklist 74, a non-LDR checklist, is noted in the LDR checklist reference column. An explanatory footnote is also included.

2) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

3) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of this Consolidated Land Disposal Restriction Checklist which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations because this incorporation aids the regulated community in knowing that the extensions, exemptions and variances addressed by the nondelegable sections of code are available to them. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to exclude these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelegable sections, see Appendix J of the State Authorization Manual (SAM).

4) Note that while 268.40 is delegable to States, "Administrator" in the following phrase "Approved by the Administrator under the procedures set for this in 268.42(b)" should not be replaced with an analogous State term because it is referring to decisions under 268.42(b). Such decisions will be made by the EPA Administrator.

5) States do not need to adopt requirements equivalent to 40 CFR 268.10, 268.11, 268.12 and 268.13 because these sections of code contain the schedule by which EPA must evaluate wastes for land disposal restrictions. As such, these sections of code are not included in this consolidated checklist.

6) Note that the Toxicity Characteristic Leaching Procedure (TCLP) referred to by the Third Third Scheduled Waste Rule is the TCLP entered into the Federal code at 40 CFR 261 Appendix II by the Toxicity Characteristic Rule (55 FR 11798, March 29, 1990) and amended at 55 FR 26986 (June 29, 1990). (Both the Toxicity Characteristic Rule and the June amendment are addressed by Revision Checklist 74.) The TCLP procedure previously located at 40 CFR Part 268, Appendix I and introduced by the Solvents and Dioxins Land Disposal Restrictions Rule (51 FR 40572; November 7, 1986; Revision Checklist 34) is the outdated version of the TCLP. Thus, States adopting the Third Third Schedule Waste Rule must also adopt the new version of the TCLP. If a State has already adopted the Revision Checklist 34 TCLP, this version must be replaced with the Revision Checklist 74 TCLP. See Footnote 40.

7) Guidance regarding the use of the new TCLP versus the EP Toxicity Test may be found at 55 FR 22660 (June 1, 1990). The code (40 CFR 268.40(a) and 268.41(a)) addressing this issue contains a serious technical error which is discussed in Footnote 31 found at the end of this checklist.

8) Adopting the alternate treatment standards for lab packs is optional. However, if a State chooses to adopt these alternate standards, all of the requirements related to these standards must be adopted, including all of the provisions added by the Third Third Scheduled Waste Rule (i.e., Revision Checklist 78) at 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

insert "and 268"	34	260.1(a)				
insert "and 268"	34	260.1(b)(1)				
insert "and 268"	34	260.1(b)(2)				
insert "and 268"	34	260.1(b)(3)				
insert "and 268"	34	260.1(b)(4)				

AVAILABILITY OF INFORMATION; CONFIDENTIALITY OF INFORMATION

insert "and 268"	34	260.2(a)				
insert "and 268"	34	260.2(b)				

USE OF NUMBER AND GENDER

insert "and 268"	34	260.3				
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SUBPART B - DEFINITIONS

DEFINITIONS

insert "and 268"	34	260.10				
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REFERENCES

1,2 Parts 260 through 270	39	260.11(a)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - RULEMAKING PETITIONS

GENERAL

insert "and 268"	34	260.20(a)				
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PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

PURPOSE AND SCOPE

insert "268,"	34	261.1(a)				
insert ", 268"	34	261.1(a)(1)				

EXCLUSIONS

insert "268,"	34	261.4(c)				
remove "267"						
insert "268"	34	261.4(d)(1)				

SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE GENERATED BY
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS

insert ", 268,"	34	261.5(b)				
insert ", 268,"	34	261.5(c)				
insert ", 268,"	34	261.5(e)				
3 insert ", 268,"	34	261.5(f)(2)				
insert ", 268,"	34	261.5(g)(2)				

REQUIREMENTS FOR RECYCLABLE MATERIALS

insert "268,"	34	261.6(a)(3)				
insert "268,"	34	261.6(c)(1)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

RESIDUES OF HAZARDOUS WASTE IN EMPTY CONTAINERS

insert "268,"	34	261.7(a)(1)(II)				
insert "268,"	34	261.7(a)(2)(II)				

SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE

GENERAL

insert "268,"; remove ", but is not listed as a hazardous waste in Subpart D"; change "the EPA" to "every EPA"; insert "that is applicable as" before "set forth"; remove "in the respective charac- teristic" before "in this Subpart"; before "recordkeeping" change "certain" to "all applicable"	34,78	261.20(b)				
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CHARACTERISTIC OF IGNITABILITY

remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.21(b)				
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CHARACTERISTIC OF CORROSIVITY

remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.22(b)				
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CHARACTERISTIC OF REACTIVITY

remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.23(b)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TOXICITY CHARACTERISTIC

4 remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.24(b)				
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SUBPART D - LISTS OF HAZARDOUS WASTES

GENERAL

insert "268,"	34	261.30(c)				
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HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

add the waste code "F039" in alphanumeric order to list	78	261.31				
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DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF

5 insert "or (f)" after "(e)"; change "261.7(b)(3)" to "261.7(b)"	78	261.33(c)				
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APPENDIX VII, PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add "F039" to list in alphanumeric order	78	Appendix VII				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART A - GENERAL

HAZARDOUS WASTE DETERMINATION

in the first sentence, replace "If" with "For purposes of compliance with 40 CFR Part 268, or if"; remove "as a hazardous waste" after "listed"; replace "of 40 CFR Part 261" with "of this part"; replace "he must determine" with "the generator must then determine"	78	262.11(c)				
reference to exclusions/restrictions	34	262.11(d)				

SUBPART C - PRE-TRANSPORT REQUIREMENTS

ACCUMULATION TIME

replace "and with §265.16" with ", with §265.16, and with 40 CFR 268.7(a)(4)"	78	262.34(a)(4)				
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SUBPART G - FARMERS

FARMERS

6 pesticide disposal by farmers	†39	262.70				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 263 - STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE

SUBPART A - GENERAL

TRANSFER FACILITY REQUIREMENTS

insert ", 268"	34	263.12				
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PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE AND DISPOSAL FACILITIES

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

7 facilities to which Part 264 applies	34	264.1(h)				
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SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

7,8 insert "Part 268"	34	264.13(a)(1)				
revise comment following paragraph (a)(2) as follows: remove "or all" after "supply part"; add ", except as otherwise specified in 40 CFR 268.7(b) and (c)." to the second sentence	78	264.13(a)(2)				
insert "268.7"	34	264.13(b)(6)				
exempted surface impoundment plan specifications	34	264.13(b)(7)				
sampling impound- ment contents	34	264.13(b)(7)(i)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
analysis procedures	34	264.13(b)(7)(II)				
annual removal of specific residues; criteria:	34,39 50	264.13(b)(7)(III)				
do not meet treatment standards of Part 268, Subpart D	50	264.13(b)(7)(III)(A)				
where no treatment standards have been established	50	264.13(b)(7)(III)(B)				
prohibited disposal of residues under 268.32 or RCRA 3004(d)	50	264.13(b)(7)(III)(B)(1)				
prohibited disposal of residues under 268.33(f)	50	264.13(b)(7)(III)(B)(2)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATING RECORD

add "268.4(a)" and "268.7"	34	264.73(b)(3)				
records for each shipment placed in units under a 268.5 extension, a 268.6 petition, or a 268.8 certification; 268.7(a) generator notice	34,50	264.73(b)(10)				
off-site treatment facility requirements	34,50	264.73(b)(11)				
on-site treatment facility requirements	34,50	264.73(b)(12)				
off-site land disposal facility requirements	34,50	264.73(b)(13)				
7 on-site land disposal facility requirements	34,50	264.73(b)(14)				
off-site storage facility requirements	50	264.73(b)(15)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
on-site storage facility requirements	50	264.73(b)(16)				

SUBPART K - SURFACE IMPOUNDMENTS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Insert "the waste and impoundment satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	78	264.229				
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SUBPART L - WASTE PILES

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Insert "the waste and waste pile satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	78	264.256				
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SUBPART M - LAND TREATMENT

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Insert "the waste and the treatment zone meet all applicable requirements of 40 CFR Part 268, and" after "unless"	78	264.281				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART N - LANDFILLS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

replace "in treated, rendered, or mixed before or immediately after placement in a landfill so that:" with "and landfill meet all applicable requirements of Part 268, and:"	78	264.312(a)				
first sentence and begin the first sentence with "Except for prohibited wastes which remain subject to treatment standards in Subpart D of Part 268,"	78	264.312(b)				

DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS (LAB PACKS)

†,9 add new paragraph regarding disposal in compliance with Part 268; requirement for fiber drums to meet DOT specifications and 264.316(b) requirements if incinerate lab packs	78	264.316(f)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

7 facilities to which Part 265 applies; Part 268 standards are material conditions of the 265 standards	34,78	265.1(e)				
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SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

8 insert "Part 268"	34	265.13(a)(1)				
revise comment following subparagraph (a)(2) as follows: remove "or all" after "supply part"; add ", except as otherwise specified in 40 CFR 268.7(b) and (c)." to the second sentence	78	265.13(a)(2)				
insert "268.7"	34	265.13(b)(6)				
exempt surface impoundment plan specifications	34	265.13(b)(7)				
sampling impoundment contents	34	265.13(b)(7)(i)				
analysis procedures	34	265.13(b)(7)(ii)				
annual removal of specific residues; criteria:	34,39 50	265.13(b)(7)(iii)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
do not meet treatment standards of Part 268, Subpart D	50	265.13(b)(7)(iii)(A)				
where no treatment standards have been established	50	265.13(b)(7)(iii)(B)				
prohibited disposal of residues under 268.32 or RCRA 3004(d)	50	265.13(b)(7)(iii)(B)(1)				
prohibited disposal of residues under 268.33(f)	50	265.13(b)(7)(iii)(B)(2)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATING RECORD

add "268.4(a)" and "268.7"	34	265.73(b)(3)				
records for each shipment placed in units under a 268.5 extension, a 268.6 petition, or a 268.8 certification; 268.7(a) generation notice	34,50	265.73(b)(8)				
off-site treatment facility requirements	34,50	265.73(b)(9)				
on-site treatment facility requirements	34,50	265.73(b)(10)				
off-site land disposal facility requirements	34,50	265.73(b)(11)				
on-site land disposal facility requirements	34,50	265.73(b)(12)				
off-site storage facility requirements	50	265.73(b)(13)				
on-site storage facility requirements	50	265.73(b)(14)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART K - SURFACE IMPOUNDMENTS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and impoundment satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	78	265.229				
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SUBPART L - WASTE PILES

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and pile satisfy all applicable requirements of 40 CFR Part 268, and" after "unless"	78	265.256				
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SUBPART M - LAND TREATMENT

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

insert "the waste and treatment zone meet all applicable requirements of 40 CFR Part 268, and" after "unless"	78	265.281				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART N - LANDFILLS

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

replace "is treated, rendered, or mixed before or immediately after placement in a landfill so that:" with "and landfill meets all applicable requirements of 40 CFR Part 268, and:"	78	265.312(a)				
begin the first sentence with "Except for prohibited wastes which remain subject to treatment standards in Subpart D of Part 268,"	78	265.312(b)				

DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS (LAB PACKS)

†,9 add new paragraph regarding disposal in compliance with Part 268; requirement for fiber drums to meet DOT specifications and 264.316(b) requirements if incinerate lab packs	78	265.316(f)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND
SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

SUBPART C - RECYCLABLE MATERIALS USED IN A MANNER CONSTITUTING DISPOSAL

APPLICABILITY

add language to reflect that products for general public's use are not subject to regulation if they meet treatment requirements of 268 Subpart D or prohibition levels of 268.32 or 3004(d) where no treatment standards; delete the word "constituent" from the parenthetical phrase following "recyclable material"; add sentence exempting from regulation commercial fertilizers produced for the general public's use that contain recyclable materials; zinc-containing fertilizers using K061 not subject to this requirement

50,66

266.20(b)

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

	purpose	34	268.1(a)			
	applicability	34	268.1(b)			
	conditions for continued land disposal:					
		34,66	268.1(c)			
7	persons with an extension	34	268.1(c)(1)			
7	persons with an exemption	34	268.1(c)(2)			
10	wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal if the wastes:					
		34,39,50 66,78	268.1(c)(3)			
	disposed into a non-hazardous or hazardous injection well as defined in 40 CFR 144.6(a)	78	268.1(c)(3)(i)			
	do not exhibit any prohibited characteristic of hazardous waste at the point of injection	78	268.1(c)(3)(ii)			
11	removed	34,39 50,66	268.1(c)(4)			
12	removed	39,50 78	268.1(c)(5)			
	preserve waiver availability under 121(d)(4) of CERCLA	50	268.1(d)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
hazardous wastes not subject to any provision of Part 268:	66	268.1(e)				
wastes generated by small quantity generators of <100 kg of non-acute hazardous waste or less than 1 kg of acute hazardous per month, as defined in 261.5	66	268.1(e)(1)				
waste pesticides that a farmer disposes of pursuant to 262.70	66	268.1(e)(2)				
wastes identified or listed as hazardous after November 8, 1984 for which EPA has not promulgated land disposal prohibitions or treat- ment standards	66	268.1(e)(3)				

DEFINITIONS APPLICABLE TO THIS PART

	introductory paragraph for definitions	78	268.2			
	"halogenated organic compounds" or "HOCs"	39,78	268.2(a)			
13	"hazardous constituent or constituents"	34,78	268.2(b)			
14	"land disposal"	34,39,78	268.2(c)			
15	"nonwastewaters"	78	268.2(d)			
16	"polychlorinated biphenyls" or "PCBs"	39,78	268.2(e)			
	"wastewaters"	78	268.2(f)			
	"F001, F002, F003 F004, F005 solvent- water mixtures"	78	268.2(f)(1)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"K011, K013, K014 wastewaters"	78	268.2(f)(2)				
"K103 and K104 wastewaters"	78	268.2(f)(3)				
"inorganic solid debris"; specific inorganic or metal materials:	78	268.2(g)				
metal slag	78	268.2(g)(1)				
classified slag	78	268.2(g)(2)				
glass	78	268.2(g)(3)				
concrete	78	268.2(g)(4)				
masonry and refractory bricks	78	268.2(g)(5)				
metal cans, containers, drums or tanks	78	268.2(g)(6)				
metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment	78	268.2(g)(7)				
scrap metal as defined in 40 CFR 261.1(c)(6)	78	268.2(g)(8)				

DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT

17	except as provided in 268.3(b), dilution not substitute for treatment; restriction regarding circumven- tion of effective dates and avoidance of prohibition of Subpart C or RCRA 3004	34,39,78	268.3(a)			
	permissible forms of dilution related to sections 307 or 402 of the CWA	78	268.3(b)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
† TREATMENT SURFACE IMPOUNDMENT EXEMPTION						
7 when prohibited wastes may be treated in a surface impoundment:	34	268.4(a)				
7 treatment occurs in impoundments	34	268.4(a)(1)				
soft hammer wastes in treatment surface impoundments that meet a list of conditions:	34,39,50	268.4(a)(2)				
sampling and testing requirements for wastes with and without treatment standards; supernatant and sludge samples tested separately	50	268.4(a)(2)(i)				
annual removal of specific residues; residues subject to valid certification; flow-through standard of removal for supernatant	50	268.4(a)(2)(ii)				
requirements for subsequent management of treatment residues in another impoundment; prohibited unless certification under 268.8 and standards of 268.8(a) are met	50	268.4(a)(2)(iii)				
recordkeeping requirements must be specified in the facility's waste analysis plan	50	268.4(a)(2)(iv)				
7 design requirements/exemptions	34	268.4(a)(3)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
exempt under 264.221(d) or (e) or 265.221(c) or (d)	34	268.4(a)(3)(i)				
7 conditions under which Administrator grants waiver of requirements; meets §3005(j)(2)	34	268.4(a)(3)(ii)				
		268.4(a)(3)(ii)(A)				
		268.4(a)(3)(ii)(B)				
		268.4(a)(3)(ii)(C)				
7 modification granted on basis of a demon- stration of no migra- tion into groundwater or surface water at any future time; satisfies §3005(j)(11) no migration	34	268.4(a)(3)(iii)				
7 submittal of written certification and waste analysis plan	34	268.4(a)(4)				
evaporation of hazard- ous constituents not considered treatment for exemption purposes	39	268.4(b)				

Guidance note: 268.5 is **NOT DELEGABLE**. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

application to EPA Administrator for an extension to effective date of any Part 268, Subpart C restriction; what the applicant must demonstrate:	34	268.5(a)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
good-faith effort to locate and contract with treatment, recovery, or disposal facilities nationwide to manage waste according to Subpart C effective date	34	268.5(a)(1)				
binding contractual commitment to construct or provide alternate treatment, recovery (e.g., recycling), or disposal capacity that meets Subpart D treatment standards; requirements when no treatment standards	34,39	268.5(a)(2)				
demonstration that alternative capacity cannot reasonably be available by effective date due to circumstances beyond applicant's control; how this must be demonstrated	34	268.5(a)(3)				
capacity being constructed or provided by applicant must be sufficient capacity for entire quantity of waste	34	268.5(a)(4)				
detailed schedule for obtaining required permits or outlines of how and when alleviate capacity available	34	268.5(a)(5)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
arranged for adequate capacity during extension and documented in all site locations where wastes will be managed	34	268.5(a)(6)				
surface impoundment or landfill used must meet 268.5(h)(2) requirements	34	268.5(a)(7)				
certification by authorized representative signing an application	34	268.5(b)				
Administrator may request additional information	34	268.5(c)				
extension applies only to waste generated at individual facility covered by extension	34	268.5(d)				
Administrator may grant extension of up to 1 year from effective date; extension for 1 additional year if 268.5(a) demonstration can still be made; no extension beyond 24 months from 268, Subpart C effective date; length of extension determined by Administrator and basis; public notice and comment; final decision published in Federal Register	34	268.5(e)				
notify Administrator of change in certified conditions	34	268.5(f)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
written progress re- ports at intervals designated by Admini- strator; what progress reports must include; conditions for revoca- tion of extension by Administrator	34	268.5(g)				
during period establi- shed by Administrator for which extension is in effect:	34	268.5(h)				
268.5(a) storage restrictions do not apply	34,39	268.5(h)(1)				
conditions on disposal in landfill or surface impoundment regard- less if unit is existing, new, replacement or lateral extension	34,50,66	268.5(h)(2)				
interim status landfill requirements	34	268.5(h)(2)(I)				
permitted landfill requirements	34	268.5(h)(2)(II)				
interim status surface impoundment requirements	34,39	268.5(h)(2)(III)				
permitted surface impoundment requirements	34	268.5(h)(2)(IV)				
requirements for landfills disposing of specified PCB waste	39	268.5(h)(2)(V)				
pending decision on application, com- pliance with all legal disposal restrictions once effective date has been reached	34	268.5(I)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.6 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

**PETITIONS TO ALLOW LAND DISPOSAL OF A WASTE PROHIBITED
UNDER SUBPART C OF PART 268**

submit petition to Administrator; demonstration of no waste migration; demonstration components	34	268.6(a)				
identify specific unit and waste	34	268.6(a)(1)				
waste analysis	34	268.6(a)(2)				
comprehensive disposal unit characterization	34	268.6(a)(3)				
monitoring plan detecting migration at the earliest time	50	268.6(a)(4)				
sufficient information to assure Admini- strator that owner/ operator is in com- pliance with other applicable Federal State and local laws	50	268.6(a)(5)				
Administrator approved sampling, testing and estimation techniques	34	268.6(b)(2)				
model calibration; models verified with actual data	34	268.6(b)(3)				
quality assurance/ control plan approved by Administrator	34	268.6(b)(4)				
uncertainty analysis	34	268.6(b)(5)				
18 what each petition must include:	50	268.6(c)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring plan including description of monitoring program to verify continued compliance with variance; Information which must be included	50	268.6(c)(1)				
media monitored	50	268.6(c)(1)(I)				
type of monitoring	50	268.6(c)(1)(II)				
monitoring station location	50	268.6(c)(1)(III)				
monitoring interval	50	268.6(c)(1)(IV)				
specific hazardous constituents to be monitored	50	268.6(c)(1)(V)				
monitoring program implementation schedule	50	268.6(c)(1)(VI)				
monitoring station equipment	50	268.6(c)(1)(VII)				
sampling and analytical techniques employed	50	268.6(c)(1)(VIII)				
data recording/reporting procedures	50	268.6(c)(1)(IX)				
268.6(c)(1) monitoring program must be in place by Administrator specified time period, as part of approval of the petition prior to prohibited waste receipt at unit	50	268.6(c)(2)				
268.6(c)(1) monitoring data sent to Administrator according to monitoring plan must be according to approved format and schedule	50	268.6(c)(3)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring data as per 268.6(c)(1) monitoring plan must be kept in on-site operating record	50	268.6(c)(4)				
criteria the 268.6(c)(1) monitoring program must meet:	50	268.5(c)(5)				
Administrator approval for all sampling, testing, and analytical data; data accurate and reproducible	50	268.6(c)(5)(i)				
Administrator approval of all estimation and monitoring techniques	50	268.6(c)(5)(ii)				
QA/QC plan for all aspects of monitoring program provided to and approved by Administrator	50	268.6(c)(5)(iii)				
18,19 petition submitted to Administrator	34,50	268.6(d)				
20 reporting of changes at unit and/or surrounding environment that significantly depart from variances and affect migration potential	50	268.6(e)				
changes to unit design, construction or operation proposed in writing and a demonstration to Administrator 30 days prior to change; Administrator makes determination if petition is invalidated and determines appropriate response; Administrator approval before changes can be made	50	268.6(e)(1)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
within 10 days of discovering change, written notification to Administrator if condition is not as predicted or modeled in petition; Administrator decides if change requires further action	50	268.6(e)(2)				
21 owner/operator responsibilities if hazardous waste migration:	50	268.6(f)				
immediate suspension of prohibited waste receipt	50,66	268.6(f)(1)				
within 10 days written notification to Administrator	50	268.6(f)(2)				
Administrator decision within 60 days as to continued receipt of prohibited waste; Administrator deter- mines if further examination of any migration warranted	50	268.6(f)(3)				
22 signed statement	34,50	268.6(g)				
22 Administrator may request additional information	34,50	268.6(h)				
22 waste unit to which petition applies	34,50	268.6(i)				
22 Administrator gives public notice in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	34,50	268.6(j)				
22 term of petition	34,50	268.6(k)				
22 requirements prior to Administrator's decision	34,50	268.6(l)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
22 petition granted by Administrator does not relieve responsibilities under RCRA	34,50	268.6(m)				
23 noneligibility of certain liquid PCB waste for "no migration" petitions under 268.6	39,50	268.6(n)				

WASTE ANALYSIS AND RECORDKEEPING

7 generator determines if restricted waste; 268.32 and 268.43 exceptions	34,39 50	268.7(a)				
if generator is managing restricted waste that does not meet applicable treatment standards, must notify treatment or storage facility of appropriate treatment standards	34,39, 50	268.7(a)(1)				
	34	268.7(a)(1)(i)				
	34,39,78	268.7(a)(1)(ii)				
information the notice must include		268.7(a)(1)(iii)				
	34	268.7(a)(1)(iv)				
7 if managing restricted waste that can be land disposed without further treatment, notice and certification to treatment, storage, or land disposal facility	34,39, 50	268.7(a)(2)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Information required in notice to treatment, storage or land disposal facility	34	268.7(a)(2)(I)				
		268.7(a)(2)(I)(A)				
	34,39,78	268.7(a)(2)(I)(B)				
	34	268.7(a)(2)(I)(C)				
		268.7(a)(2)(I)(D)				
7 certification signature/statement	34,39	268.7(a)(2)(II)				
7 for waste subject to an exemption from land disposal prohibition (such as a case-by-case 268.5 extension, 268.6 exemption or Subpart C nationwide capacity variance), notice to receiving facility that waste is not prohibited from land disposal	34,50,66	268.7(a)(3)				
24 Information the notice must include	50	268.7(a)(3)(I)				
	50,78	268.7(a)(3)(II)				
	50	268.7(a)(3)(III)				
		268.7(a)(3)(IV)				
		268.7(a)(3)(V)				
for prohibited waste managed in tanks or containers under 262.34 and treated to meet 268 Subpart D standards, waste analysis plan to be developed, followed and kept on-site	50,66,78	268.7(a)(4)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
25 waste analysis plan based on detailed chemical and physical analysis of representative sample; contain information necessary to treat waste in accordance with 268 requirements	50,78	268.7(a)(4)(i)				
25 file plan with EPA Regional Administrator or authorized State 30 days prior to treatment; delivery verified	50,78	268.7(a)(4)(ii)				
25 off-site shipments comply with 268.7(a)(2)	50,78	268.7(a)(4)(iii)				
25 removed	50,78	268.7(a)(4)(iv)				
7 maintenance of data						
26 supporting knowledge of waste; retention of waste analysis data on-site in files	34,50	268.7(a)(5)				
five-year retention period for notices, certifications, demonstrations, etc., produced relative to 268.7; extensions during enforcement actions	50	268.7(a)(6)				
†,9 notice for a generator managing a lab pack that contains wastes identified in Appendix IV if use alternate treatment standards under 268.42; 268.7(a)(5)&(6) compliance; certification	78	268.7(a)(7)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
†,9 notice for a generator managing a lab pack that contains organic wastes specified in Appendix V if use alternate treatment standard under 268.42; 268.7(a)(5)&(6) compliance; certification	78	268.7(a)(8)				
notification and certification requirements for small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e)	78	268.7(a)(9)				
treatment facility testing of wastes at frequency specified in waste analysis plan	34,39 50	268.7(b)				
testing when standards are expressed as concentrations in waste extract	50	268.7(b)(1)				
testing of 268.32 or 3004(d) prohibited wastes not subject to Subpart D treatment standards	50	268.7(b)(2)				
testing for wastes with treatment standards expressed as concentrations in waste	50	268.7(b)(3)				
27 notice with each shipment by treatment facility to land disposal facility		34,50	268.7(b)(4)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
	34,50	268.7(b)(4)(i)				
	34,39, 50,78	268.7(b)(4)(ii)				
		268.7(b)(4)(iii)				
27 information the notice must include	34,50	268.7(b)(4)(iv)				
28 certification of each shipment	34,39, 50	268.7(b)(5)				
28 certification requirements for wastes with treat- ment standards expressed as concen- trations in the waste extract or in the waste, or for wastes prohibited under 268.32 or RCRA Section 3004(d) which do not have 268, Subpart D treatment standards	34,39 50,78	268.7(b)(5)(i)				
28 certification require- ments for wastes with treatment standards expressed as technologies	34,50	268.7(b)(5)(ii)				
certification require- ments for wastes with treatment standards expressed as concen- trations in the waste pursuant to 268.43	78	268.7(b)(5)(iii)				
compliance with generator notice and certification requirements if waste sent off-site	50	268.7(b)(6)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
29 no 268.7(b)(4) notification of receiving facility for recyclable materials used in a manner constituting disposal and subject to 266.20(b); with each shipment 268.7(b)(5) certification and 268.7(b)(4) notice to the Regional Administrator; records of recipients of waste-derived products	50,66,78	268.7(b)(7)				
30 requirements for land disposal facility except where the owner or operator is disposing recyclable wastes pursuant to 266.20(b):	34,39, 50,78	268.7(c)				
30 have copies of notice and certifications under 268.7(a) or (b) and certifications in 268.8 if applicable	34, 39,50	268.7(c)(1)				
30 test of waste or extract; applicable treatment standards and prohibitions to be met; frequency of testing	39,50	268.7(c)(2)				
removed	50,78	268.7(c)(3)				
removed	66,78	268.7(c)(4)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
LANDFILL AND SURFACE IMPOUNDMENT DISPOSAL RESTRICTIONS						
disposal of 268.33(f) prohibited wastes in landfills or surface impoundments in compliance with 268.5(h)(2) if requirements of 268.8 are met; section no longer in effect as of May 8, 1990	50,78	268.8(a)				
good faith generator effort to contract with treatment and recovery facilities providing greatest environmental benefit	50	268.8(a)(1)				
specific requirements for a generator when no practically available treatment can be found	50,66	268.8(a)(2)				
prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	50,66	268.8(a)(2)(I)				
for initial shipment, demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	50,66	268.8(a)(2)(II)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
specific requirements for a generator when there are practically available treatments for wastes:	50,66	268.8(a)(3)				
prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	66	268.8(a)(3)(i)				
with initial shipment copy of demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	66	268.8(a)(3)(ii)				
31 where there is practically available treatment for waste prior to disposal, copy of demonstration and certification submitted to receiving facility with initial shipment; certification only for subsequent shipments; generator recordkeeping and five-year retention	50	268.8(a)(4)				
additional information for certification if requested by Regional Administrator; submittal of new demonstration and certification as provided in 268.8(a) to the receiving facility	50	268.8(b)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
notification when any change in conditions forming basis of certification occurs	50,66	268.8(b)(1)				
invalidation when Regional Administrator finds practically available treatment method or a method yielding greater environmental benefit than certified	50	268.8(b)(2)				
when certification is invalidated, generator must cease shipment, communicate with facilities receiving waste, and keep records of communication	50	268.8(b)(3)				
receiving treatment, recovery or storage facilities keep copy of generator's demonstration and certification	50	268.8(c)				
receiving treatment, storage or recovery facility certify waste treated according to generator's demonstration	50	268.8(c)(1)				
for initial shipment, treatment, recovery or storage facility must send copy of generator's demonstration and certification(s) to facility receiving waste or treatment residues; only certification with subsequent shipments, if certification conditions remain unchanged	50,66	268.8(c)(2)				

321

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
32 disposal facility must assure certification prior to disposal in landfill or surface impoundment unit and units in accordance with 268.5(h)(2) for wastes prohibited under 268.33(f)	50,66	268.8(d)				
wastes may be disposed in landfill or surface impoundment meeting 268.5(h)(2) requirements if certified and treated	50	268.8(e)				

SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC

determination of applicable treatment standards under Subpart D of Part 268 by initial generator of a solid waste; code designation	78	268.9(a)				
treatment standards for the waste code listed in 40 CFR Part 261, Subpart D will operate for wastes listed under both Subpart D, Part 261 and exhibits a characteristic under Subpart C, Part 261; conditions under which treatment standards for all applicable listed and characteristic waste codes must be met	78	268.9(b)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no prohibited waste which exhibits a characteristic under 40 CFR Part 261, Subpart C may be land disposed unless waste complies with Part 268, Subpart D treatment standards	78	268.9(c)				
wastes that exhibit a characteristic are subject to 268.7 requirements, but no notification once the wastes are no longer hazardous; if not hazardous, notification/certification sent to EPA Regional Administrator or authorized State	78	268.9(d)				
Information needed with each notification certification signed by authorized representative stating language found in 268.7(b)(5)(i)	78	268.9(d)(1)				
		268.9(d)(1)(i)				
		268.9(d)(1)(ii)				
		268.9(d)(1)(iii)				
certification signed by authorized representative stating language found in 268.7(b)(5)(i)	78	268.9(d)(2)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES

33	effective November 8, 1986, F001-F005 spent solvent wastes, as specified in 261.31, are prohibited from land disposal unless one or more specific conditions apply:	34	268.30(a)			
	small quantity generator (100-1,000 kg/mo) exemption	34	268.30(a)(1)			
	CERCLA/corrective action exemption except where waste is contaminated soil or debris	34,50	268.30(a)(2)			
7	concentration-specific exemption (solvent waste with less than 1% total solvent constituent)	34,50	268.30(a)(3)			
	solvent waste residue from treating a 268.30(a)(1), (a)(2), or (a)(3) waste or residue from other wastes meeting specific treatability group requirements	39	268.30(a)(4)			
	effective November 8, 1988, the F001-F005 solvent wastes of 268.30(a)(1)-(4) are prohibited from land disposal	34,50	268.30(b)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
land disposal of F001-F005 solvent wastes that are contaminated soil and debris (and their treatment residues) resulting from CERCLA action or RCRA corrective action prohibited after November 8, 1990; permitted disposal in landfill or surface impoundment unit in compliance with 268.5(h)(2) prior to November 8, 1990	50	268.30(c)				
34 situations where 268.30(a), (b) and (c) do not apply:	34,50	268.30(d)				
7,34 wastes treated to meet Subpart D of Part 268	34,50	268.30(d)(1)				
7,34 disposal at facility with successful no-migration petition	34,50	268.30(d)(2)				
7,34 wastes and units for which case-by-case extensions have been granted	34,50	268.30(d)(3)				
WASTE SPECIFIC PROHIBITIONS - DIOXIN-CONTAINING WASTES						
7 effective November 8, 1988, the dioxin-containing wastes, F020-F023 and F026-F028, are prohibited from land disposal unless a specific condition applies:	34,50	268.31(a)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste is contami- nated soil and debris waste resulting from response action under CERCLA or from a RCRA corrective action	50	268.31(a)(1)				
effective November 8, 1990, prohibit land disposal of F020- F023 and F026-F028 dioxin-containing wastes of 268.31(a)(1)	50	268.31(b)				
7 between November 8, 1988, and November 8, 1990, wastes of 268.31(a)(1) disposed in landfill or surface impoundment that meet 268.5(h)(2) and applicable 264 and 265 requirements	34,50	268.31(c)				
35 situations where 268.31(a) and (b) do not apply	34,50	268.31(d)				
7,35 wastes treated to meet Subpart D, Part 268 standards	34,50	268.31(d)(1)				
7,35 disposal at facility with no-migration petition	34,50	268.31(d)(2)				
7,35 extension to effective date of a prohibition	34,50	268.31(d)(3)				
WASTE SPECIFIC PROHIBITIONS - CALIFORNIA LIST WASTES						
prohibitions effective July 8, 1987, except in injection wells:	39	268.32(a)				
liquids having pH less than or equal to 2.0	39	268.32(a)(1)				
liquids containing PCBs greater than or equal to 50 ppm	39	268.32(a)(2)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
liquids containing HOCs greater than or equal to 1,000 mg/l and less than 10,000 mg/l	39	268.32(a)(3)				
reserved	39	268.32(b)				
reserved	39	268.32(c)				
268.32(a) and (e) requirements do not apply until specific calendar dates:	39,50	268.32(d)				
July 8, 1989 for contaminated soil or debris <u>not</u> resulting from a 104 or 106 CERCLA response or a RCRA corrective action; disposal allowed between July 8, 1987, and July 8, 1989, in landfill or surface impoundment in compliance with 268.5(h)(2)	50	268.32(d)(1)				
November 8, 1990 for contaminated soil or debris resulting from a CERCLA 104 or 106 response or a RCRA corrective action; disposal allowed between Nov- ember 8, 1988, and November 8, 1990, in landfill or surface impoundment in com- pliance with 268.5(h)(2)	50	268.32(d)(2)				
land disposal prohibitions effective November 8, 1988:	39,50	268.32(e)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
36 liquids containing HOCs greater than or equal to 1,000 mg/l and not prohibited under 268.32(a)(3)	39	268.32(e)(1)				
nonliquid wastes containing HOCs greater than or equal to 1,000 mg/kg and not wastes described in 268.32(d)	39,50	268.32(e)(2)				
between July 8, 1987, and November 8, 1988, 268.32(e)(1) and (e)(2) wastes may be disposed in a landfill or surface impoundment if disposal complies with 268.5(h)(2)	39,50 66	268.32(f)				
requirements of 268.32(a), (d) and (e) do not apply under certain conditions:	39,50	268.32(g)				
granted a 268.6 exemption	39	268.32(g)(1)				
granted a 268.5 extension	39	268.32(g)(2)				
in compliance with Subpart D standards, RCRA 3004(d) or section prohibitions	39	268.32(g)(3)				
requirements of 268.32(a)(3), (d) and (e) do not apply when subject to Part 268, Subpart C prohibition	39,50	268.32(h)				
1 method 9095 required	39	268.32(i)				
applicability of waste analysis/ recordkeeping requirements of 268.7:	39	268.32(j)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
initial generator must use 261.22(a)(1) procedures or knowledge of pH; pH less than or equal to 2.0 restriction	39	268.32(j)(1)				
initial generator must test for or have knowledge of HOC or PCB concentration levels; restriction above levels	39	268.32(j)(2)				

WASTE SPECIFIC PROHIBITIONS - FIRST THIRD WASTES

specific wastes prohibited from land disposal effective August 8, 1988	50,66	268.33(a)				
land disposal prohibition of K061 waste containing 15% or greater of zinc pursuant to 268.41 treatment standard for K061 containing less than 15% zinc	50	268.33(a)(1)				
K048, K049, K050, K051, K052, K061 (contain 5% or greater zinc), K071 wastes prohibited from land disposal effective August 8, 1990	50	268.33(b)				
effective August 8, 1990, land disposal prohibition of wastes specified in 268.10 having a treatment treatment standard in 268, Subpart D based on incineration and which are contaminated soil and debris	50	268.33(c)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between November 8, 1988, and August 8, 1990, landfill or surface impoundment disposal of wastes included under 268.(b) & (c) permitted if unit is in compliance with 268.5(h)(2)	50	268.33(d)				
requirements of 268(a)-(d) do not apply if:	50	268.33(e)				
waste meets applicable 268, Subpart D standards	50	268.33(e)(1)				
granted an exemption from prohibition for wastes and units under 268.6	50	268.33(e)(2)				
granted an extension to an effective date for wastes under 268.5	50	268.33(e)(3)				
prohibition of landfill or surface impoundment disposal of wastes specified in 268.10 for which treatment standards have not been promulgated (other than 268.32 or section 3004(d) prohibitions) unless a demonstration and certification have been submitted	50,66	268.33(f)				
for a waste listed in 268.10, initial generator testing to determine exceedance of 268.41 and 268.43 treatment standards; prohibition from land disposal if exceed standards	50,66	268.33(g)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
WASTE SPECIFIC PROHIBITIONS - SECOND THIRD WASTES						
effective June 8, 1989, prohibition from land disposal of specific 261.31, 261.32 and 261.33 wastes	63	268.34(a)				
effective June 8, 1989, prohibition from land disposal, except underground injection pursuant to 148.14(f) and 148.15(d), of certain 261.32 wastes	63	268.34(b)				
effective June 8, 1989, prohibition from land disposal of F006, F008, F009, F011 and F012	63	268.34(c)				
effective July 8, 1989, F007 prohibited from land disposal except underground injection pursuant to 148.14(f)	63	268.34(c)(1)				
July 8, 1989, until December 8, 1989, F011 and F012 non-wastewaters prohibited from land disposal pursuant to 268.41 and 268.43 treatment standards for F007, F008 and F009 nonwastewaters; effective December 8, 1989, F011 and F012 prohibited from land disposal pursuant to 268.41 and 268.43 treatment standards for F011 and F012 nonwastewaters	63	268.34(c)(2)				

587

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective June 8, 1991, wastes specified in 268.34 with Subpart D treatment standard based on incineration, and which are contaminated soil and debris, are prohibited from land disposal	63	268.34(d)				
requirements for landfill or surface impoundment disposal of wastes included in 268.34(c) and (d) between June 8, 1989, and June 8, 1991; applies to F007, F008, F009, F011 and F012 only between June 8, 1989, and July 8, 1989	63	268.34(e)				
requirements of 268.34(a)-(d) do not apply if:	63	268.34(f)				
meet applicable 268 Subpart D standards	63	268.34(f)(1)				
granted an exemption pursuant to a 268.6 petition for the wastes and units covered by the petition	63	268.34(f)(2)				
268.34(a), (b) and (c) do not apply if granted extension under 268.5 for wastes covered by extension	63	268.34(g)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between June 8, 1989, and May 8, 1990, prohibition from land disposal in landfills or surface impoundments of 268.11 wastes for which Subpart D treatment standards are not applicable, including California list wastes subject to prohibitions under 3004(d) or 268.32; exceptions under 268.8	63	268.34(h)				
initial generator testing to determine if a 268.10, 268.11 and 268.12 waste exceeds applicable 268.41 and 268.43 treatment standards; land disposal prohibited and all 268 requirements apply if constituents exceed Subpart D levels	63	268.34(i)				
WASTE SPECIFIC PROHIBITIONS - THIRD THIRD WASTES						
effective August 8, 1990, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e), and 261.33(f)	78	268.35(a)				
effective November 8, 1990, prohibition from land disposal of certain wastes specified in 261.32	78	268.35(b)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective May 8, 1992, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e), 261.33(f); certain characteristic wastes; inorganic debris defined in 268.2(a)(7); and RCRA hazardous wastes containing naturally occurring radioactive materials	78	268.35(c)				
effective May 8, 1992, prohibition from land disposal of 268.12 mixed radioactive/ hazardous wastes	78	268.35(d)				
effective May 8, 1992, prohibition from land disposal of wastes specified 268.35 as having Subpart D, Part 268 treatment standards based on incineration, mercury retorting, or vitrification, and which are contaminated soil or debris	78	268.35(e)				
between May 8, 1990, and August 8, 1990, wastes included in paragraph 268.35(a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(f)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between May 8, 1990, and November 8, 1990, wastes included in paragraph 268.35(b) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(g)				
between May 8, 1990, and May 8, 1992, wastes included in paragraphs 268.35(c), (d) and (e) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(h)				
conditions under which requirements of paragraphs 268.35(a), (b), (c) (d) and (e) do not apply:	78	268.35(i)				
wastes meet applicable 268, Sub-part D standards	78	268.35(i)(1)				
persons granted exemption under 268.6	78	268.35(i)(2)				
wastes meet applicable alternate standards under 268.44	78	268.35(i)(3)				
persons granted extension to the effective date of a prohibition under 268.5	78	268.35(i)(4)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CREATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
initial generator testing to determine if a 268.10, 268.11 and 268.12 waste exceeds applicable 268.41 and 268.43 treatment standards; land disposal prohibited and all 268 requirements apply if constituents exceed Subpart D levels	78	268.35(l)				

SUBPART D - TREATMENT STANDARDS

APPLICABILITY OF TREATMENT STANDARDS

37	land disposal of 268.41 restricted wastes only if waste extract or treatment residue (developed using Appendix I methods) does not exceed 268.41 Table CCWE values; specific wastes may be land disposed if waste extract or residue does not exceed Table CCW values for any hazardous constituent listed in Table CCWE for that waste	34,39, 50,78	268.40(a)			
	restricted waste with a 268.42(a) treatment technology may be land disposed if specified technology or an Administrator-approved method is used	39	268.40(b)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
except as specified in 268.43(c), land disposal of a restricted waste identified in 268.43 may be land disposed only if Table CCW constituent concentration values are not exceeded	50,78	268.40(c)				

TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

7,37 treatment standards; explanation of Table CCWE	34,50 63,78	268.41(a)				
Constituent Concentrations in Waste Extract	34,50 63,78	268.41(a)/ Table CCWE				
treatment standards for common constituents in combined wastes	34	268.41(b)				

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

treatment of waste identified in 268.42(a)(1)&(2) and Tables 2 and 3 with technology(s) specified in 268.42(a)(1)&(2) and (a)(2) and Table 1	34,78	268.42(a)				
standard for incineration of liquid hazardous wastes containing PCBs	39	268.42(a)(1)				
treatment standards for incineration of certain hazardous wastes containing HOCs; where standards do not apply	39,50, 78	268.42(a)(2)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
removed	63,78	268.42(a)(3)				
removed	63,78	268.42(a)(4)				
Technology Codes and Description of Technology-Based Standards	78	268.42(a)/Table 1				
Technology-Based Standards by RCRA Waste Code	78	268.42(a)/Table 2				
Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste	78	268.42(a)/Table 3				

 Guidance note: 268.42(b) is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this paragraph into their code.

submit application to Administrator demonstrating alter- nate treatment can achieve 268.42(a), (c), & (d) performance specifications; information demon- strating compliance with Federal, State and local require- ments; criteria for approval by Administrator; approval in writing containing provisions and con- ditions as the Admini- strator deems appro- priate; compliance by person to whom approval is issued	34,39,78	268.42(b)				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
ALTERNATE TREATMENT STANDARDS FOR LAB PACKS						
conditions for eligibility of lab packs for land disposal:	78	268.42(c)				
compliance with applicable provisions of 264.316 and 265.316	78	268.42(c)(1)				
Part 268 Appendix IV or Appendix V hazardous wastes contained in lab packs	78	268.42(c)(2)				
incineration of lab packs in accordance with Part 264, Subpart O or Part 265, Subpart O requirements	78	268.42(c)(3)				
treatment standards for incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010 and D011	78	268.42(c)(4)				
radioactive hazardous mixed wastes with Table 3 treatment standards not subject to 268.41, 268.43 or Table 2 treatment standards; radioactive hazardous mixed wastes not subject to Table 3 treatment standards remain subject to 268.41, 268.43 and Table 2 treatment standards	78	268.42(d)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS						
introductory paragraph for Table CCW explaining table	34,50 63,78	268.43(a)				
Constituent Concen- trations in Wastes; no land disposal for specified K wastes	50,62 63,78	268.43(a)/ Table CCW				
meet lowest con- stituent treatment standard when mixing wastes with differing treatment standards for a constituent of concern	50,63	268.43(b)				
conditions for demonstrating compliance with treat- ment standards for organic constituents provided:	78	268.43(c)				
treatment for organic constituents established based on incineration in units operated in accordance with Subpart O requirements of Part 264 or Part 265 or based on combustion in fuel substitution units in accordance with applicable tech- nical requirements	78	268.43(c)(1)				
organic constituents treated using paragraph 268.43(c)(1) methods	78	268.43(c)(2)				
good-faith efforts fail to detect the organic constituents; when such efforts must be demonstrated	78	268.43(c)(3)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.44 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

VARIANCE FROM A TREATMENT STANDARD

conditions for variance; petition Administrator; what must be demonstrated	34	268.44(a)				
procedures in accordance with 260.20	34	268.44(b)				
statement signed by petitioner or authorized representative	34	268.44(c)				
additional information or samples may be requested by Administrator; additional copies for affected States and region	34	268.44(d)				
Administrator gives public notification in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	34	268.44(e)				
268.7 waste analysis requirements must be followed for wastes covered by variance	34	268.44(f)				
requirements during petition review	34	268.44(g)				
apply to Administrator or delegated representative for site-specific variance from a treatment standard if specified conditions are appropriate; what applicant must demonstrate	50,66	268.44(h)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
260.20(b)(1)-(4) information must be included	50	268.44(l)				
Assistant Administrator or delegated represen- tative may request additional information	50	268.44(l)				
if site-specific treatment standard variance then com- pliance with 268.7 waste analysis requirements	50	268.44(k)				
during application review process, com- pliance with land disposal restrictions once effective date for waste reached	50	268.44(l)				

SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES

7 except as provided in 268.50, storage of wastes restricted from land disposal is prohibited unless certain conditions are met:	34,39	268.50(a)				
7 on-site storage exemption for generator	34	268.50(a)(1)				
7 treatment, storage, and disposal facility exemption	34	268.50(a)(2)				
7 container labeling	34	268.50(a)(2)(I)				
7 tank labeling	34	268.50(a)(2)(II)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
7 transporter exemption	34	268.50(a)(3)				
storage up to one year	34	268.50(b)				
storage longer than one year	34	268.50(c)				
7 268.50(a) prohibition does not apply if waste is exempt from a prohibition on type of land disposal utilized for the waste	34, 50, 66	268.50(d)				
no prohibition where treatment standards are not specified or are met, or compliance with 268.32 or RCRA 3004 exists	34, 39	268.50(e)				
requirements for storage of liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm	39	268.50(f)				

APPENDIX I TO PART 268

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

7,40 TCLP is published in Appendix II of Part 261	34, 74	Appendix I				
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APPENDIX II TO PART 268

TREATMENT STANDARDS (AS CONCENTRATIONS IN THE TREATMENT RESIDUAL EXTRACT)

table	34	Appendix II				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX III TO PART 268

LIST OF HALOGENATED ORGANIC COMPOUNDS REGULATED UNDER 268.32

HOC definition and list of HOCs regulated under 268.32	39	Appendix III				
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APPENDIX IV TO PART 268

t,
9 ORGANOMETALLIC LAB PACKS

list of hazardous wastes that may be placed in "organo- metallic" or "Appendix IV lab packs"	78	Appendix IV				
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APPENDIX V TO PART 268

t,
9 ORGANIC LAB PACKS

list of hazardous wastes that may be placed in "organic" or "Appendix VII" lab packs	78	Appendix V				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX VI TO PART 268

RECOMMENDED TECHNOLOGIES TO ACHIEVE DEACTIVATION OF CHARACTERISTICS IN SECTION 268.42

list of technologies which achieve the standard of "deactivation to remove characteristics of ignitability, corrosivity, and reactivity"; use of specified technologies not mandatory; alternative methods not performed in land disposal units	78	Appendix VI				
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APPENDIX VII TO PART 268

EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs

comprehensive list of waste and effective dates	78	Appendix VII				
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APPENDIX VIII TO PART 268

NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES

comprehensive list of national capacity LDR variances for UIC wastes	78	Appendix VIII				
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CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

SUBPART B - PERMIT APPLICATION

CONTENTS OF PART B: GENERAL REQUIREMENTS

copy of notice of approval of petition or extension	34	270.14(b)(21)				
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SUBPART C - PERMIT CONDITIONS

ESTABLISHING PERMIT CONDITIONS

Insert "through 268"; remove "267"	34	270.32(b)(1)				
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SUBPART D - CHANGES TO PERMIT

41 MINOR MODIFICATIONS OF PERMITS

conditions for treating non-specified waste	34	270.42(o)				
prohibited from one or more land disposal methods under Part 268, Subpart C or RCRA Section 3004	34,†39	270.42(o)(1)				
treatment in accordance with 268.4 and 268.3 and:	34,†39	270.42(o)(2)				
treatment in accordance with 268.41, 268.42 or 268.44; or	†39	270.42(o)(2)(i)				

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no standards exist and treatment removes prohibitions of 268.32 or RCRA 3004	†39	270.42(o)(2)(ii)				
no increased or substantially different risks	34	270.42(o)(3)				
Federal/State approval; allowable modifications	34	270.42(o)(4)				
allow facilities to change operation to treat or store if:	†39	270.42(p)				
major permit modification is requested;	†39	270.42(p)(1)				
demonstrates neces- sity to comply with 268 or RCRA 3004; and	†39	270.42(p)(2)				
ensures compliance pending administra- tive determination	†39	270.42(p)(3)				

APPENDIX I TO SECTION 270.42

42 CLASSIFICATION OF PERMIT MODIFICATION

43	add new item involving F039 under "General Facility Standards"	78	270.42 Appendix I, B(1)(b)			
44	redesignate old B(1)(b) as B(1)(c)	78	270.42 Appendix I, B(1)(c)			

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART G - INTERIM STATUS

CHANGES DURING INTERIM STATUS

45	no reconstruction; changes do not include tank/ container changes to comply with land disposal restrictions	39	270.72(e)			
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See amendment to rule addressed by Revision Checklist 39 at 52 FR 41295 (October 27, 1987).

- 2 Paragraph 260.11(a) is also affected by Revision Checklist 67 (54 FR 40260, September 29, 1989) and Revision Checklist 73 (55 FR 8948, March 9, 1990).
- 3 Paragraph 261.5(f)(2) is also affected by Revision Checklist 47 (53 FR 27162, July 19, 1988).
- 4 Note that the "TC Rule," Revision Checklist 74 (55 FR 11798, March 29, 1990), has also made changes to 261.24(b).
- 5 Paragraph 261.33(c) is also affected by Revision Checklist 41 (52 FR 26012, July 10, 1987).
- 6 Note that the final rule for Revision Checklist 39 (52 FR 25787) gives Subpart E, 262.51 as the citation for Farmers. This is not correct as the August 8, 1986 (51 FR 28664, Revision Checklist 31) final rule regarding exports changed this section and moved it to Subpart G, 262.70. This error in the final rule was deleted when Revision Checklist 39 was developed, and the proper citation (262.70) was used on that checklist. This error was ultimately corrected at 53 FR 27164 (July 19, 1988).
- 7 Also see technical correction to the rule addressed by Revision Checklist 34 at 52 FR 21010 (June 4, 1987).
- 8 Subparagraphs 264.13(a)(1) and 265.13(a)(1) are also affected by Revision Checklist 64 (54 FR 33376, August 14, 1989).
- 9 This code is part of the optional requirements for the alternate treatment standards for lab packs under the Third Third Scheduled Waste Rule. If adopted, all of the requirements (i.e., 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268) related to these alternate treatment standards must be adopted.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- 10 This is a new subparagraph introduced into the code by Revision Checklist 78. The original subparagraph 268.1(c)(3) was introduced by Revision Checklist 34, modified by Revision Checklist 39, then removed by Revision Checklist 50, with 268.1(c)(4) redesignated as (c)(3). The redesignated subparagraph 268.1(c)(3) was subsequently removed by Revision Checklist 66.
- 11 Subparagraph 268.1(c)(4) originated in Revision Checklist 34, was modified by Revision Checklist 39, redesignated by Revision Checklist 50, and finally removed by Revision Checklist 66. Revision Checklist 48 also made a technical correction.
- 12 Subparagraph 268.1(c)(5) originated in Revision Checklist 39, was revised by Revision Checklist 48, original text redesignated and new text introduced by Revision Checklist 50, and finally removed by Revision Checklist 78.
- 13 This paragraph was originally part of 268.2(a) when it was entered into the code by Revision Checklist 34. Revision Checklist 78 renumbered it as 268.2(b) and removed the old 268.2(b) introduced by Revision Checklist 34.
- 14 The definition of land disposal was introduced into the code as part of 268.2(a) by Revision Checklist 34. It was modified by Revision Checklist 39 and designated as 268.2(c) by Revision Checklist 78.
- 15 Note there is a typographical error in the Federal Register notice for Revision Checklist 78 (55 FR 22520, June 1, 1990). The reference to "(g)(6)" should be "(f)."
- 16 This definition was introduced by Revision Checklist 39 as part of 268.2(a). It was redesignated as 268.2(e) by Revision Checklist 78.
- 17 Paragraph 268.3(a) was originally introduced into the code by Revision Checklist 34 as 268.3, and was then revised by Revision Checklist 39. Revision Checklist 78 revised and redesignated it as 268.3(a).
- 18 268.6(c) was originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(c) as 268.6(d) and inserted a new 268.6(c).
- 19 The original 268.6(d) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that paragraph as 268.6(g). That same checklist redesignated 268.6(c) as 268.6(d). See Footnote 18.
- 20 268.6(e) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(e) as 268.6(h) and inserted a new 268.6(e).
- 21 268.6(f) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(f) as 268.6(i) and inserted a new 268.6(f).
- 22 268.6(d)-(j) were originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated these paragraphs as 268.6(g)-(m).

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE	
23	268.6(k) was originally introduced by Revision Checklist 39. Revision Checklist 50 redesignated it as 268.6(n).						
24	Note that the rule addressed by Revision Checklist 78 (55 FR 22520) makes it appear as if 268.7(a)(3)(iii)-(v) were removed (see page 22687). This was an error and these three subparagraphs should remain in the code.						
25	Initially, subparagraphs 268.7(a)(4)(i)-(iv) were introduced into the code by Revision Checklist 50. Revision Checklist 78 completely changed the text of (a)(4)(i)-(iii) and removed (a)(4)(iv).						
26	This subparagraph was originally 268.7(a)(4) when it was added to the code by Revision Checklist 34. However, it was redesignated as 268.7(a)(5) by Revision Checklist 50.						
27	These subparagraphs were originally 268.7(b)(1) and 268.7(b)(1)(i)-(iv) when they were added to the code by Revision Checklist 34. However, they were redesignated as 268.7(b)(4) and 268.7(b)(4)(i)-(iv) by Revision Checklist 50.						
28	These subparagraphs were originally 268.7(b)(2) and 268.7(b)(2)(i)-(ii) when they were added to the code by Revision Checklist 34. However, they were redesignated as 268.7(b)(5) and 268.7(b)(5)(i)-(ii) by Revision Checklist 50.						
29	This paragraph was originally 268.7(b)(8) when it was entered into the code by Revision Checklist 50, but it was redesignated as 268.7(b)(7) by Revision Checklist 78 because the old 278.7(b)(7) and 278.7(b)(7)(i)-(iv) were removed by Revision Checklist 78. Revision Checklist 66 corrected 268.7(b)(8) before it was redesignated by Revision Checklist 78.						
30	The notice, certification and test requirements currently found in Federal code at 268.7(c)(1) and (c)(2) were originally addressed in paragraph 268.7(c), as introduced into the code by Revision Checklist 34. 268.7(c) was subsequently modified by Revision Checklists 39 and 50. Revision Checklist 39 added the testing requirements now found at 268.7(c)(2), although at the time the paragraph was still designated as 268.7(c). It was Revision Checklist 50 that significantly revised the paragraph so that the notice and certification requirements now appear at (c)(1) and the testing requirements appear at (c)(2). The checklist reference column, then, includes all relevant checklists for 268.7(c)(1) and (c)(2), rather than just Revision Checklist 50 which primarily affected the formatting changes.						
31	An error in the September 6, 1989 rule (54 FR 36967) makes it appear that the revisions to 268.8(a) include the removal of 268.8(a)(4). This was not the Agency's intent and 268.8(a)(4) remains in Federal code as introduced by Revision Checklist 50.						
32	Note that 268.8(d) in the final rule addressed by Revision Checklist 50 has a typographical error. The reference to 263.33(f) should be 268.33(f), as corrected by Revision Checklist 66.						
33	The 268.30(a) introduction appeared in the final rule addressed by Revision Checklist 50, but was not changed by that rule.						

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
34						
These subparagraphs were originally 268.30(c) and 268.30(c)(1)-(3) when they were introduced into the code by Revision Checklist 34. However, Revision Checklist 50 redesignated them as 268.30(d) and 268.30(d)(1)-(3) because that checklist inserted a new paragraph at 268.30(c).						
35						
These paragraphs were originally 268.31(b) and 268.31(b)(1)-(3) when they were introduced into the code by Revision Checklist 34. However, Revision Checklist 50 redesignated them as 268.31(d) and 268.31(d)(1)-(3), because that checklist inserted a new paragraph at 268.31(b).						
36						
While this subparagraph appeared in the final rule addressed by Revision Checklist 50, the rule did not change this subparagraph.						
37						
The current text of 268.40(a) and 268.41(a) indicates that an extract or treatment residue of certain wastes may be land disposed only if certain requirements are met using either the test method in Appendix I of Part 268 or the test method in Appendix II of Part 261. Following promulgation of the March 29, 1990 Toxicity Characteristics rule addressed by Revision Checklist 74 (55 FR 11798, as amended at 55 FR 26986), both of these appendices relate to the same test method, the TCLP. Previously, the Part 261 appendix contained the EP Toxicity test procedures while the Part 268 appendix contained the TCLP. EPA will issue a correction to the rule for these particular paragraphs in the near future, clarifying which procedures may be used. Until such time, however, EPA indicates that for the specific waste exceptions listed in these paragraphs, the TCLP can be used for measuring compliance with the treatment standards for those specified wastes, and if the extract or treatment residue fails that test, the EP Toxicity test can be used. If the extract or residue passes that less stringent test, then such waste is considered in compliance with the treatment standards. For more information related to the use of either of the two test methods, see the discussion at 55 FR 22660 (June 1, 1990).						
38						
The 55 FR 22520, June 1, 1990, code incorrectly states that a subparagraph 268.42(e) is added. The <u>Federal Register</u> did not contain a 268.42(e); it only added 268.42(d).						
39						
While 268.43(b) appeared in the final rule addressed by Revision Checklist 63, the text of the paragraph was not changed and remains the same as that introduced by Revision Checklist 50.						
40						
Revision Checklist 74, a non-LDR checklist, revised and moved the TCLP from Appendix I of Part 268 to Appendix II of Part 261. The TCLP is used in the LDR program to determine whether certain wastes require treatment prior to land disposal. Because the rule addressed by Revision Checklist 74 included modifications to the TCLP for use in the LDR program, Checklist 74 is included in the LDR Checklist Reference column for Appendix I of Part 268. Effectively, States adopting the Third Thirds Land Disposal Restrictions must also adopt this new version of the TCLP found at Part 261, Appendix II of the July 1, 1990 <u>CFR</u> . Note also that the placement of the TCLP within a State's hazardous waste regulations is not that important, per se. What is important, however, is that the TCLP introduced by Revision Checklist 34, an LDR checklist, is replaced by the TCLP entered into the code and amended by the final rules (55 FR 11798 and 55 FR 26986) addressed by Revision Checklist 74.						

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- 41 Paragraphs 270.42(o) and (p) were introduced into the code by Revision Checklists 34 and 39, respectively. Subsequently, Revision Checklist 54 removed both paragraphs, though these deletions were optional. Though EPA strongly encourages States to adopt the permit modification rule as addressed by Revision Checklist 54, States may elect to retain paragraphs 270.42(o) and (p). Thus, the paragraphs are included in this consolidated checklist. If States have adopted the Revision Checklist 54 modifications, the section title should also be modified to read "Permit Modification at the Request of the Permittee" instead of "Minor Modifications of Permits" and the Revision Checklist 54 modifications made. States should also note that 270.42 was not required by 271.14 to be part of a State's authorized permit program. Thus, only States which elected to have a section analogous to 270.42 (Minor Modification of Permits) at the time of base program authorization need worry about the 270.42 modifications made by Revision Checklists 34 and 39. These changes are, of course, negated if the State chooses to also adopt the Revision Checklist 54 modification.
- 42 Appendix I was introduced by Revision Checklist 54 as an optional modification to Section 270.42. Changes to this appendix addressed by the LDR Revision Checklist 78 are relevant only if a State has modified its code to include Appendix I as per Revision Checklist 54.
- 43 Revision Checklist 78 redesignated item B(1)(b) as item B(1)(c) and added a new B(1)(b).
- 44 This item was entered into the code as Appendix I, B(1)(b) and was redesignated as B(1)(c) by Revision Checklist 78.
- 45 Revision Checklist 61 revised and redesignated 270.72(e) as 270.72(b). The Revision Checklist 61 changes are optional, however, some States may have retained 270.72(e) in their code as introduced by the LDR Revision Checklist 39.

ATTACHMENT C

**Updates to the
State Authorization Manual (SAM)**

Tables G-1 and G-2

The following pages (numbered 4 through 24)
should replace pages 4 through 23 of
SAM Appendix G

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Requirements prior to non-HSWA Cluster I (January 26, 1983 - June 30, 1984; Due Date - one year after the promulgation date of the final rule^{1/})</u>			
1	Biennial Report [See Revision Checklist 30]	48 FR 3977	1/28/83
2	Permit Rules - Settlement Agreement	48 FR 39611	9/1/83
3	Interim Status Standards - Applicability [See Revision Checklist 10 in non-HSWA Cluster I]	48 FR 52718	11/22/83
4	Chlorinated Aliphatic Hydrocarbon Listing (F024)	49 FR 5308	2/10/84
5	National Uniform Manifest [See Revision Checklists 17 D & 32 in HSWA Cluster I]	49 FR 10490	3/20/84
†6	Permit Rules: Settlement Agreement	49 FR 17716	4/24/84
†7	Warfarin & Zinc Phosphide Listing	49 FR 19922	5/10/84
†8	Lime Stabilized Pickle Liquor Sludge	49 FR 23284	6/5/84
<u>Non-HSWA Cluster I (July 1, 1984 - June 30 1985; Due Date - July 1, 1986^{1/})</u>			
	State Availability of Information	HSWA §3006(f)	11/8/84
†9	Household Waste	49 FR 44978	11/13/84
10	Interim Status Standards - Applicability	49 FR 46094	11/21/84
11	Corrections to Test Methods Manual	49 FR 47390	12/4/84
†12	Satellite Accumulation	49 FR 49568	12/20/84
13	Definition of Solid Waste	50 FR 614	1/4/85
(13) ^{2/}	[Definition of Solid Waste; Correction (included on Revision Checklist 13 in non- HSWA Cluster I)]	50 FR 14216	4/11/85

Continued . . .
DLIST9 - 12/9/91

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Cluster I (cont'd)</u>			
15	Interim Status Standards for Treatment, Storage, and Disposal Facilities	50 FR 16044	4/23/85
(13)	[Definition of Solid Waste; Correction (included on Revision Checklist 13 in non-HSWA Cluster I)]	50 FR 33541	8/20/85
<u>Non-HSWA Cluster II (July 1, 1985 - June 30, 1986; Due Date - July 1, 1987^{1/})</u>			
24	Financial Responsibility: Settlement Agreement [See non-HSWA Cluster VI]	51 FR 16422	5/2/86
†26	Listing of Spent Pickle Liquor (K062)	51 FR 19320	5/28/86
(26)	[Listing of Spent Pickle Liquor; Correction (Included on optional Revision Checklist 26 in non-HSWA Cluster II)]	51 FR 33612	9/22/86
(26)	[Spent Pickle Liquor from Steel Finishing Operations (Included on optional Revision Checklist 26 in non-HSWA Cluster II, see Footnote 1 of that checklist)]	52 FR 28697	8/3/87
(24)	[Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Closure/Post-Closure and Financial Responsibility Requirements (Included on Revision Checklist 24 in non-HSWA Cluster II)]	53 FR 7740	3/10/88
<u>Non-HSWA Cluster III (July 1, 1986 - June 30, 1987; Due Date - July 1, 1988^{1/})</u>			
	Radioactive Mixed Waste (See SPA 2)	51 FR 24504	7/3/86
†27 ^{3/}	Liability Coverage - Corporate Guarantee [See Revision Checklist 43 in non-HSWA Cluster IV]	51 FR 25350	7/11/86

Continued . . .
DLIST9 - 12/9/91

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Cluster III (cont'd)</u>			
28	Standards for Hazardous Waste Storage and Treatment Tank Systems [Certain sections superseded by 53 FR 34079, see Revision Checklist 52 in non-HSWA Cluster V; also see HSWA Cluster I]	51 FR 25422	7/14/86
29	Correction to Listing of Commercial Chemical Products and Appendix VIII Constituents [Completely superseded by 53 FR 13382; use Revision Checklist 46 in non-HSWA Cluster IV to replace this checklist]	51 FR 28296	8/6/86
(28)	[Standards for Hazardous Waste Storage and Treatment Tank Systems; Correction (Included on Revision Checklist 28 in non-HSWA Cluster III)]	51 FR 29430	8/15/86
35	Revised Manual SW-846; Amended Incorporation by Reference	52 FR 8072	3/16/87
36	Closure/Post-closure Care for Interim Status Surface Impoundments	52 FR 8704	3/19/87
37	Definition of Solid Waste; Technical Corrections	52 FR 21306	6/5/87
38	Amendments to Part B Information Requirements for Land Disposal Facilities	52 FR 23447	6/22/87
(38)	[Development of Corrective Action Programs After Permitting Hazardous Waste Land Disposal Facilities; Corrections (Included on Revision Checklist 38 in non-HSWA Cluster III)]	52 FR 33936	9/9/87
<u>Non-HSWA Cluster IV (July 1, 1987 - June 30, 1988; Due Date - July 1, 1989¹⁷)</u>			
40	List (Phase 1) of Hazardous Constituents for Ground-Water Monitoring	52 FR 25942	7/9/87

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Cluster IV (cont'd)</u>			
41	Identification and Listing of Hazardous Waste	52 FR 26012	7/10/87
†43 ^{3/}	Liability Requirements for Hazardous Waste Facilities; Corporate Guarantee [See Revision Checklist 27 in non-HSWA Cluster III]	52 FR 44314	11/18/87
45	Hazardous Waste Miscellaneous Units [See Revision Checklist 59 in non-HSWA V for technical corrections]	52 FR 46946	12/10/87
46	Technical Correction; Identification and Listing of Hazardous Waste (Entirely supersedes Revision Checklist 29 in non-HSWA Cluster III)	53 FR 13382	4/22/88
<u>Non-HSWA Cluster V (July 1, 1988 - June 30, 1989; Due Date - July 1, 1990^{1/})</u>			
†49	Identification and Listing of Hazardous Waste; Treatability Studies Sample Exemption	53 FR 27290	7/19/88
51	Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; Liability Coverage [withheld; EPA is responding to the settlement of litigation surrounding this rule]	53 FR 33938	9/1/88
52	Hazardous Waste Management System; Standards for Hazardous Waste Storage and Treatment Tank Systems [See Revision Checklist 28 in non-HSWA Cluster III; also see HSWA Cluster II]	53 FR 34079	9/2/88

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Cluster V (cont'd)</u>			
53	Identification and Listing of Hazardous Waste; and Designation, Reportable Quantities, and Notification	53 FR 35412	9/13/88
†54	Permit Modifications for Hazardous Waste Management Facilities	53 FR 37912	9/28/88
55	Statistical Methods for Evaluating Ground-Water Monitoring Data from Hazardous Waste Facilities	53 FR 39720	10/11/88
(54)	[Permit Modifications for Hazardous Waste Management Facilities (Included on optional Revision Checklist 54 in non-HSWA Cluster V)]	53 FR 41649	10/24/88
†56	Identification and Listing of Hazardous Waste; Removal of Iron Dextran from the List of Hazardous Wastes	53 FR 43878	10/31/88
†57	Identification and Listing of Hazardous Waste; Removal of Strontium Sulfide from the List of Hazardous Wastes	53 FR 43881	10/31/88
†58	Standards for Generators of Hazardous Waste; Manifest Renewal	53 FR 45089	11/8/88
59	Hazardous Waste Miscellaneous Units; Standards Applicable to Owners and Operators (Technical correction to Revision Checklist 45 in non-HSWA Cluster IV)	54 FR 615	1/9/89
60	Amendment to Requirements for Hazardous Waste Incinerator Permits	54 FR 4286	1/30/89
†61	Changes to Interim Status Facilities for Hazardous Waste Management Permits; Modifications of Hazardous Waste Management Permits; Procedures for Post-Closure Permitting	54 FR 9596	3/7/89

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>Non-HSWA Cluster VI (July 1, 1989 - June 30, 1990; Due Date - July 1, 1991^{1/})</u>			
†64 ^{4/}	Delay of Closure Period for Hazardous Waste Management Facilities	54 FR 33376	8/14/89
65	Mining Waste Exclusion I	54 FR 36592	9/1/89
67	Testing and Monitoring Activities	54 FR 40260	9/29/89
70	Changes to Part 124 Not Accounted for by Present Checklists	Various	Various
24 ^{5/} (Amended)	Financial Responsibility: Settlement Agreement; Correction [See Revision Checklist 64 and Footnote 4 of this table]	55 FR 25976	6/26/90
71	Mining Waste Exclusion II	55 FR 2322	1/23/90
72	Modifications of F019 Listing	55 FR 5340	2/14/90
73	Testing and Monitoring Activities; Technical Corrections	55 FR 8948	3/9/90
76	Criteria for Listing Toxic Wastes; Technical Amendment	55 FR 18726	5/4/90
78 ^{6/}	Land Disposal Restrictions for Third Third Scheduled Wastes [See HSWA Cluster II]	55 FR 22520	6/1/90
<u>HSWA Cluster I (November 8, 1984 - June 30, 1987; Due Date - July 1, 1989^{1/})</u>			
	Surface Impoundment Requirements	HSWA §3005(j) §3004(d)	
	Exceptions to the Burning and Blending of Hazardous Waste	HSWA §3004(q)(2)(A) §3004(r)(2)&(3)	

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster I (cont'd)</u>			
	Hazardous and Used Oil Fuel Criminal Penalties	HSWA §3006(h) §3008(d) §3014	
	HSWA Date of Enactment Provisions [See Revision Checklists 17 A - S in HSWA Cluster I]	Numerous	11/8/84
	Direct Action Against Insurers	HSWA §3004(t)	11/8/84
14	Dioxin Waste Listing and Management Standards	50 FR 1978	1/14/85
	Fuel Labeling [See Revision Checklist 17 K in HSWA Cluster I]	HSWA §3004 (r)(1)	2/7/85
16	Paint Filter Test [See Revision Checklist 25 in HSWA Cluster I]	50 FR 18370	4/30/85
	Prohibition of Liquids in Landfills [See Revision Checklist 17 F in HSWA Cluster I]	HSWA §3004(c)	5/8/85
	Expansions During Interim Status - Waste Piles [See Revision Checklist 17 P in HSWA Cluster I]	HSWA §3015(a)	5/8/85
	Expansions During Interim Status - Landfills and Surface Impoundments [See Revision Checklist 17 P in HSWA Cluster I]	HSWA §3015(b)	5/8/85
	Sharing of Information With the Agency for Toxic Substances and Disease Registry	HSWA §3019(b)	7/15/85
17	HSWA Codification Rule [See Revision Checklist 44 in HSWA Cluster II]	50 FR 28702	7/15/85

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster I (cont'd)</u>			
	17 A - Small Quantity Generators [Superseded by 51 FR 10146, see Revision Checklist 23 in HSWA Cluster I]		
†	17 B - Delsing		
†	17 C - Household Waste		
	17 D - Waste Minimization [See Revision Checklist 32 in HSWA Cluster I]		
	17 E - Location Standards for Salt Domes, Salt Beds, Underground Mines and Caves		
	17 F - Liquids in Landfills [See Revision Checklist 25 in HSWA Cluster I]		
	17 G - Dust Suppression		
	17 H - Double Liners		
	17 I - Ground-Water Monitoring		
	17 J - Cement Kilns		
	17 K - Fuel Labeling [Superseded by 51 FR 49164, see Revision Checklist 19 in HSWA Cluster I]		
	17 L - Corrective Action		
	17 M - Pre-construction Ban		
	17 N - Permit Life		
	17 O - Omnibus Provision		
	17 P - Interim Status		
†	17 Q - Research and Development Permits		
	17 R - Hazardous Waste Exports [Superseded by 51 FR 28644, see Revision Checklist 31 in HSWA Cluster I]		
	17 S - Exposure Information		
18	Listing of TDI, TDA, DNT	50 FR 42936	10/23/85
19	Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces	50 FR 49164	11/29/85
20	Listing of Spent Solvents	50 FR 53315	12/31/85
(20)	[Listing of Spent Solvents; Correction (Included on Revision Checklist 20)]	51 FR 2702	1/21/86

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster I (cont'd)</u>			
21	Listing of EDB Waste	51 FR 5327	2/13/86
22	Listing of Four Spent Solvents	51 FR 6537	2/25/86
23	Generators of 100 to 1000 kg Hazardous Waste [See Revision Checklists 42 and 47 in HSWA Cluster II]	51 FR 10146	3/24/86
25	Codification Rule, Technical Correction (Paint Filter Test)	51 FR 19176	5/28/86
28	Standards for Hazardous Waste Storage and Treatment Tank Systems [Certain sections superseded by 53 FR 34079, see Revision Checklist 52 in HSWA Cluster II; also see Non-HSWA Cluster III]	51 FR 25422	7/14/86
30	Biennial Report; Correction	51 FR 28556	8/8/86
31	Exports of Hazardous Waste [See Revision Checklist 48 in HSWA Cluster II]	51 FR 28664	8/8/86
(28)	[Hazardous Waste Storage and Tank Systems; Corrections (See Revision Checklist 28 in HSWA Cluster I)]	51 FR 29430	8/15/86
32	Standards for Generators - Waste Minimization Certifications	51 FR 35190	10/1/86
33	Listing of EBDC	51 FR 37725	10/24/86
34	Land Disposal Restrictions [Certain sections superseded by 52 FR 25760 and 53 FR 31138, see Revision Checklists 39 & 50 in HSWA Cluster II, and SPAs 4 & 6]	51 FR 40572	11/7/86
(19)	[Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces; Technical Corrections (Included on Revision Checklist 19 in HSWA Cluster I)]	52 FR 11819	4/13/87

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster I (cont'd)</u>			
(34)	[Land Disposal Restrictions; Corrections (Included on Revision Checklist 34 in HSWA Cluster I)]	52 FR 21010	6/4/87
(17B)	[Hazardous Waste Management System: Requirements of Rulemaking Petitions (Included on optional Revision Checklist 17 B in HSWA Cluster I)]	54 FR 27114	6/27/89
<u>HSWA Cluster II (July 1, 1987 - June 30, 1990; Due Date - July 1, 1991¹)</u>			
39	California List Waste Restrictions [See Revision Checklist 34 and SPA 4; certain sections superseded by 53 FR 31138, see Revision Checklist 50, in HSWA Cluster II, and SPA 6]	52 FR 25760	7/8/87
42	Exception Reporting for Small Quantity Generators of Hazardous Waste [See Checklist 23 in HSWA Cluster I]	52 FR 35894	9/23/87
(39)	[California List Waste Restrictions; Technical Corrections (Included on Revision Checklist 39 in HSWA Cluster II)]	52 FR 41295	10/27/87
44	HSWA Codification Rule 2 [See Revision Checklist 17 in HSWA Cluster I]	52 FR 45788	12/1/87
	44 A - Permit Application Requirements Regarding Corrective Action		
	44 B - Corrective Action Beyond Facility Boundary		
	44 C - Corrective Action for Injection Wells		
	44 D - Permit Modification		
	44 E - Permit as a Shield Provision		
	44 F - Permit Conditions to Protect Human Health and the Environment		
	44 G - Post-Closure Permits		
47	Identification and Listing of Hazardous Waste; Technical Correction (corrects Revision Checklist 23 in HSWA Cluster I)	53 FR 27162	7/19/88

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster II (cont'd)</u>			
48	Farmer Exemptions; Technical Corrections (corrects Revision Checklist 31 in HSWA Cluster I)	53 FR 27164	7/19/88
50	Land Disposal Restrictions for First Third Scheduled Wastes [See Revision Checklist 62 in HSWA Cluster I]	53 FR 31138	8/17/88
52	Hazardous Waste Management System; Standards for Hazardous Waste Storage and Treatment Tank Systems [Supersedes certain portions of Revision Checklist 28 in HSWA Cluster I; also see non-HSWA Cluster V]	53 FR 34079	9/2/88
(50)	[Land Disposal Restrictions (Included on Revision Checklist 50 in HSWA Cluster II)]	54 FR 8264	2/27/89
62	Land Disposal Restriction Amendments to First Third Scheduled Wastes [amends portions of Revision Checklist 50 in HSWA Cluster II]	54 FR 18836	5/2/89
63	Land Disposal Restrictions for Second Third Scheduled Wastes	54 FR 26594	6/23/89
66	Land Disposal Restrictions; Correction to the First Third Scheduled Wastes	54 FR 36967	9/6/89
68	Reportable Quantity Adjustment Methyl Bromide Production Wastes	54 FR 41402	10/6/89
69	Reportable Quantity Adjustment	54 FR 50968	12/11/89
74	Toxicity Characteristics Revisions	55 FR 11798	3/29/90
75	Listing of 1,1-Dimethylhydrazine Production Wastes	55 FR 18496	5/2/90
77	HSWA Codification Rule, Double Liners; Correction	55 FR 19262	5/9/90

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
<u>HSWA Cluster II (cont'd)</u>			
78 ^{6/}	Land Disposal Restrictions for Third Third Scheduled Wastes [See non-HSWA Cluster VI]	55 FR 22520	6/1/90
(66)	[Land Disposal Restrictions; Correction (Included on Revision Checklist 66 in HSWA Cluster II)]	55 FR 23935	6/13/90
79	Hazardous Waste Treatment, Storage, and Disposal Facilities--Organic Air Emission Standards For Process Vents and Equipment Leaks (See Revision Checklist 87 in RCRA Cluster I)	55 FR 25454	6/21/90
(74)	[Toxicity Characteristics Revisions; Correction (Included on Revision Checklist 74 in HSWA Cluster II)]	55 FR 26986	6/29/90

† Optional.

¹States have an additional year if statutory changes are required.

²A parenthesized number implies that this is not the main rule for the indicated checklist. However, the rule is included on the indicated checklist. Rules with parenthesized numbers are typically technical corrections or amendments to a major final rule. These corrections are usually close enough in time to the initial final rule that the correction was included on the checklist for the initial rule, rather than develop a new checklist for the correction.

³While Revision Checklists 27 and 43 are optional, States which have adopted or choose to adopt the changes addressed by Revision Checklist 27 must adopt Revision Checklist 43's changes.

⁴The May 2, 1986 amendments to 40 CFR 264.113 and 265.113, addressed by Revision Checklist 24, must be adopted before or simultaneous with adopting the provisions addressed by Revision Checklist 64. Also see Footnote 5.

SPA 9

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1990

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>HSWA or FR Reference</u>	<u>Promulga- tion or HSWA Date</u>
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⁵Only those sections, i.e., 40 CFR 264.113 and 265.113, of Revision Checklist 24 (Amended) recharacterized as more stringent by the June 26, 1990 correction are included in non-HSWA Cluster VI. All other Revision Checklist 24 provisions continue to be included in non-HSWA Cluster II. States which have already adopted the 264.113 and 265.113 amendments as part of their authorization for Revision Checklist 24 in non-HSWA Cluster II, are not affected by this correction and do not have to submit an amended Revision Checklist 24.

⁶Revision Checklist 78 is in HSWA Cluster II, with the exception of the clarifying amendment to §268.33(c) which is in non-HSWA Cluster VI. This clarification is not immediately effective in authorized States since the requirements are not imposed pursuant to HSWA. Thus, these requirements are applicable only in those States that do not have interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER
Through June 30, 1991**

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>Cluster</u>
	State Availability of Information [See Appendix N]	Non-HSWA Cluster I
	Radioactive Mixed Waste (See SPA 2 and Appendix N)	Non-HSWA Cluster III
	Direct Action Against Insurers	HSWA Cluster I
	Surface Impoundment Requirements	HSWA Cluster I
	Sharing of Information With the Agency for Toxic Substances and Disease Registry	HSWA Cluster I
	Exceptions to the Burning and Blending of Hazardous Waste	HSWA Cluster I
	Hazardous and Used Oil Fuel Criminal Penalties	HSWA Cluster I
1	Biennial Report	Non-HSWA Requirements Prior to Non-HSWA Cluster I
2	Permit Rules - Settlement Agreement	Non-HSWA Requirements Prior to Non-HSWA Cluster I
3	Interim Status Standards - Applicability	Non-HSWA Requirements Prior to Non-HSWA Cluster I
4	Chlorinated Aliphatic Hydrocarbon Listing (F024)	Non-HSWA Requirements Prior to Non-HSWA Cluster I
5	National Uniform Manifest	Non-HSWA Requirements Prior to Non-HSWA Cluster I
†6	Permit Rules: Settlement Agreement	Non-HSWA Requirements Prior to Non-HSWA Cluster I
†7	Warfarin & Zinc Phosphide Listing	Non-HSWA Requirements Prior to Non-HSWA Cluster I
†8	Lime Stabilized Pickle Liquor Sludge	Non-HSWA Requirements Prior to Non-HSWA Cluster I

Continued . . .
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SPA 9

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

Revision Checklist Number	Federal Requirement	Cluster
†9	Household Waste	Non-HSWA Cluster I
10	Interim Status Standards - Applicability	Non-HSWA Cluster I
11	Corrections to Test Methods Manual	Non-HSWA Cluster I
†12	Satellite Accumulation	Non-HSWA Cluster I
13	Definition of Solid Waste	Non-HSWA Cluster I
14	Dioxin Waste Listing and Management Standards	HSWA Cluster I
15	Interim Status Standards for Treatment, Storage, and Disposal Facilities	Non-HSWA Cluster I
16	Paint Filter Test	HSWA Cluster I
17	HSWA Codification Rule	HSWA Cluster I
	17 A - Small Quantity Generators	
†	17 B - Delisting	
†	17 C - Household Waste	
	17 D - Waste Minimization	
	17 E - Location Standards for Salt Domes, Salt Beds, Underground Mines and Caves	
	17 F - Liquids in Landfills	
	17 G - Dust Suppression	
	17 H - Double Liners	
	17 I - Ground-Water Monitoring	
	17 J - Cement Kilns	
	17 K - Fuel Labeling	
	17 L - Corrective Action	
	17 M - Pre-construction Ban	
	17 N - Permit Life	
	17 O - Omnibus Provision	
	17 P - Interim Status	
	17 Q - Research and Development Permits	
†	17 R - Hazardous Waste Exports	
	17 S - Exposure Information	

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

Revision Checklist Number	Federal Requirement	Cluster
18	Listing of TDI, TDA, DNT	HSWA Cluster I
19	Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces	HSWA Cluster I
20	Listing of Spent Solvents	HSWA Cluster I
21	Listing of EDB Waste	HSWA Cluster I
22	Listing of Four Spent Solvents	HSWA Cluster I
23	Generators of 100 to 1000 kg Hazardous Waste	HSWA Cluster I
24 ^{1/}	Financial Responsibility: Settlement Agreement	Non-HSWA Cluster II and Non-HSWA Cluster VI
25	Codification Rule, Technical Correction (Paint Filter Test)	HSWA Cluster I
†26	Listing of Spent Pickle Liquor (K062)	Non-HSWA Cluster II
†27 ^{2/}	Liability Coverage - Corporate Guarantee	Non-HSWA Cluster III
28	Standards for Hazardous Waste Storage and Treatment Tank Systems	Non-HSWA Cluster III and HSWA Cluster I
29	Correction to Listing of Commercial Chemical Products and Appendix VIII Constituents	Non-HSWA Cluster III
30	Biennial Report; Correction	HSWA Cluster I
31	Exports of Hazardous Waste	HSWA Cluster I
32	Standards for Generators - Waste Minimization Certifications	HSWA Cluster I
33	Listing of EBDC	HSWA Cluster I
34	Land Disposal Restrictions	HSWA Cluster I

SPA 9

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

Revision Checklist Number	Federal Requirement	Cluster
35	Revised Manual SW-846; Amended Incorporation by Reference	Non-HSWA Cluster III
36	Closure/Post-closure Care for Interim Status Surface Impoundments	Non-HSWA Cluster III
37	Definition of Solid Waste; Technical Corrections	Non-HSWA Cluster III
38	Amendments to Part B Information Requirements for Land Disposal Facilities	Non-HSWA Cluster III
39	California List Waste Restrictions	HSWA Cluster II
40	List (Phase 1) of Hazardous Constituents for Ground-Water Monitoring	Non-HSWA Cluster IV
41	Identification and Listing of Hazardous Waste	Non-HSWA Cluster IV
42	Exception Reporting for Small Quantity Generators of Hazardous Waste	HSWA Cluster II
†43 ^{2/}	Liability Requirements for Hazardous Waste Facilities; Corporate Guarantee	Non-HSWA Cluster IV
44	HSWA Codification Rule 2	HSWA Cluster II
	44 A - Permit Application Require- ments Regarding Corrective Action	
	44 B - Corrective Action Beyond Facility Boundary	
	44 C - Corrective Action for Injection Wells	
	44 D - Permit Modification	
	44 E - Permit as a Shield Provision	

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>Cluster</u>
	44 F - Permit Conditions to Protect Human Health and the Environment	
	44 G - Post-Closure Permits	
45	Hazardous Waste Miscellaneous Units	Non-HSWA Cluster IV
46	Technical Correction; Identification and Listing of Hazardous Waste	Non-HSWA Cluster IV
47	Identification and Listing of Hazardous Waste; Technical Correction	HSWA Cluster II
48	Farmer Exemptions; Technical Corrections	HSWA Cluster II
†49	Identification and Listing of Hazardous Waste; Treatability Studies Sample Exemption	Non-HSWA Cluster V
50	Land Disposal Restrictions for First Third Scheduled Wastes	HSWA Cluster II
51	Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; Liability Coverage [withheld; EPA is responding to the settlement of litigation surrounding this rule]	Non-HSWA Cluster V
52	Hazardous Waste Management System; Standards for Hazardous Waste Storage and Treatment Tank Systems	Non-HSWA Cluster V and HSWA Cluster II
53	Identification and Listing of Hazardous Waste; and Designation, Reportable Quantities, and Notification	Non-HSWA Cluster V

SPA 9

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

<u>Revision Checklist Number</u>	<u>Federal Requirement</u>	<u>Cluster</u>
†54	Permit Modifications for Hazardous Waste Management Facilities	Non-HSWA Cluster V
55	Statistical Methods for Evaluating Ground-Water Monitoring Data from Hazardous Waste Facilities	Non-HSWA Cluster V
†56	Identification and Listing of Hazardous Waste; Removal of Iron Dextran from the List of Hazardous Wastes	Non-HSWA Cluster V
†57	Identification and Listing of Hazardous Waste; Removal of Strontium Sulfide from the List of Hazardous Wastes	Non-HSWA Cluster V
†58	Standards for Generators of Hazardous Waste; Manifest Renewal	Non-HSWA Cluster V
59	Hazardous Waste Miscellaneous Units; Standards Applicable to Owners and Operators	Non-HSWA Cluster V
60	Amendment to Requirements for Hazardous Waste Incinerator Permits	Non-HSWA Cluster V
†61	Changes to Interim Status Facilities for Hazardous Waste Management Permits; Modifications of Hazardous Waste Management Permits; Procedures for Post-Closure Permitting	Non-HSWA Cluster V
62	Land Disposal Restriction Amendments to First Third Scheduled Wastes	HSWA Cluster II
63	Land Disposal Restrictions for Second Third Scheduled Wastes	HSWA Cluster II

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

Revision Checklist Number	Federal Requirement	Cluster
64 ^{3/}	Delay of Closure Period for Hazardous Waste Management Facilities	Non-HSWA Cluster VI
65	Mining Waste Exclusion I	Non-HSWA Cluster VI
66	Land Disposal Restrictions; Correction to First Third Scheduled Wastes	HSWA Cluster II
67	Testing and Monitoring Activities	Non-HSWA Cluster VI
68	Reportable Quantity Adjustment Methyl Bromide Production Wastes	HSWA Cluster II
69	Reportable Quantity Adjustment	HSWA Cluster II
70	Changes to Part 124 Not Accounted for by Present Checklists	Non-HSWA VI
71	Mining Waste Exclusion II	Non-HSWA Cluster VI
72	Modification of F019 Listing	Non-HSWA Cluster VI
73	Testing and Monitoring Activities; Technical Corrections	Non-HSWA Cluster VI
74	Toxicity Characteristics Revision	HSWA Cluster II
75	Listing of 1,1-Dimethylhydrazine Production Wastes	HSWA Cluster II
76	Criteria for Listing Toxic Wastes; Technical Amendment	Non-HSWA Cluster VI
77	HSWA Codification Rule, Double Liners; Correction	HSWA Cluster II
78 ^{4/}	Land Disposal Restrictions for Third Third Scheduled Wastes	Non-HSWA Cluster VI and HWSA CLuster II

SPA 9

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991**

Revision Checklist Number	Federal Requirement	Cluster
79	Hazardous Waste Treatment, Storage, and Disposal Facilities-- Organic Air Emission Standards For Process Vents and Equipment Leaks	HSWA Cluster II

† Optional.

¹Only those sections, i.e., 40 CFR 264.113 and 265.113, of Revision Checklist 24 (Amended) recharacterized as more stringent by the June 26, 1990 correction are included in non-HSWA Cluster VI. All other Revision Checklist 24 provisions continue to be included in non-HSWA Cluster II. States which have already adopted the 264.113 and 265.113 amendments as part of their authorization for Revision Checklist 24 in non-HSWA Cluster II, are not affected by this correction and do not have to submit an amended Revision Checklist 24.

²While Revision Checklists 27 and 43 are optional, states which have adopted or choose to adopt the changes addressed by Revision Checklist 27, must adopt Revision Checklist 43's changes.

³The May 2, 1986 amendments to 40 CFR 264.113 and 265.113, addressed by Revision Checklist 24, must be adopted before or simultaneous with adopting the provisions addressed by Revision Checklist 64. Also see Footnote 1.

⁴Revision Checklist 78 is in HSWA Cluster II, with the exception of the clarifying amendment to §268.33(c) which is in non-HSWA Cluster VI. This clarification is not immediately effective in authorized States since the requirements are not imposed pursuant to HSWA. Thus, these requirements are applicable only in those States that do not have interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

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PART 2 OF 2



Model Revision Attorney General's Statement

The following pages (numbered 9 through 47)
should replace pages 9 through 43 of
SAM Appendix E

MODEL REVISION ATTORNEY GENERAL'S STATEMENT FOR FINAL
AUTHORIZATION FOR CHANGES TO THE FEDERAL
RCRA PROGRAM FROM JANUARY 1983 THROUGH
JUNE 1990

I hereby certify, pursuant to my authority as _____ and in accordance with Section 3006(b) of the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments of 1984 (42 USC 6901 et seq.), and 40 CFR 271 that in my opinion the laws of the State [Commonwealth] of _____ provide adequate authority to carry out the revised program set forth in the revised "Program Description" submitted by the [State Agency]. The specific authorities provided are contained in statutes or regulations lawfully adopted at the time this Statement is signed and which are in effect now [shall be fully effective by _____], as specified below. These authorities and this certification supplement [or supercede (and indicate how supercede)] the previously certified authorities described in my [or my predecessors] certification(s) of _____ (date or dates).

Please add an explanation of how the Revision Attorney General's Statement you are submitting relates to any prior Attorney General's Statements you have submitted.

I. IDENTIFICATION AND LISTING

A. State statutes and regulations contain lists of hazardous waste which encompass all wastes controlled under the following Federal regulations as indicated in the designated Revision Checklists:

- (1) Chlorinated aliphatic hydrocarbons, 40 CFR 261.31, Part 261 Appendices VII and VIII as amended February 10, 1984 [49 FR 5308], Revision Checklist 4.
- ¹ (2) OPTIONAL: This is a reduced requirement.] Warfarin and zinc phosphide listing, 40 CFR 261.33(e) and (f), as amended May 10, 1984 [49 FR 19923], Revision Checklist 7.
- (3) TDI, DNT and TDA wastes, 40 CFR 261.32, 261.33(f), and Part 261 Appendices III, VII and VIII as amended October 23, 1985 [50 FR 42936], Revision Checklist 18.
- (4) Spent solvents, 40 CFR 261.31, as amended December 31, 1985 [50 FR 53319] and January 21, 1986 [51 FR 2702], Revision Checklist 20.
- (5) EDB wastes, 40 CFR 261.32 and Part 261 Appendices II, III and VIII, as amended February 13, 1986 [51 FR 5330], Revision Checklist 21.

¹The phrase "OPTIONAL: This is a reduced requirement" is used to indicate provisions that either are less stringent or reduce the scope of the program. Any State which adopts an "optional" requirement must ensure that it is at least as stringent as the Federal requirement.

- (6) Four spent solvents, 40 CFR 261.31, 261.33(f), and Part 261 Appendices III, VII and VIII as amended February 25, 1986 [51 FR 6541], Revision Checklist 22.
- (7) [OPTIONAL: This is a reduced requirement.] Listing of spent pickle liquor from steel finishing operations, 40 CFR 261.32, as amended May 28, 1986 [51 FR 19320] and September 22, 1986 [51 FR 33612], Revision Checklist 26.
- (8) Listing of commercial chemical products and Appendix VIII constituents, 40 CFR 261.33 and Part 261 Appendix VIII, as amended August 6, 1986 [51 FR 28296], Revision Checklist 29; as amended July 10, 1987 [52 FR 26012], Revision Checklist 41; and as amended April 22, 1988 [53 FR 13382], Revision Checklist 46.
- (9) EBDC wastes, 40 CFR 261.32 and Part 261 Appendices III and VII, as amended on October 24, 1986 [51 FR 37725], Revision Checklist 33.
- (10) Listing of spent potliners from aluminum reduction (K088), 40 CFR 261.32 and Part 261 Appendix VII, as amended September 13, 1988 [53 FR 35412], Revision Checklist 53.
- (11) [OPTIONAL: This is a reduced requirement.] Generic delisting of iron dextran (CAS No. 9004-66-4), 40 CFR 261.33(f) and Part 261 Appendix VIII, as amended October 31, 1988 [53 FR 43878], Revision Checklist 56.
- (12) [OPTIONAL: This is a reduced requirement.] Generic delisting of strontium sulfide (CAS No. 1314-96-1), 40 CFR 261.33(e) and Part 261 Appendix VIII, as amended October 31, 1988 [53 FR 43881], Revision Checklist 57.
- (13) Listing of two wastes (K131 and K132) generated during the production of methyl bromide, 40 CFR 261.32 and 261 Appendices III and VII, as amended October 6, 1989 [54 FR 41402], Revision Checklist 68.
- (14) Listing of one generic category (F025) of waste generated during the manufacture of chlorinated aliphatic hydrocarbons by free radical catalyzed processes and amending F024, 40 CFR 261.31 and 261 Appendix VII; adding one toxicant to 261 Appendix VIII; as amended December 11, 1989 [54 FR 50968], Revision Checklist 69.
- (15) [OPTIONAL: This is a reduced requirement.] Amendment to the F019 hazardous waste listing to exclude wastewater treatment sludges from zirconium phosphating in aluminum can washing, when such phosphating is an exclusive conversion coating process, 40 CFR 261.31, as amended February 14, 1990 [55 FR 5340], Revision Checklist 72.
- (16) Listing of four wastes (K107-K110) generated during the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides, 40 CFR 261.31 and Part 261 Appendices III and VII, as amended May 2, 1990 [55 FR 18496], Revision Checklist 75.

SPA 9

- (17) Listing of multisource waste (F039), 40 CFR 261.31 and Part 261 Appendix VII, as amended June 1, 1990 [55 FR 22520], Revision Checklist 78.

Federal Authority: RCRA §3001(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations define hazardous waste so as to control the generation, transportation, treatment, storage and disposal of hazardous waste produced by small quantity generators of between 100 and 1000 kilograms/month as indicated in Revision Checklist 23 (which supercedes prior amendments by Revision Checklist 17 A) and Revision Checklist 47 (providing technical corrections to Checklist 23). State statutes and regulations also require small quantity generators to certify good faith efforts to minimize waste generation and to select the best available and affordable treatment, storage or disposal alternatives, 40 CFR Part 262 as amended October 1, 1986 [51 FR 35190], Revision Checklist 32 (see Item IX below).

Federal Authority: RCRA §3001(d); 40 CFR Parts 260-263 and 270 as amended March 24, 1986 (51 FR 10146), October 1, 1986 (51 FR 35190), and July 19, 1988 (53 FR 27162).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. [This requirement applies only if States have a delisting mechanism. This requirement is NOT OPTIONAL for such States.] State statutes and regulations provide authority to delist hazardous waste as indicated in Revision Checklist 17 B.

- (1) State statutes and regulations require that before deciding to delist a waste, the State must consider whether any listing factor (including additional constituents) other than those for which the waste was listed would cause the waste to be hazardous.

Federal Authority: RCRA §3001(f)(1); 40 CFR 260.22 as amended July 15, 1985 (50 FR 28702) and June 27, 1989 (54 FR 27114).

(2) State statutes and regulations require that there be no new temporary delistings without prior notice and comment. All temporary delistings received before November 18, 1984 without the opportunity for public comment and full consideration of such comment, shall lapse if not made final by November 8, 1986.

Federal Authority: RCRA §3001(f)(2); 40 CFR 260.20(d) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. [OPTIONAL: This is a reduced requirement.] State statutes and regulations define hazardous waste so as to exclude waste pickle liquor sludge generated by lime stabilization, but only to the extent that such waste is excluded by 40 CFR 261.3(c)(2), as indicated in Revision Checklist 8.

Federal Authority: RCRA §3001; 40 CFR 261.3(c) as amended June 5, 1984 (49 FR 23284).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. [OPTIONAL: This is a reduced requirement.] State statutes and regulations define hazardous waste so as to not exclude household waste other than those household wastes excluded in 40 CFR 261.4(b)(1), as indicated in Revision Checklists 9 and 17 C.

Federal Authority: RCRA §3001; 40 CFR 261.4(b)(1) as amended November 13, 1984 (49 FR 44980) and July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

F. State statutes and regulations incorporate the most recent edition and updates to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) as indicated in Revision Checklists 11 and 35.

Federal Authority: RCRA §§2002, 3001; 40 CFR 260.11, 260.21 and 270.6(a) as amended December 4, 1984 (49 FR 47390) and March 16, 1987 (52 FR 8072).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

G. State statutes and regulations define solid wastes to include the hazardous components of radioactive mixed wastes, July 3, 1986 [51 FR 24504]. See State Program Advisory (SPA) #2.

SPA 9

Federal Authority: RCRA §§1004(27) and 3001(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

H. [OPTIONAL: This is a reduced requirement.] State statutes and regulations exempt (with certain limitations) waste samples used in small scale treatability studies from Subtitle C regulation as indicated in Revision Checklist 49.

Federal Authority: RCRA §3001; 40 CFR 260.10 and 261.4(e)&(f) as amended July 19, 1988 (53 FR 27290).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

I. State statutes and regulations exclude from the mining waste exemption the six wastes listed at 40 CFR 261.4(b)(7)(i) through 261.4(b)(7)(vi), as indicated in Revision Checklist 53.

Federal Authority: RCRA §3001(b); 40 CFR 261.4(b)(7) as amended September 13, 1988 (53 FR 35412).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

J. State statutes and regulations that:

1. provide final criteria to define Bevill-excluded mineral processing wastes, finalize the Bevill status of nine mineral processing waste streams, and list those mineral processing wastes subject to conditional retention as indicated in Revision Checklist 65.

Federal Authority: RCRA §3001(b); 40 CFR 261.3 and 261.4 as amended September 1, 1989 (54 FR 36592).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

2. remove five conditionally retained mineral processing wastes from the exemption from hazardous waste regulation under the Bevill exclusion, and amend the definitions of "beneficiation" and "designated facility" as indicated in Revision Checklist 71.

Federal Authority: RCRA §3001(b)(3)(A)(ii); 40 CFR 260.10 and 261.4(b)(7) as amended January 23, 1990 (55 FR 2322).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

K. State statutes and regulations incorporate 47 new testing methods as approved methods for use in meeting the regulatory requirements under Subtitle C of RCRA as indicated in Revision Checklists 67 and 73.

Federal Authority: RCRA §§3001, 3004, 3005, and 3006; 40 CFR 260.11 and Part 261 Appendix III as amended September 29, 1989 (54 FR 40260) and March 9, 1990 (55 FR 8948).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

L. State statutes and regulations revise the existing toxicity characteristic by replacing the Extraction Procedure (EP) leach test with the Toxicity Characteristic Leaching Procedure (TCLP) for identifying wastes that are defined as hazardous and subject to regulation under Subtitle C of RCRA as indicated in Revision Checklist 74. State statutes and regulations add 25 organic chemicals and their regulatory levels to the list of toxic constituents of concern as indicated in Revision Checklist 74.

Federal Authority: RCRA §§1006, 2002(a), 3001, 3002, 3004, 3005 and 3006; 40 CFR Parts 261, 264, 265 and 268 as amended March 29, 1990 (55 FR 11798), and June 29, 1990 (55 FR 26986).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

M. State statutes and regulations contain language to result in consistent interpretation of the criteria for listing wastes as hazardous under RCRA as indicated in Revision Checklist 76.

Federal Authority: RCRA §3001(a); 40 CFR 261.11(a)(3) as amended May 4, 1990 (55 FR 18726).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

N. State statutes and regulations add eight new testing methods related to air emission control to the section of regulations that incorporates these methods by reference as indicated in Revision Checklist 79.

Federal Authority: RCRA §§3001, 3004, 3005 and 3006; 40 CFR 260.11(a) as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

II. DEFINITION OF SOLID WASTE

A. State statutes and regulations define hazardous waste and impose management standards so as to control all the hazardous waste controlled under 40 CFR Parts 261, 264, 265 and 266 as indicated in Revision Checklists 13 and 37.

Federal Authority: RCRA §§3001 and 3004; 40 CFR Parts 260, 261, 264, 265, and 266 as amended January 4, 1985 (50 FR 614), April 11, 1985 (50 FR 14216), August 20, 1985 (50 FR 33541) and June 5, 1987 (52 FR 21306).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

III. MANAGEMENT OF DIOXIN WASTES

A. State statutes and regulations contain the following requirements regarding dioxin wastes as indicated in Revision Checklist 14:

(1) Dioxin wastes are listed and otherwise identified as hazardous wastes so as to encompass all such wastes controlled under 40 CFR 261.5(e), 261.7(b), 261.30(d), 261.31, 261.33(f), and Part 261 Appendix X.

(2) Special management and permitting standards for facilities managing dioxin wastes and prohibitions applicable to permitted and interim status facilities, as provided in 40 CFR Parts 264, 265, and 270.

Federal Authority: RCRA §§3001 and 3004; 40 CFR Parts 261, 264, 265 and 270 as amended January 14, 1985 (50 FR 1978).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

IV. SATELLITE ACCUMULATION

A. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow generators to accumulate at the site of generation, without a permit or interim status, as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste provided that the generator complies with the requirements specified in §262.34(c) as indicated in Revision Checklist 12.

Federal Authority: RCRA §§2002, 3002, 3004 and 3005; 40 CFR 262.34(c) as amended December 20, 1984 (49 FR 49571).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

V. APPLICABILITY OF INTERIM STATUS STANDARDS

A. State statutes and regulations contain the following requirements regarding interim status standards as indicated in Revision Checklists 3 and 10:

- (1) Interim status standards apply to facilities identified in 40 CFR 265.1(b).

Federal Authority: RCRA §3004; 40 CFR Part 265 as amended November 22, 1983 (48 FR 52718) and November 21, 1984 (49 FR 46095).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VI. PAINT FILTER TEST

A. State statutes and regulations require the use of a paint filter test to determine the absence or presence of free liquids in either a containerized or bulk waste as indicated in Revision Checklists 16, 17 F and 25.

Federal Authority: RCRA §§3004 and 3005; 40 CFR Parts 260, 264, 265, and 270 as amended April 30, 1985 (50 FR 18370), July 15, 1985 (50 FR 28702) and May 28, 1986 (51 FR 19176).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VII. NATIONAL UNIFORM MANIFEST SYSTEM AND RECORDKEEPING

A. State statutes and regulations require generators to use the national uniform manifest as indicated in Revision Checklists 5 and 32.

Federal Authority: RCRA §§2002, 3002 and 3003; 40 CFR Parts 260 and 262 as amended March 20, 1984 (49 FR 10490) and October 1, 1986 (51 FR 35190).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations require that generators, of between 100 and 1000 kg/mo of hazardous waste, file an exception report in those instances where the generator does not receive confirmation of delivery of his hazardous waste to the designated facility as indicated in Revision Checklist 42.

Federal Authority: RCRA §§3001(d) and 3002(a)(5); 40 CFR Parts 262.42 and 262.44 as amended September 23, 1987 (52 FR 35894).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations require that the following be recorded, as it becomes available, and maintained in the operating record, until facility closure, as indicated in Revision Checklist 45: monitoring, testing or analytical data, corrective action where required by Subpart F and §§264.226, 264.253, 264.254, 264.276, 264.278, 264.280, 264.303, 264.309, 264.347, and 264.602.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.73(b) as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. [OPTIONAL: This is a reduced requirement.] State statutes and regulations include a burden disclosure statement with each uniform manifest form and renew the use of this form as indicated in Revision Checklist 58.

Federal Authority: RCRA §§2002, 3002, and 3003; 40 CFR 262.20 and Part 262 Appendix as amended November 8, 1988 (53 FR 45089).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. State statutes and regulations require that generators, who ship hazardous waste to a designated facility in an authorized state which has not yet obtained

authorization to regulate that particular waste as a hazardous waste, assure that the designated facility agrees to sign and return the manifest to the generator, and that any out-of-state transporter signs and forwards the manifest to the designated facility, as indicated in Revision Checklist 71.

Federal Authority: RCRA §§2002, 3002 and 3003; 40 CFR 262.23(e) as amended on January 23, 1990 (55 FR 2322).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VIII. BIENNIAL REPORT

A. State statutes and regulations contain the following reporting requirements as indicated in Revision Checklists 1 and 30.

(1) The biennial report contains the information indicated in 40 CFR 262.41(a), 264.75 and 265.75.

(2) Facilities must submit groundwater monitoring data annually to the State Director as indicated in 40 CFR 265.94.

Federal Authority: RCRA §§3002 and 3004; 40 CFR Parts 262, 264 and 265 as amended January 28, 1983 (48 FR 3977) and August 8, 1986 (51 FR 28566).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

IX. WASTE MINIMIZATION

A. State statutes and regulations contain the following requirements regarding waste minimization as indicated in Revision Checklists 17 D, 30 and 32 (see Item I B above).

(1) Generators must submit report and manifest certifications regarding efforts taken to minimize the amounts and toxicity of wastes.

Federal Authority: RCRA §3002(a)(6), (b); 40 CFR 262.41, 264.75 and 265.75 as amended July 15, 1985 (50 FR 28702), August 8, 1986 (51 FR 28556) and October 1, 1986 (51 FR 35190).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

(2) RCRA permits for the treatment, storage, or disposal of hazardous waste on the premises where the waste was generated must contain a certification by the permittee regarding efforts taken to minimize the amount and toxicity of the generated wastes.

Federal Authority: RCRA §3005(h); 40 CFR 264.70, 264.73 and 270.30(j)(2) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

X. LIQUIDS IN LANDFILLS

A. State statutes and regulations contain the following requirements regarding liquids in landfills as indicated in Revision Checklists 17 F and 25.

(1) Effective May 8, 1985, there is a ban on the placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids in any landfill pursuant to 40 CFR 264.314 and 265.314 as amended July 15, 1985 and May 28, 1986.

(2) Effective November 8, 1985, there is a ban on the placement of non-hazardous liquids in landfills unless the owner or operator satisfies the criteria set forth in 40 CFR 264.314(e) and 265.314(f), as amended July 15, 1985 and May 28, 1986.

(3) For bulk or non-containerized liquid wastes or wastes containing free liquids they may be placed in a landfill prior to May 8, 1985, only if the requirements of 40 CFR 264.314(a) and 265.314(a) are met.

Federal Authority: RCRA §3004(c); 40 CFR 264.314, 265.314 and 270.21(h) as amended July 15, 1985 (50 FR 28702) and May 28, 1986 (51 FR 19176).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XI. GROUND-WATER MONITORING

A. State statutes and regulations provide that the §3004 groundwater monitoring requirements applicable to surface impoundments, waste piles, land treatment units and landfills shall apply whether or not such units are located above the seasonal high water table, have two liners and a leachate collection system or have liners that are periodically inspected, as indicated in Revision Checklist 17 I.

Federal Authority: RCRA §3004(p); 40 CFR 264.222, 264.252, 264.253, and 264.302 as amended July 15, 1985 (50 FR 28702).²

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. [OPTIONAL: This is a reduced requirement.] State statutes and regulations may allow variances from the ground-water monitoring requirements as provided in §3004(p). However, those variances must be restricted as provided in RCRA §3004(p) as indicated in Revision Checklist 17 I.

Federal Authority: RCRA §3004(p); 40 CFR 264.90(b) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations provide that with regard to ground-water monitoring, all land based hazardous waste treatment, storage, and disposal facilities analyze for a specified core list (Part 264, Appendix IX) of chemicals plus those chemicals specified by the Regional Administrator on a site-specific basis as indicated in Revision Checklist 40.

Federal Authority: RCRA §§1006, 2002(a), 3001, 3004, and 3005; 40 CFR Parts 264.98, 264.99, Part 264 Appendix IX and 270.14 as amended July 9, 1987 (52 FR 25942).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. State statutes and regulations specify statistical methods, sampling procedures, and performance standards that can be used in groundwater monitoring procedures to detect groundwater contamination at permitted hazardous waste facilities as indicated in Revision Checklist 55.

²Note that Revision Checklist 17 I reserved the cited sections of 40 CFR Part 264. Prior to Revision Checklist 17 I, these sections of code addressed exemptions from the Subpart F groundwater monitoring requirements.

SPA 9

Federal Authority: RCRA §§1006, 2002(a), 3004 and 3005; 40 CFR 264.91, 264.92, 264.97, 264.98 and 264.99 as amended October 11, 1988 (53 FR 39720).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XII. BURNING AND BLENDING OF HAZARDOUS WASTES

A. State statutes and regulations provide the following requirements:

(1) The burning of fuel containing hazardous waste in a cement kiln is prohibited as specified in 40 CFR 266.31 and Revision Checklist 17 J.

Federal Authority: RCRA §3004(q); 40 CFR 266.31 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(2) Fuels containing hazardous waste and all persons who produce, distribute and market fuel containing hazardous wastes must be regulated as indicated in Revision Checklists 17 J, 17 K, and 19.

Federal Authority: RCRA §§3004(q)-(s); 40 CFR 261.31 and 266.34 as amended July 15, 1985 (50 FR 28702) and November 19, 1986 (51 FR 41900).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide exceptions to the burning and blending of hazardous waste as specified in §§3004(q)(2)(A) and 3004(r)(2) & (3).

Federal Authority: RCRA §§3004(q)2(A) and 3004(r)(2) & (3).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XIII. CORRECTIVE ACTION

A. State statutes and regulations contain the following corrective action requirements as indicated in Revision Checklist 17 L:

(1) Corrective action is required for releases of hazardous waste or constituents from any solid waste management unit at a facility seeking a permit, regardless of when the waste was placed in the unit, in all permits issued after November 8, 1984.

Federal Authority: RCRA §3004(u); 40 CFR 264.90, 264.101, and 270.60 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(2) Corrective action is required beyond a facility's boundary, in accordance with RCRA §3004(v). (States now may impose these requirements through a permit or a corrective action order. Once EPA promulgates the regulations required by RCRA §3004(v), States will need authority to impose corrective action in a permit following the RCRA §3004(v) regulations.)

Federal Authority: RCRA §3004(v)(1).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(3) Corrective action is required beyond a facility's boundary in accordance with RCRA §3004(v) for all landfills, surface impoundments and waste pile units (including any new units, replacements of existing units or lateral expansions of existing units) which receive hazardous waste after July 26, 1982.

Federal Authority: RCRA §3004(v)(2).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(4) There is evidence of financial responsibility for corrective action on- and off-site.

Federal Authority: RCRA §§3004(a)(6); (u); 40 CFR 264.90 and 264.101 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations provide for additional information and engineering feasibility plan requirements regarding groundwater contamination detected at the time of Part B permit application as indicated in Revision Checklist 38.

SPA 9

Federal Authority: RCRA §§3004 and 3005; 40 CFR 270.14 as amended June 22, 1987 (52 FR 23447) and September 9, 1987 (52 FR 33936).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations require owners and operators of facilities seeking permits to provide descriptive information on the solid waste management units themselves and all available information pertaining to any releases from the units as indicated in Revision Checklist 44 A.

Federal Authority: RCRA §3004(u); 40 CFR 270.14 as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. State statutes and regulations require that owners and operators of hazardous waste treatment, storage and disposal facilities (including permit-by-rule facilities subject to 264.101) institute corrective action beyond the facility boundary to protect human health and the environment, unless the owner/operator is denied access to adjacent lands despite the owner/operator's best efforts, as indicated in Revision Checklist 44 B.

Federal Authority: RCRA §3004(v); 40 CFR 264.100(e) and 264.101(c), as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. State statutes and regulations contain the following corrective action requirements for injection wells as indicated in Revision Checklist 44 C.

(1) Hazardous waste injection wells now operating under RCRA interim status may retain interim status after issuance of a UIC permit. Until a RCRA permit or a RCRA "rider" to a UIC permit, which addresses Section 3004(u) corrective action, is issued, the well must comply with applicable interim status requirements imposed by §265.430, Parts 144.146 and 147, and any UIC permit requirements.

Federal Authority: RCRA §3004(u); 40 CFR 144.1(h) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(2) As part of the UIC permit process, available information regarding operating history and condition of the injection well must be submitted as well as any available information on known releases from the well or injection zone.

Federal Authority: RCRA §3004(u); 40 CFR 144.31(g) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(3) UIC facility owners/operators must submit certain information related to corrective action with their UIC applications.

Federal Authority: RCRA §3004(u); 40 CFR 270.60(b)(3) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

F. State statutes and regulations require that miscellaneous units comply with regulations (Subpart F) regarding releases from solid waste management units when necessary to comply with §§264.601 through 264.603 as indicated in Revision Checklist 45.

Federal Authority: RCRA §3004(u); 40 CFR 264.90(d) as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XIV. HAZARDOUS WASTE EXPORTS

A. State statutes and regulations require generators and transporters of hazardous waste destined for export outside the United States to comply with standards equivalent to those as indicated in Revision Checklists 17 R, 31, and 48 (with the latter providing technical corrections to Checklist 31).

SPA 9

Federal Authority: RCRA §3017; 40 CFR 262.50 as amended July 15, 1985 (50 FR 28702), August 8, 1986 (51 FR 28664), and July 19, 1988 (53 FR 27164).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XV. STANDARDS FOR FACILITIES³

A. State statutes and regulations prohibit the land disposal of hazardous waste prohibited under 40 CFR Parts 264 and 265 as indicated in Revision Checklist 17 E. Land disposal includes, but is not limited to, placement in landfills, surface impoundments, waste piles, deep injection wells, land treatment facilities, salt dome and bed formations and underground mines or caves. Deep injection well means a well used for the underground injection of hazardous wastes other than a well to which §7010(a) of RCRA applies.

Federal Authority: RCRA §§3004(b)-(q); 40 CFR 264.18 and 265.18 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. Effective on November 8, 1984, State statutes and regulations prohibit the placement of any non-containerized or bulk liquid hazardous waste in any salt dome or salt bed formation any underground mine or cave except as provided in §264.18(c) and §265.18(c) as indicated in Revision Checklist 17 E. Furthermore, State statutes and regulations prohibit the placement of any other hazardous waste in such formations until a permit is issued.

Federal Authority: RCRA §3004(b); 40 CFR 264.18 and 265.18 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations prohibit the use of waste oil or other materials contaminated with hazardous wastes (except ignitable wastes) as a dust suppressant as indicated in Revision Checklist 17 G.

³This section contains all changes to the Federal RCRA program concerning facility standards except for those specifically related to groundwater monitoring. This latter group of facility standard changes are addressed by Section XI.



Federal Authority: RCRA §3004(1); 40 CFR 266.23 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. State statutes and regulations allow direct action by third parties against the insurer or guarantor of an owner/operator's financial responsibilities if an owner/operator is in bankruptcy reorganization or arrangement or where (with reasonable diligence) jurisdiction in any State or Federal Court cannot be obtained over an owner/operator likely to be solvent at time of judgment.

Federal Authority: RCRA §3004(t).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. State statutes and regulations require the permittee to take steps to minimize releases to the environment in accordance with 40 CFR Part 270.30(d) as indicated in Revision Checklist 2.

Federal Authority: RCRA §3005(c); 40 CFR Part 270 as amended September 1, 1983 (48 FR 39622).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

F. State statutes and regulations require that closure and post-closure requirements and special requirements for containers apply to interim status landfills as indicated in Revision Checklist 15.

Federal Authority: RCRA §3004; 40 CFR 265.310 and 265.315 as amended April 23, 1985 (50 FR 16044).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

G. State statutes and regulations require compliance with closure/post-closure and financial responsibility requirements applicable to owners and operators of hazardous waste treatment, storage and disposal facilities, as indicated in Revision Checklists 24, 36, and 45.

SPA 9

Federal Authority: RCRA §§3004 and 3005; 40 CFR Parts 260, 264, 265, and 270 as amended May 2, 1986 (51 FR 16422), March 19, 1987 (52 FR 8704) and December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

H. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow qualified companies that treat, store or dispose of hazardous waste to use a corporate guarantee to satisfy liability assurance requirements as indicated in Revision Checklists 27 and 43.

Federal Authority: RCRA §§2002, 3004, and 3005; 40 CFR 264.147, 264.151, and 265.147 as amended July 11, 1986 (51 FR 25350) and November 18, 1987 (52 FR 44314).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

I. State statutes and regulations require companies that generate, treat or store hazardous waste in tanks to comply with tank standards equivalent to those indicated in Revision Checklists 28 and 52.

Federal Authority: RCRA §§1006, 2002, 3001 - 3007, 3010, 3014, 3017 - 3019 and 7004; 40 CFR Parts 260, 261, 262, 264, 265, and 270 as amended July 14, 1986 (51 FR 25422), August 15, 1986 (51 FR 29430) and September 2, 1988 (53 FR 34079).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

J. State statutes and regulations require environmental performance standards; monitoring, testing, analytical data, inspection, response and reporting procedures; and post-closure care for miscellaneous units as indicated in Revision Checklist 45.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.600, 264.601, 264.602, and 264.603 as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

K. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow owners and operators of landfills, surface impoundments, or land treatment units, under limited circumstances, to remain open after the final receipt of hazardous wastes in order to receive non-hazardous wastes in that unit as indicated in Revision Checklist 64.

Federal Authority: RCRA §§1006, 2002(a), 3004, 3005 and 3006; 40 CFR 264.13, 264.112, 264.113, 264.142, 265.13, 265.112, 265.113, 265.142 and Appendix I to 270.42 as amended August 14, 1989 (54 FR 33376).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

L. State statutes and regulations require new and existing hazardous waste treatment, storage or disposal facilities to control organic air emissions from process vents and equipment leaks as indicated in Revision Checklist 79.

Federal Authority: RCRA §§1006, 2002, 3001-3007, 3010, 3014 and 7004; 40 CFR Parts 261, 264, 265 and 270 as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XVI. REQUIREMENTS FOR PERMITS

A. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow a facility (1) to construct an approved TSCA facility for burning PCBs without first obtaining a RCRA permit and (2) to subsequently apply for a RCRA permit in accordance with Revision Checklist 17 M.

Federal Authority: RCRA §3005(a); 40 CFR 270.10(f)(3) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations require review of land disposal permits every five years and modification of such permits as necessary to assure compliance with the requirements in Parts 124, 260 through 266, and 270, as indicated in Revision Checklist 17 N.

SPA 9

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.41(a)(6) and 270.50(d) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations require permits to contain any conditions necessary to protect human health and the environment in addition to any conditions required by regulations as indicated in Revision Checklist 17 O.

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.32(b) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. State statutes and regulations require that:

(1) For land disposal facilities granted interim status prior to 11/8/84, interim status terminates 11/8/85; unless a Part B application and certification of compliance with applicable groundwater monitoring and financial responsibility requirements are submitted by 11/8/85, as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(e); 40 CFR 270.73(c) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(2) For land disposal facilities in existence on the effective date of statutory or regulatory changes under this Act that render the facility subject to the requirement to have a permit and which is granted interim status, interim status terminates 12 months after the date the facility first becomes subject to such permit requirement unless a Part B application and certification of compliance with applicable groundwater monitoring and financial responsibility requirements are submitted by that date as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(e); 40 CFR 270.73(d) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(3) Interim status terminates for incinerator facilities on 11/8/89 unless the owner/operator submits a Part B application by 11/8/86 as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(c)(2)(C); 40 CFR 270.73(e) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(4) Interim status terminates for any facility other than a land disposal or an incineration facility on 11/8/92 unless the owner/operator submits a Part B application by 11/8/88 as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(c)(2)(C); 40 CFR 270.73(f) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow facilities to qualify for interim status if they (1) are in existence on the effective date of statutory or regulatory changes that render the facility subject to the requirement to have a permit and (2) comply with §270.70(a) as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(e); 40 CFR 270.70(a) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

F. State statutes and regulations provide that facilities may not qualify for interim status under the State's analogue to Section 3005(e) if they were previously denied a Section 3005(c) permit or if authority to operate the facility has been terminated as indicated in Revision Checklist 17 P.

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.70(c) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

G. [OPTIONAL]: This is a reduced requirement.] State statutes and regulations allow the issuance of a one-year research, development, and demonstration permit (renewable each year, but not for a period longer than three years) for any hazardous waste treatment facility which proposes an innovative and experimental hazardous waste treatment technology or process not yet regulated as indicated in Revision Checklist 17 Q. If adopted, however, the State must require the facility to meet RCRA's financial responsibility and public participation requirements and retain authority to terminate experimental activity if necessary to protect health or the environment.

Federal Authority: RCRA §3005(g); 40 CFR 270.65 as amended July 15, 1985 (50 FR 28702)

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

H. State statutes and regulations require landfills, surface impoundments, land treatment units, and waste piles that received waste after July 26, 1982 and which qualify for interim status to comply with the groundwater monitoring, unsaturated zone monitoring, and corrective action requirements applicable to new units at the time of permitting as indicated in Revision Checklist 17 L.

Federal Authority: RCRA §3005(i); 40 CFR 264.90(a) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

I. State statutes and regulations require:

(1) Surface impoundments in existence on November 8, 1984 [or subsequently becoming subject to RCRA pursuant to §3005(j)(6)(A) or (B)] to comply with the double liner, leachate collection, and groundwater monitoring requirements applicable to new units by November 8, 1988 [or the date specified in §3005(j)(6)(A) or (B)] or to stop treating, receiving, or storing hazardous waste, unless the surface impoundment qualifies for a special exemption under §3005(j).

Federal Authority: RCRA §3005(j)(6)(A).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(2) Surface impoundments to comply with the double liner, leachate collection and ground-water monitoring requirements if the Agency allows a hazardous waste prohibited from land disposal under §3004(d), (e) or (g) to be placed in such impoundments.

Federal Authority: RCRA §3005(j)(11).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

(3) [OPTIONAL: This is a reduced requirement.] State statutes and regulations may allow variances from the above requirements as provided in RCRA §3005(j)(2-9) and (13). However, the availability of such variances must be restricted as provided in RCRA §3005(j).

Federal Authority: RCRA §3005(j)(2-9).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

J. [OPTIONAL: This is a reduced requirement.] Facility owners or operators are given the opportunity to cure deficient Part A applications in accordance with 40 CFR 270.70(b) before failing to qualify for interim status as indicated in Revision Checklist 6.

Federal Authority: RCRA §3005; 40 CFR Part 270 as amended April 24, 1984 (49 FR 17716).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

K. State statutes and regulations allow the permit granting agency to initiate modifications to a permit without first receiving a request from the permittee, in cases where statutory changes, new or amended regulatory standards or judicial decisions affect the basis of the permit as indicated in Revision Checklist 44 D.

Federal Authority: RCRA §3005(c); 40 CFR 270.41(a)(3) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

L. State statutes and regulations require that permittees must comply with new requirements imposed by the land disposal restrictions promulgated under Part 268 even when there are contrary permit conditions, as indicated in Revision Checklist 44 E.

SPA 9

Federal Authority: RCRA §3006(g); 40 CFR 270.4(a) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

M. State statutes and regulations require information from permit applicants concerning permit conditions necessary to protect human health and the environment as indicated in Revision Checklist 44 F.

Federal Authority: RCRA §3005(c); 40 CFR 270.10 as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

N. State statutes and regulations require post-closure permits for all landfills, surface impoundments, waste piles and land treatment units receiving hazardous waste after July 26, 1982 as indicated in Revision Checklist 44 G.

Federal Authority: RCRA §3005(i); 40 CFR 270.1(c) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

O. State statutes and regulations require that all owners and operators of units that treat, store, or dispose of hazardous waste in miscellaneous units must comply with the general application requirements (including Part A permit requirements), the Part B general application requirements of §270.14, and specific Part B information requirements for miscellaneous units as indicated in Revision Checklists 45 and 59.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.600, 270.14 and 270.23 as amended December 10, 1987 (52 FR 46946) and January 9, 1989 (54 FR 615).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

P. [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide owners and operators more flexibility to change specified permit conditions, to expand public notification and participation opportunities, and allow for expedited approval if

no public concern exists for a proposed permit modification. Owner/operator permit modifications are categorized into three classes with administrative procedures for approving modifications established in each class. These changes are as indicated in Revision Checklist 54.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR Parts 124, 264, 265, and 270 as amended September 28, 1988 (53 FR 37912) and October 24, 1988 (53 FR 41649).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

Q. State statutes and regulations make it clear that existing incinerator facilities must either conduct a trial burn or submit other information as specified in 270.19(a) or (c) before a permit can be issued for that facility as indicated in Revision Checklist 60.

Federal Authority: RCRA §3005(b); 40 CFR Part 270 as amended January 30, 1989 [54 FR 4286).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

R. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow greater flexibility to interim status facilities to make changes during interim status following Director approval as indicated in Revision Checklist 61.

Federal Authority: RCRA §§2002(a), 3004, 3005 and 3006; 40 CFR 270.72 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

S. [OPTIONAL: This is a reduced requirement.] State statutes and regulations lift the reconstruction limit for changes: 1) to certain interim status units necessary to comply with Federal, State, or local requirements, 2) necessary to allow continued handling of newly listed or identified hazardous waste, 3) made in accordance with an approved closure plan, and 4) made pursuant to a corrective action order as indicated in Revision Checklist 61.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR 270.72 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

T. [OPTIONAL: This is a reduced requirement.] State statutes and regulations that clarify that a permit can be denied for the active life of a facility while a decision on post closure permitting is pending as indicated in Revision Checklist 61.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR 124.1, 124.15, 124.19, 270.1, 270.10 and 270.29 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

U. [OPTIONAL: This is a reduced requirement.] State statutes and regulations that classify as Class 1 certain permit modifications requested by owners/operators necessary to enable permitted facilities to comply with the land disposal restrictions as indicated in Revision Checklist 61. Specifically these modifications include 1) adding restricted wastes treated to meet applicable 40 CFR Part 268 treatment standards or adding residues from treating "soft hammer" wastes, 2) adding certain wastewater treatment residues and incinerator ash, 3) adding new wastes for treatment in tanks or containers under certain limited conditions, and 4) adding new treatment processes, necessary to treat restricted wastes to meet treatment standards, that take place in tanks or containers.

Federal Authority: RCRA §§2002(a), 3004, 3005 and 3006; 40 CFR 270.42 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

V. State statutes and regulations revise 40 CFR Part 124 as indicated in Revision Checklist 70.

Federal Authority: RCRA §§6901 and 6902; 40 CFR 124.3, 124.5, 124.6, 124.10 and 124.12 as amended April 1, 1983 (48 FR 14146), June 30, 1983 (48 FR 30113), July 26, 1988 (53 FR 28118), September 26, 1988 (53 FR 37396) and January 4, 1989 (54 FR 246).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XVII. MINIMUM TECHNOLOGICAL REQUIREMENTS

A. State statutes and regulations require that new units, expansions, and replacements of interim status waste piles meet the requirements for a single liner and leachate collection system in regulations applicable to permitted waste piles as indicated in the Revision Checklist 17 H.

Federal Authority: RCRA §3015(a); 40 CFR 265.254 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulation require:

(1) New units, expansions, and replacement units at interim status landfills and surface impoundments and landfills and surface impoundments for which Part B of the permit application is received by the proper authority after November 8, 1984, meet the requirements for double liners and leachate collection systems applicable to new permitted landfills and surface impoundments in 40 CFR 264.221 and 264.301 and 265.221 and 265.301 as indicated in Revision Checklists 17 H and 77.

Federal Authority: RCRA §§1006, 2002(a), 3004, 3005 and 3015(b); 40 CFR 264.221, 265.221, 264.301 and 265.301 as amended July 15, 1985 (50 FR 28702) and May 9, 1990 (55 FR 19262).

(2) [OPTIONAL: This is a reduced requirement.] Facilities which comply in good faith need not retrofit at permit issuance unless the liner is leaking as provided in §§265.221(e) and 265.301(e) as indicated in Revision Checklist 17 H.

Federal Authority: RCRA §3015(b); 40 CFR 264.221, 265.221 and 265.301 as amended July 15, 1985 (50 FR 28702).

(3) [OPTIONAL: This is a reduced requirement.] Variances from the above requirements are optional. However, the availability of such variances is restricted as provided in §§264.221(d) and (e), 264.301(d) and (e), 265.221(c) and (d), and 265.301(c) and (d) as indicated in Revision Checklist 17 H.

Federal Authority: RCRA §3015(b); 40 CFR 264.221, 265.221 and 265.301 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

XVIII. EXPOSURE ASSESSMENTS

A. State laws and regulations require permit applicants for landfills or surface impoundments to submit exposure information as indicated in Revision Checklist 17 S.

Federal Authority: RCRA §3019(a); 40 CFR 270.10(j) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State laws and regulations allow the State to make assessment information available to the Agency for Toxic Substances and Disease Registry. [See CERCLA §104(i).]

Federal Authority: RCRA §3019(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XIX. AVAILABILITY OF INFORMATION

A. State statutes and regulations provide that:

(1) All records shall be available to the public unless they are exempt from the disclosure requirements of the Federal FOIA, 5 U.S.C. 552;

(2) All nonexempt records will be available to the public upon request regardless of whether any justification or need for such records has been shown by the requestor;

(3) The same types of records would be available to the public from the State as would be available from EPA. [In making this certification, the Attorney General should be aware of the types of documents EPA generally releases under the FOIA, subject to claims of business confidentiality: permit applications; biennial reports from facilities; closure plans; notification of a facility closure; contingency plan incident reports; delisting petitions; financial responsibility instruments; ground-water monitoring data (note that exemptions 5 U.S.C.552(b)(9) of the FOIA applies to such wells as oil and gas, rather than to ground-water wells); transporter spill reports; international shipment reports; manifest exception, discrepancy and unmanifested waste reports; facility EPA identification numbers; withdrawal requests; enforcement orders; and, inspection reports]; and,

(4) Information is provided to the public in substantially the same manner as EPA as indicated in 40 CFR Part 2 and the Revision Checklist in Appendix N of the State Authorization Manual. [OPTIONAL: Where the State agrees to implement selected provisions through the use of a Memorandum of Agreement (MOA) the Attorney General must certify that: "The State has the authority to enter into and carry out the MOA

provisions and there are no State statutes (e.g., State Administrative Procedures Acts) which require notice and comment or promulgation of regulations for the MOA procedures to be binding.]

(5) [OPTIONAL: The State statutes and regulations protect Confidential Business Information (CBI) to the same degree as indicated in 40 CFR 2 and the Revision Checklist in Appendix N of the State Authorization Manual. Note, that States do not have to protect CBI, to satisfy 3006(f). However, if a State does extend protection to CBI then it cannot restrict the release of information that EPA would require to be disclosed.]

Federal Authority: RCRA §3006(f); 40 CFR §271.17(c).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XX. BURNING OF WASTE FUEL AND USED OIL FUEL IN BOILERS AND INDUSTRIAL FURNACES

A. State statutes and regulations contain the following requirements regarding the burning of waste fuel and used oil fuel for energy recovery in boilers and industrial furnaces as indicated in Revision Checklist 19:

(1) Waste fuels and used oil fuels are identified as solid wastes so as to encompass all such wastes controlled under 40 CFR 261.3, 261.5 and 261.6.

(2) Special management standards for generators, transporters, marketers and burners of hazardous waste and used oil burned for energy, as set forth in 40 CFR 264.340, 265.340, 266.30-35 and 266.40-44.

Federal Authority: RCRA §§3001, 3004 and 3014(a); 40 CFR Parts 261, 264, 265 and 266 as amended November 29, 1985 (50 FR 49164), November 19, 1986 (51 FR 41900) and April 13, 1987 (52 FR 11819).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations provide the authority to obtain criminal penalties for violations of the waste fuel and used oil fuel requirements, as set forth in 40 CFR 266.40-44.

Federal Authority: RCRA §§3006(h), 3008(d) and 3014; 40 CFR 271.16.

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

XXI. LAND DISPOSAL RESTRICTIONS

A. State statutes and regulations provide for the restrictions of the land disposal of certain spent solvents and dioxin-containing hazardous wastes as indicated in Revision Checklists 34, 39, and 50.

Federal Authority: §3004(d)-(k) and (m); 40 CFR Parts 260, 261, 262, 263, 264, 265, 268 and 270 as amended on November 7, 1986 (51 FR 40572), June 4, 1987 (52 FR 21010), July 8, 1987 (52 FR 25760), and August 17, 1988 (53 FR 31138).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statutes and regulations for restricting the disposal of certain California list wastes, including liquid hazardous waste containing polychlorinated biphenyls (PCBs) above specified concentrations, and hazardous waste containing halogenated organic compounds (HOCs) above specified concentrations as indicated in Revision Checklists 39, 50, and 66.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Parts 262, 264, 265, 268 and 270 as amended on July 8, 1987 (52 FR 25760), October 27, 1987 (52 FR 41295), August 17, 1988 (53 FR 31138), and September 6, 1989 (54 FR 36967).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. State statutes and regulations for specific treatment standards and effective dates for certain wastes from the "First Third" of the schedule of restricted wastes listed in 40 CFR 268.10 as well as land disposal restrictions for those First Third wastes for which a treatment standard is not established as indicated in Revision Checklists 50, 62 and 66.

Federal Authority: RCRA §3004 (d)-(k) and (m); 40 CFR Parts 264, 265, 266, and 268 as amended on August 17, 1988 (53 FR 31138), February 27, 1989 (54 FR 8264), May 2, 1989 (54 FR 18836), September 6, 1989 (54 FR 36967) and June 13, 1990 (55 FR 23935).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. State statutes and regulations for certain treatment standards and prohibition effective dates for certain Second Third wastes and for imposing the "soft hammer" provisions of 40 CFR 268.8 on Second Third wastes for which the Agency is not establishing treatment standards as indicated in Revision Checklist 63.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended June 23, 1989 (54 FR 26594).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. State statutes and regulations for treatment standards and effective dates for certain First Third "soft hammer" wastes as well as for certain wastes originally contained in the Third Third of the Schedule as indicated in Revision Checklist 63.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Parts 264, 265 and 268 as amended June 23, 1989 (54 FR 26594).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

F. State statutes and regulations provide specific treatment standards and effective dates for the "Third Third" wastes, "soft hammer" First and Second Third wastes⁴, five newly listed wastes, certain mixed radioactive/hazardous wastes, characteristic wastes, and multi-source leachate, as well as establish revised treatment standards for petroleum refining hazardous wastes (K048-K052) as indicated in Revision Checklist 78.

Federal Authority: RCRA §§3001 and 3004 (d)-(k) and (m); 40 CFR 261, 262, 264, 265, 268, and 270 as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

⁴ "Soft hammer" wastes are those wastes for which EPA did not promulgate treatment standards by their respective effective dates. These wastes could continue to be disposed of in a landfill or surface impoundment until May 8, 1990 if certain demonstrations were made and the technology requirements of RCRA §3004(o) were met. Other types of land disposal (e.g., underground injection) were not similarly restricted. On May 6, 1990, wastes for which EPA had not established treatment standards became prohibited from all types of land disposal. This latter requirement is referred to as the "hard hammer" provision and ended the soft hammer provisions which were in effect prior to May 6, 1990.

SPA 9

G. [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide for alternate treatment standards for lab packs meeting certain criteria as indicated in Revision Checklist 78.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Part 268 Appendices IV and V, as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XXII. MEMORANDUM OF AGREEMENT (MOA)

[If the State uses the MOA to satisfy Federal procedural requirements, the Attorney General must certify the following:

- (1) The State has the authority to enter into the agreement,
- (2) The State has the authority to carry out the agreement, and
- (3) No applicable State statute (including the State Administrative Procedure Act) requires that the procedure be promulgated as a rule in order to be binding.]

Seal of Office

Signature

Name (Type or Print)

Title

Date



**I. Index to the checklist entries found in the
Model Revision Attorney General's Statement**

Revision checklist number/name	Subsections pertaining to checklist
1. Biennial Report	VIII A
2. Permit Rule: Settlement Agreement	XV E
3. Interim Status Standards	V A
4. Chlorinated Aliphatic Hydrocarbons	I A(1)
5. National Uniform Manifests	VII A
6. Permit Rule - Deficient Part A Applications	XVI J
7. Listing Warfarin & Zinc Phosphide	I A(2)
8. Lime Stabilized Pickle Liquor Sludge	I D
9. Exclusion of Household Waste	I E
10. Interim Status Standards - Applicability	V A
11. Corrections to Test Methods Manual	I F
12. Satellite Accumulation Standards	IV A
13. Definition of Solid Wastes	II A
14. Dioxin Listing and Management Standards	III A
15. Interim Status Standards for Treatment, Storage, and Disposal Facilities	XV F
16. Paint Filter Test	VI
17 A. Small Quantity Generators (Superceded: See Checklist 23)	I B
17 B. Delisting	I C(1)&(2)
17 C. Household Waste	I E
17 D. Waste Minimization	IX A(1)&(2)
17 E. Location Standards for Salt Domes, Salt Beds, Underground Mines, and Caves	XV A & B
17 F. Liquids in Landfills	VI A; X A
17 G. Dust Suppression	XV C
17 H. Double Liners	XVII A; XVII B(1),(2)&(3)
17 I. Ground-water Monitoring	XI A & B

Continued...

**I. Index to the checklist entries found in the
Model Revision Attorney General's Statement (cont'd)**

SPA 9

Revision checklist number/name	Subsections pertaining to checklist
17 J. Cement Kilns	XII A(1)&(2)
17 K. Fuel Labeling	XII A(2)
17 L. Corrective Action	XIII A(1),(2),(3)&(4); XVI H
17 M. Pre-construction Ban	XVI A
17 N. Permit Life	XVI B
17 O. Omnibus Provision	XVI C
17 P. Interim Status	XVI D(1),(2),(3)&(4); XVI E & F
17 Q. Research & Development Permits	XVI G
17 R. Hazardous Waste Exports	XIV A
17 S. Exposure Information	XVIII A
18. Listing of TDI, TDA, DNT	I A(3)
19. Burning of Waste Fuel and Used Oil	XX A
20. Spent Solvents Listing	I A(4)
21. EDB Waste Listing	I A(5)
22. Four Spent Solvents Listing	I A(6)
23. Small Quantity Generators	I B
24. Financial Responsibility: Settlement Agreement	XV G
25. Paint Filter Test - Correction	VI; X A
26. Listing of Spent Pickle Liquor	I A(7)
27. Corporate Guarantee - Liability Coverage	XV H
28. Hazardous Waste Storage and Tank Systems	XV I
29. Correction - Commercial Chemical Products and Appendix VIII	I A(8)
30. Biennial Reports; Correction	VIII A; IX A
31. Exports of Hazardous Wastes	XIV A
32. Standards for Generators - Waste Minimization Certifications	I B; VII A; IX A(1)&(2)
33. Listing of EBDC	I A(9)
34. Land Disposal Restrictions	XXI A
35. Revised Manual SW-846; Amended Incorporation by Reference	I F
36. Closure/Post-closure Care for Interim Status Surface Impoundments	XV G

**I. Index to the checklist entries found in the
Model Revision Attorney General's Statement (cont'd)**

SPA 9

Revision checklist number/name	Subsections pertaining to checklist
37. Definition of Solid Wastes; Technical Corrections	II A
38. Amendments, Part B - Information Requirements for Disposal Facilities	XIII B
39. California List Waste Restrictions	XXI B
40. List (Phase I) of Hazardous Constituents for Ground-water Monitoring	XI C
41. Identification and Listing of Hazardous Waste	I A(8)
42. Exception Reporting for Small Quantity Generators	VII B
43. Liability Requirements; Corporate Guarantee	XV H
44 A. Permit Application Requirements Regarding Corrective Action	XIII C
44 B. Corrective Action Beyond Facility Boundary	XIII D
44 C. Corrective Action for Injection Wells	XIII E(1),(2)&(3)
44 D. Permit Modification	XVI K
44 E. Permit as Shield Provision	XVI L
44 F. Permit Conditions to Protect Human Health and the Environment	XVI M
44 G. Post-closure Permits	XVI N
45. Hazardous Waste Miscellaneous Units	VII C; XIII F; XV G; XV J; XVI O
46. Technical Correction - Identification and Listing of Hazardous Waste	I A(9)
47. Small Quantity Generators; Technical Correction	I B
48. Farmer Exemption; Technical Correction	XIV A
49. Treatability Studies Sample Exemption	I H
50. Land Disposal Restrictions for First Third Scheduled Wastes	XXI A, B & C
51. Liability Coverage for Owners/ Operators of Treatment, Storage,	

**I. Index to the checklist entries found in the
Model Revision Attorney General's Statement (cont'd)**

SPA 9

Revision checklist number/name	Subsections pertaining to checklist
and Disposal Facilities	Withheld, no entry as yet
52. Standards for Hazardous Waste Storage and Treatment Tank Systems	XV I
53. Identification and Listing of Hazardous Waste; and Designation, Reportable Quantities and Notification	I A(10), I I
54. Permit Modifications for Waste Management Facilities	XVI P
55. Statistical Methods for Evaluating Ground-Water Monitoring Data from Hazardous Waste Facilities	XI D
56. Removal of Iron Dextran from the Lists of Hazardous Wastes	I A(11)
57. Removal of Strontium Sulfide from the Lists of Hazardous Wastes	I A(12)
†58. Standards for Generators of Hazardous Waste; Manifest Renewal	VII D
59. Hazardous Waste Miscellaneous Units; Standards Applicable to Owners and Operators	XVI O
60. Amendment to Requirements for Hazardous Waste Incinerator Permits	XVI Q
61. Changes to Interim Status Facilities for Hazardous Waste Management Permits; Modifications of Hazardous Waste Management Permits; Procedures for Post-Closure Permitting	XVI R & S
62. Land Disposal Restrictions Amendments to First Third Scheduled Wastes	XVI U
63. Land Disposal Restrictions for Second Third Scheduled Wastes	XVI T
64. Delay of Closure Period for Hazardous Waste Management Facilities	XXI C
65. Mining Waste Exclusion I	XXI D & E
	XV K
	I J(1)

**I. Index to the checklist entries found in the
Model Revision Attorney General's Statement (cont'd)**

SPA 9

Revision checklist number/name	Subsections pertaining to checklist
66. Land Disposal Restrictions; Correction to First Third Scheduled Wastes	XXI C
67. Testing and Monitoring Activities	I K
68. Reportable Quantity Adjustment Methyl Bromide Production Waste	I A (13)
69. Reportable Quantity Adjustment	I A (14)
70. Changes to Part 124 Not Accounted for by Present Checklists	XVI V
71. Mining Waste Exclusion II	I J(2); VII E
72. Modification of F019 Listing	I A(15)
73. Testing and Monitoring Activities; Technical Corrections	I K
74. Toxicity Characteristic Revisions	I L
75. Listing of 1,1-Dimethylhydrazine Production Wastes	I A(16)
76. Criteria for Listing Toxic Wastes; Technical Amendment	I M
77. HSWA Codification Rule, Double Liners; Correction	XVII B(1)
78. Land Disposal Restrictions for Third Third Scheduled Wastes	I A(17); XXI F & G
79. Organic Air Emission Standards for Process Vents and Equipment Leaks	I N; XV L

SPA 9

**II. Index to the non-checklist entries found in the
Model Revision Attorney General's Statement**

Description	Pertinent subsections
Agency for Toxic Substances and Disease Registry, making assessment information available to	XVIII B
Availability of Information	XIX A(1)-(5)
Burning and blending of hazardous waste, RCRA §§3004(q)(2)(A) & 3004(r)(2) & (3) exceptions	XII B
Criminal penalties for waste fuel and used oil fuel requirement violations	XX B
Radioactive mixed wastes, hazardous components of	I G
Surface Impoundments:	
1. compliance with new unit requirements by November 8, 1988 or stop hazardous waste activity for units existing prior to November 8, 1984 or becoming subject to RCRA pursuant to RCRA §3005(j)(6)(A) or (B)	XVI I(1)
2. disposal of waste prohibited from land disposal under RCRA §3004(d), (e) or (g)	XVI I(2)
3. variance under RCRA §3005(j)(2-9) and (13)	XVI I(3)
Third party direct action against financial responsibility insurer or granter	XV D

Checklist Linkage Table

The following pages (numbered 3 through 6)
should replace pages 3 through 6 of
SAM Appendix H

Revision Checklist Linkage Table
as of June 30, 1990

Revision Checklist Number	Linked Checklists	Topic or Explanation
1	17 D, 30	Biennial Report
2	---	Permit - Settlement Agreement ¹
3	10	Interim Status - Applicability
* 4	---	Chlorinated Aliphatic Hydrocarbon Listing
5	17 D,32,58	National Uniform Manifest Requirements
6	---	Permit - Settlement Agreement ¹
* 7	---	Warfarin & Zinc Phosphate Listing
8	---	Lime Stabilized Pickle Liquor Sludge
9	17 C	Household Waste Exclusion
10	3	Interim Status - Applicability
11	35,67,73	Corrections to Test Methods Manual
12	---	Satellite Accumulation
13	37	Definition of Solid Waste
* 14	---	Dioxin Waste Listing and Management Standards
15	---	Landfill Interim Status
16	25	Paint Filter Test
17 A ²	23,42,47	Small Quantity Generators
17 B	---	Delisting
17 C	9	Household Waste Exclusion
17 D	1,5,30,32,58	Biennial Report/National Uniform Manifest
17 E	---	Salt Domes, Salt Beds, Underground Mines and Caves Standards
17 F	---	Liquids in Landfills
17 G	---	Dust Suppression
17 H	77	Double Liners
17 I	---	Ground-Water Monitoring
17 J	---	Cement Kilns
17 K ³	---	Fuel Labeling
17 L	---	Corrective Action
17 M	---	Pre-construction Ban
17 N	---	Permit Life
17 O	---	Omnibus Provision

Revision Checklist Linkage Table (cont'd)

SPA 9

Revision Checklist Number	Linked Checklists	Topic or Explanation
17 P	---	Interim Status
17 Q	---	Research and Development Permits
17 R ⁴	31,48	Hazardous Waste Exports
17 S	---	Exposure Information
* 18	---	TDI, TDA, & DNT Listing
19	---	Waste Fuel/Used Oil Fuel
* 20	22	Spent Solvents Listing
* 21	---	EDB Waste Listing
* 22	20	Four Spent Solvents Listing
23	17 A,42,47	Small Quantity Generators
24	64	Financial Responsibility - Settlement Agreement
25	16	Paint Filter Test
* 26	---	Spent Pickle Liquor Listing
27	43	Corporate Guarantee
28 ⁵	52	Hazardous Waste Tank Systems
* 29 ⁶	46	Listings - 261.33(e)&(f) and Associated Appendices
30	1,17 D	Biennial Report
31	17 R,48	Exports of Hazardous Waste
32	5,17 D,58	National Uniform Hazardous Waste Manifest
* 33	---	EDBC Listing
34	39,50,62,63,66,78	Land Disposal Restrictions
35	11,67,73	Corrections - Test Methods Manual
36	---	Surface Impoundments: Closure/Post Closure Care
37	13	Definition of Solid Waste
38	---	Part B Information Requirements Amendment
39	34,50,62,63,66,78	Land Disposal Restrictions
40	---	List of Hazardous Constituents for Ground-Water Monitoring
41	---	Container/Liner Residues
42	17 A,23,47	Small Quantity Generators

Continued...

Revision Checklist Linkage Table (cont'd)

SPA 9

Revision Checklist Number	Linked Checklists	Topic or Explanation
43	27	Corporate Guarantee
44 A	---	Permits/Corrective Action
44 B	---	Corrective Action Beyond Facility Boundary
44 C	---	Corrective Action for Injection Wells
44 D	54	Permit Modification
44 E	---	Permit as a Shield Provision
44 F	---	Permit Conditions/Health-Environment
44 G	---	Post-Closure Permits, Scope of Requirement
45	59	Miscellaneous Units
* 46	29	Listings 261.33(e),(f) and Associated Appendices
47	17 A,23,42	Small Quantity Generators
48	17 R,31	Hazardous Waste Exports
49	---	Sample Exemption
50	34,39,62,63,66,78	Land Disposal Restrictions
51	---	Liability Coverage
52	28	Hazardous Waste Tank Systems
* 53	---	Smelting Waste Listing
54	44 D	Permit Modification
55	---	Ground-Water Monitoring Statistical Methods
* 56	---	Iron Dextran Listing Removal
* 57	---	Strontium Sulfide Listing Removal
58	5,17 D,32	National Uniform Manifest
59	45	Miscellaneous Units
60	---	Incinerator Permits
61	---	Changes to Interim Status Facilities
	---	Reconstruction Limits
	54	Modifications to Hazardous Waste Management Permits
	---	Procedures for Post-closure Permitting
62	34,39,50,63,66,78	Land Disposal Restrictions
63	34,39,50,62,66,78	Land Disposal Restrictions

Revision Checklist Linkage Table (cont'd)

SPA 9

Revision Checklist Number	Linked Checklists	Topic or Explanation
64	24	Delay of Closure Period for Hazardous Waste Management Facilities
65	71	Mining Waste Exclusion I
66	34,39,50,62,63,78	Land Disposal Restrictions
67	11,35,73	Testing and Monitoring Activities
* 68	---	Methyl Bromide Production Wastes
* 69	---	Chlorinated Aliphatic Hydrocarbon Production Wastes
70	---	Updates to Part 124
71	65	Mining Waste Exclusion II
* 72	---	Modification of F019 Listing
73	11,35,67	Analytical Test Methods
74	---	Revision of Toxicity Characteristics
* 75	---	1,1-Dimethylhydrazine Production Wastes Listing
76	---	Criteria for Listing Toxic Wastes
77	17H	Corrections - Double Liners
* 78	34,39,50,62,66	Land Disposal Restrictions
79	---	Organic Air Emission Standards for Process Vents and Equipment Leaks

*These are checklists affecting the lists of hazardous waste in 40 CFR 261, Subpart D.

¹ While Revision Checklists 2 and 6 address similar topics, they affect different sections of code.

² Superseded by Revision Checklist 23.

³ Superseded by Revision Checklist 19.

⁴ Superseded by Revision Checklist 31.

⁵ Contains sections superseded by Revision Checklist 52.

⁶ Superseded by Revision Checklist 46.

Revision Checklist 17 H

**The following version of Revision Checklist 17 H
should replace the Revision Checklist 17 H
of SAM Appendix J**

RCRA REVISION CHECKLIST 17 H

Double Liners

Note: Corrections were made to 264.221(c) and 264.301(c) by a May 9, 1990 (55 FR 19262; Revision Checklist 77) notice. This correction notice was based on a decision reached in the U.S. Court of Appeals for the District of Columbia on June 23, 1987 concerning a lawsuit filed against EPA. States which have not yet adopted the Revision Checklist 17 H provisions are encouraged to adopt the Revision Checklist 77 corrections when adopting the requirements addressed by Revision Checklist 17 H.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS
WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART K - SURFACE IMPOUNDMENTS

DESIGN AND OPERATING REQUIREMENTS

apply to TSD facilities	264.221(a)				
two or more liners	264.221(c)				
† alternative design and operating practices	264.221(d)				
† monofills	264.221(e)				
redesignate old 264.221(c), (d) and (e) as 264.221(f), (g) and (h)	264.221(f)-(h)				

SUBPART N - LANDFILLS

DESIGN AND OPERATING REQUIREMENTS

introductory text	264.301(a)				
two or more liners	264.301(c)				
† alternative design and operating practices	264.301(d)				
† monofills	264.301(e)				

RCRA REVISION CHECKLIST 17 h: Double Liners (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
redesignate old 264.301(c),(d),(e),(f) and (g) as 264.301(f), (g),(h),(i) and (j)	264.301(f)-(j)				
1 landfills in Alabama	264.301(k)				

**PART 265 - INTERIM STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART K - SURFACE IMPOUNDMENTS

DESIGN REQUIREMENTS

two or more liners	265.221(a)				
notify Regional Administrator	265.221(b)				
† alternative design and operating practices	265.221(c)				
† monofills	265.221(d)				
† allows installed liner to be permitted liner	265.221(e)				

SUBPART L - WASTE PILES

DESIGN REQUIREMENTS

265.254 requirements for new units, expansions, and replacements	265.254				
---	---------	--	--	--	--

SUBPART N - LANDFILLS

DESIGN REQUIREMENTS

two or more liners	265.301(a)				
notify the RA	265.301(b)				

SPA 9

RCRA REVISION CHECKLIST 17 h: Double Liners (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
† alternative design and operating practices	265.301(c)				
† monofills	265.301(d)				
† allows installed liner to be permitted liner	265.301(e)				

¹ Applicable only to landfills in Alabama. States other than Alabama do not have to adopt this provision.

Revision Checklist 19

**The following version of Revision Checklist 19
should replace the Revision Checklist 19
of SAM Appendix J**

RCRA REVISION CHECKLIST 19

Burning of Waste Fuel and Used Oil Fuel
in Boilers and Industrial Furnaces
50 FR 49164-49211
November 29, 1985
as amended on April 13, 1987, at 52 FR 11819-11822
(HSA Cluster I)

Special Note on the Use of This Checklist

Used oil fuel standards at §266.40-44 are delegable to State programs although used oil is not specifically listed as a hazardous waste pursuant to Section 3001 of RCRA. This is because these regulations are promulgated pursuant to (1) the Used Oil Recycling Act (§3014(a) of RCRA) which directs EPA to regulate recycled used oil even if it is not a hazardous waste, and (2) the Superfund Amendments and Reauthorization Act of 1986 (SARA §205(j) adding RCRA §3006(h)). SARA §205(j) provides for delegation to States for used oil recycling standards even if used oil is not a listed waste or identified as a hazardous waste.

A November 19, 1986 (51 FR 41900) Federal Register article did not affect the RCRA regulations. Instead it addressed issues surrounding the potential listing of disposed used oil as hazardous.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

DEFINITION OF HAZARDOUS WASTE

1 not hazardous unless meet characteristic	261.3(c)(2)(ii)(B)				
---	--------------------	--	--	--	--

SMALL QUANTITY GENERATORS

exceptions	261.5(b)				
1 hazardous waste mixed with used oil	261.5(k)				

REQUIREMENTS FOR RECYCLABLE MATERIALS

† used oil not regulated under Subpart O	261.6(a)(2)(iii)				
1 used oil recycled rather than burned	261.6(a)(3)(iii)				
1 coke and coal tar	261.6(a)(3)(vii)				

732

**RCRA REVISION CHECKLIST 19: Burning of Waste Fuel and Used Oil Fuel
in Boilers and Industrial Furnaces (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 fuels from oil-bearing † hazardous waste from petroleum refining, production, etc.	261.6(a)(3)(viii)				
† petroleum coke	261.6(a)(3)(ix)				

**PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART O - INCINERATORS

APPLICABILITY

hazardous waste burned in boilers & industrial furnaces	264.340(a)(2)				
---	---------------	--	--	--	--

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART O - INCINERATORS

APPLICABILITY

hazardous waste burned in boilers & industrial furnaces	265.340(a)(2)				
---	---------------	--	--	--	--

**PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS
WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES**

SUBPART D - HAZARDOUS WASTE BURNED FOR ENERGY RECOVERY

APPLICABILITY

hazardous waste burned for energy recovery	266.30(a)				
† exemption for used oil	266.30(b)(1)				

430

SPA 9

**RCRA REVISION CHECKLIST 19: Burning of Waste Fuel and Used Oil Fuel
in Boilers and Industrial Furnaces (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
† exemption for hazardous waste fuels	266.30(b)(2)				
PROHIBITIONS					
1 prohibitions	266.31(a)				
permissible devices (old 266.31(b)(1)) cement kilns- renumbered	266.31(b) 266.31(c)				
STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE FUEL					
generators who produce	266.32(a)				
generators who market	266.32(b)				
generators who burn	266.32(c)				
STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE FUEL					
transporters	266.33				
STANDARDS APPLICABLE TO MARKETERS OF HAZARDOUS WASTE FUEL					
prohibitions	266.34(a)				
1 notification	266.34(b)				
storage	266.34(c)				
off-site shipment	266.34(d)				
1 required notices	266.34(e)				
recordkeeping	266.34(f)				
2 STANDARDS APPLICABLE TO BURNERS OF HAZARDOUS WASTE FUEL					
prohibitions	266.35(a)				
1 notification	266.35(b)				

**RCRA REVISION CHECKLIST 19: Burning of Waste Fuel and Used Oil Fuel
in Boilers and Industrial Furnaces (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 storage	266.35(c)				
1 required notices	266.35(d)				
recordkeeping	266.35(e)				

SUBPART E - USED OIL BURNED FOR ENERGY RECOVERY

APPLICABILITY

used oil burned for energy recovery	266.40(a)				
"used oil" means	266.40(b)				
used oil mixed with hazardous waste	266.40(c)				
subject to regulation	266.40(d)				
allowable levels of constituents	266.40(e)				

PROHIBITIONS

market off-spec used oil	266.41(a)				
burned off-spec used oil	266.41(b)				

**STANDARDS APPLICABLE TO GENERATORS OF USED OIL BURNED FOR ENERGY
RECOVERY**

generators who produce, market, or burn used oil	266.42				
--	--------	--	--	--	--

**STANDARDS APPLICABLE TO MARKETERS OF USED OIL BURNED FOR ENERGY
RECOVERY**

1 persons not "marketers"	266.43(a)				
analysis of used oil	266.43(b)(1)				
prohibitions	266.43(b)(2)				
notifications	266.43(b)(3)				

SPA 9

**RCRA REVISION CHECKLIST 19: Burning of Waste Fuel and Used Oil Fuel
in Boilers and Industrial Furnaces (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
invoice system	266.43(b)(4)				
required notices	266.43(b)(5)				
recordkeeping	266.43(b)(6)				

STANDARDS APPLICABLE TO BURNERS OF USED OIL BURNED FOR ENERGY RECOVERY

	prohibitions	266.44(a)			
1	notification	266.44(b)			
	required notices	266.44(c)			
	used oil fuel analysis	266.44(d)			
	recordkeeping	266.44(e)			

¹ See also technical corrections at 52 FR 11819-11822 (April 13, 1987).

² Revision Checklist 13 introduced 266.36 addressing a conditional exemption for spent materials and by-products exhibiting a classification of hazardous waste. Revision Checklist 19 removed this section.

Revision Checklist 53

**The following version of Revision Checklist 53
should replace the current version
of this checklist in SAM Appendix J**

RCRA REVISION CHECKLIST 53 (AMENDED)

Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification

53 FR 35412-35421

September 13, 1988

(Non-HSWA Cluster V)

Note: 1) The listing of K064, K065, K066, K090 and K091 was remanded by the U.S. Court of Appeals for the D.C. Circuit (American Mining Congress vs. the U.S. Environmental Protection Agency, 907 F. 2d 1179 (D.C. Cir. 1990)). As such, States are not required to list these wastes at this time. However, since these wastes have been removed from the 261.4(b)(7) exclusion, they may be brought under regulation as characteristic hazardous wastes, especially under the Toxicity Characteristic.

2) Revision Checklist 53 has generally been superseded by Revision Checklists 65 and 71, except for the K088 listing, spent potliners from primary aluminum reduction.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

EXCLUSIONS

ore and mineral solid wastes not included in the 261.4(b)(7) exclusion	261.4(b)(7)				
acid plant blowdown slurry/sludge resulting from thickening of blowdown slurry from primary copper production	261.4(b)(7)(i)				
surface impoundment solids contained in the dredged from surface impoundments at primary lead smelting facilities	261.4(b)(7)(ii)				
sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	261.4(b)(7)(iii)				

SPA 9

**RCRA REVISION CHECKLIST 53: Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
spent potliners from primary aluminum reduction	261.4(b)(7)(iv)				
emission control dust or sludge from ferrochromium silicon production	261.4(b)(7)(v)				
emission control dust or sludge from ferrochromium production	261.4(b)(7)(vi)				

SUBPART D - LISTS OF HAZARDOUS WASTES

HAZARDOUS WASTES FROM SPECIFIC SOURCES

add, after entries for "Iron and steel" and before entries for "Secondary lead," the following:	261.32				
---	--------	--	--	--	--

Industry and EPA hazardous waste No.	Hazardous waste					Hazard code
* * *	* *	* *	* *	* *	* *	* *
Primary aluminum: K088.....	Spent potliners from primary aluminum reduction					(T)
* *	* *	* *	* *	* *	* *	* *

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add the following in the appropriate numerical sequence:	Appendix VII				
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SPA 9

RCRA REVISION CHECKLIST 53: Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
EPA hazardous waste No.		Hazardous constituents for which listed			
*	*	*	*	*	*
K088.....		Cyanide (complexes).			
*	*	*	*	*	*

Revision Checklist 53

**The following version of Revision Checklist 53
should replace the current version
of this checklist in SAM Appendix J**

RCRA REVISION CHECKLIST 53 (AMENDED)

Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification
53 FR 35412-35421
September 13, 1988
(Non-HSWA Cluster V)

Note: 1) The listing of K064, K065, K066, K090 and K091 was remanded by the U.S. Court of Appeals for the D.C. Circuit (American Mining Congress vs. the U.S. Environmental Protection Agency, 907 F. 2d 1179 (D.C. Cir. 1990)). As such, States are not required to list these wastes at this time. However, since these wastes have been removed from the 261.4(b)(7) exclusion, they may be brought under regulation as characteristic hazardous wastes, especially under the Toxicity Characteristic.

2) Revision Checklist 53 has generally been superseded by Revision Checklists 65 and 71, except for the K088 listing, spent potliners from primary aluminum reduction.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

EXCLUSIONS

ore and mineral solid wastes not included in the 261.4(b)(7) exclusion	261.4(b)(7)				
acid plant blowdown slurry/sludge resulting from thickening of blowdown slurry from primary copper production	261.4(b)(7)(i)				
surface impoundment solids contained in the dredged from surface impoundments at primary lead smelting facilities	261.4(b)(7)(ii)				
sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	261.4(b)(7)(iii)				

SPA 9

**RCRA REVISION CHECKLIST 53: Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
spent potliners from primary aluminum reduction	261.4(b)(7)(iv)				
emission control dust or sludge from ferrochromium silicon production	261.4(b)(7)(v)				
emission control dust or sludge from ferrochromium production	261.4(b)(7)(vi)				

SUBPART D - LISTS OF HAZARDOUS WASTES

HAZARDOUS WASTES FROM SPECIFIC SOURCES

add, after entries for "Iron and steel" and before entries for "Secondary lead," the following:	261.32				
---	--------	--	--	--	--

Industry and EPA hazardous waste No.	Hazardous waste					Hazard code
* * * * *						*
Primary aluminum: K088.....	Spent potliners from primary aluminum reduction					(T)
* * * * *						*

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add the following in the appropriate numerical sequence:	Appendix VII				
--	--------------	--	--	--	--

SPA 9

**RCRA REVISION CHECKLIST 53: Identification and Listing of Hazardous Waste;
and Designation, Reportable Quantities, and Notification (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
EPA hazardous waste No.					
* * *	* *	* *			
K088.....		Cyanide (complexes).			
* * *	* *	* *			

Revision Checklist 54

**The following version of Revision Checklist 54
should replace the current version
of this checklist in SAM Appendix J**

SPA 9

RCRA REVISION CHECKLIST 54

Permit Modifications for Hazardous Waste Management Facilities

53 FR 37912-37942

September 28, 1988

as amended on October 24, 1988, at 53 FR 41649

(Non-HSWA Cluster V)

Note: The standards addressed by this checklist are less stringent than existing Federal requirements; thus, authorized States are not required to adopt them. However, EPA strongly encourages States to adopt this permit modification rule as promulgated. If preferred, States may amend their programs to incorporate only selected portions of the rule. See 53 FR 37933-37934 for a discussion of this option.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 124 - PROCEDURES FOR DECISIONMAKING

SUBPART A - GENERAL PROGRAM REQUIREMENTS

† MODIFICATION, REVOCATION AND REISSUANCE, OR TERMINATION OF PERMITS

add reference "or 270.42(c)"	124.5(c)(1)				
add references to "Classes 1 and 2 modifications as defined in §270.42 (a) and (b)"	124.5(c)(3)				

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART D - CONTINGENCY PLAN AND EMERGENCY PROCEDURES

† AMENDMENT OF CONTINGENCY PLAN

remove the comment	264.54(e)				
--------------------	-----------	--	--	--	--

SUBPART G - CLOSURE AND POST-CLOSURE

† CLOSURE PLAN; AMENDMENT OF PLAN

add wording on "notification" and "review" to text	264.112(c)				
--	------------	--	--	--	--

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
insert "notification or" prior to "request"	264.112(c)(1)				
insert "notification of or" prior to "request"	264.112(c)(2)				

† **POST-CLOSURE PLAN; AMENDMENT OF PLAN**

add wording on "notification" and "review" to text	264.118(d)				
insert "notification or" prior to "request"	264.118(d)(1)				
insert "notification of or" prior to "request"	264.118(d)(2)				

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS
OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES**

SUBPART G - CLOSURE AND POST-CLOSURE

† **CLOSURE PLAN; AMENDMENT OF PLAN**

revise last sentence of paragraph by deleting "major" and inserting "Class 2 or 3" preceding "modification" and delete reference to "\$270.41."	265.112(c)(3)				
revise last sentence of paragraph by deleting "major" and inserting "Class 2 or 3" preceding "modification" and delete reference to "\$270.41."	265.112(c)(4)				

SPA 9

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
replace "major modification" with "Class 2 or 3 modification" and delete reference to "\$270.41"	265.118(d)(3)				
replace "major modification" with "Class 2 or 3 modification" and delete reference "\$270.41."	265.118(d)(4)				

**PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS
WASTE PERMIT PROGRAM**

SUBPART A - GENERAL INFORMATION

† **DEFINITIONS**

add "Component"	270.2				
add "Facility mailing list"	270.2				
add "Functionally equivalent component"	270.2				

† **EFFECT OF A PERMIT**

modification under 270.42	270.4(a)				
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SUBPART C - PERMIT CONDITIONS

† **CONDITIONS APPLICABLE TO ALL PERMITS**

add provision for 270.42	270.30(l)(2)				
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**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART D - CHANGES TO PERMITS

† **TRANSFER OF PERMITS**

renumber old 270.40 as 270.40(a); change parenthetical clauses	270.40(a)				
ownership change procedures as Class 1 modifications	270.40(b)				

† **MODIFICATION OR REVOCATION AND REISSUANCE OF PERMITS**

remove "Major" from section heading; remove reference to 270.42; request of permittee, approval/denial under 270.42	270.41				
insert "by statute, through" before "promulgation"; insert "new or" before "amended"	270.41(a)(3)				
remove 270.41(a)(3)(i)-(iii)	270.41(a)(3)(i)-(iii)				
remove (a)(5) and redesignate existing (a)(6) as (a)(5)	270.41(a)(5)				

† **PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE**

revise section heading; remove introductory material	270.42			7	
putting into effect Class 1 modifications as listed in Appendix I	270.42(a)(1)				
notification of Director by permittee	270.42(a)(1)(i)				
to whom notice of modification must be sent and when	270.42(a)(1)(ii)				

SPA 9

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
rejection of modifica- tion by Director	270.42(a)(1)(iii)				
modifications requiring prior written approval	270.42(a)(2)				
Class 2 procedures instead of Class 1 procedures	270.42(a)(3)				
heading for "Class 2 modifications"	270.42(b)				
Class 2 modifications as listed in Appendix I	270.42(b)(1)				
description of exact changes	270.42(b)(1)(i)				
identification of Class 2 modification	270.42(b)(1)(ii)				
why modification is needed	270.42(b)(1)(iii)				
provision of applicable information	270.42(b)(1)(iv)				
to whom notice must be sent and when	270.42(b)(2)				
announcement of a 60-day comment period	270.42(b)(2)(i)				
announcement of where and when public meeting will be held	270.42(b)(2)(ii)				
name and phone number of permittee's contact person	270.42(b)(2)(iii)				
name and phone number of Agency contact person	270.42(b)(2)(iv)				
location for viewing modification request	270.42(b)(2)(v)				
availability of permittee's compliance history	270.42(b)(2)(vi)				
placement of modifica- tion request copy in vicinity of facility for public accessibility	270.42(b)(3)				

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when and where permittee must hold a public meeting	270.42(b)(4)				
public comment period	270.42(b)(5)				
requirements after receipt of modification request	270.42(b)(6)(i)				
approve request, with or without changes	270.42(b)(6)(i)(A)				
deny request	270.42(b)(6)(i)(B)				
determine if Class 3 modification pro- cedures are needed:	270.42(b)(6)(i)(C)				
significant public concern	270.42(b)(6)(i)(C)(1)				
complex nature of changes	270.42(b)(6)(i)(C)(2)				
approve as temporary authorization	270.42(b)(6)(i)(D)				
notify permittee that decision will be made in 30 days	270.42(b)(6)(i)(E)				
requirements if decision is extended for 30 days:	270.42(b)(6)(ii)				
approve request, with or without changes	270.42(b)(6)(ii)(A)				
deny request	270.42(b)(6)(ii)(B)				
determine if Class 3 modification pro- cedures are needed:	270.42(b)(6)(ii)(C)				
significant public concern	270.42(b)(6)(ii)(C) (1)				
complex nature of changes	270.42(b)(6)(ii)(C) (2)				
approve as temporary authorization	270.42(b)(6)(ii)(D)				
temporary or auto- matic authorization following failure to make decision	270.42(b)(6)(iii)				

SPA 9

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements of permittee under temporary or auto- matic authorization	270.42(b)(6)(iv)(A)				
temporary authoriza- tion to conduct activities as in modification request	270.42(b)(6)(iv)(A) (1)				
unless final approval or denial, authorization for life of permit	270.42(b)(6)(iv)(A) (2)				
deferment of permanent authoriza- tion if failure to notify public	270.42(b)(6)(iv)(B)				
if no final approval or denial or reclassifi- cation, authority to conduct activities as described in modifica- tion request for life of permit unless later modification	270.42(b)(6)(v)				
consideration and response to all significant comments	270.42(b)(6)(vi)				
extension of time periods for final approval, denial or reclassification as Class 3	270.42(b)(6)(vii)				
reasons to deny or change Class 2 permit modification terms	270.42(b)(7)				
request is incomplete	270.42(b)(7)(i)				
noncompliance with appropriate requirements	270.42(b)(7)(ii)				
failure to protect human health and environment	270.42(b)(7)(iii)				

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
commencement of construction under Class 2	270.42(b)(8)				
heading for "Class 3 modifications"	270.42(c)				
requirements for Class 3 modifications listed Appendix I	270.42(c)(1)				
description of exact changes	270.42(c)(1)(i)				
identification of Class 3 modification	270.42(c)(1)(ii)				
why modification is needed	270.42(c)(1)(iii)				
provision of applicable information	270.42(c)(1)(iv)				
to whom and when notice must be sent	270.42(c)(2)				
announcement of a 60-day comment period	270.42(c)(2)(i)				
announcement of when and where public meeting will be held	270.42(c)(2)(ii)				
name and phone number of permittee's contact person	270.42(c)(2)(iii)				
name and phone number of Agency contact person	270.42(c)(2)(iv)				
location for viewing modification request	270.42(c)(2)(v)				
availability of permittee's compliance history	270.42(c)(2)(vi)				
placement of modification request copy in vicinity of facility for public accessibility	270.42(c)(3)				
when and where permittee must hold a public meeting	270.42(c)(4)				

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
public comment period	270.42(c)(5)				
grant or deny modifi- cation request after public comment period; consider and respond to all significant written comments	270.42(c)(6)				
heading for "Other modifications"	270.42(d)				
other modifications not explicitly listed in Appendix I	270.42(d)(1)				
determination of appropriate class:	270.42(d)(2)				
changes that necessitate Class I modifications	270.42(d)(2)(i)				
changes that necessitate Class 2 modifications	270.42(d)(2)(ii)				
variations in types and quantities of wastes managed	270.42(d)(2)(ii)(A)				
technological advancements	270.42(d)(2)(ii)(B)				
changes necessary to comply with new regulations	270.42(d)(2)(ii)(C)				
Class 3 modifica- tions description	270.42(d)(2)(iii)				
heading for "Tempo- rary authorizations"	270.42(e)				
granting of tempo- rary authorizations	270.42(e)(1)				
request for tempo- rary authorization:	270.42(e)(2)(i)				
Class 2 modification meeting criteria	270.42(e)(2)(i)(A)				

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Class 3 modification meeting criteria and providing improved management or treatment	270.42(e)(2)(i)(B)				
what temporary authorization request must include	270.42(e)(2)(ii)				
description of activities	270.42(e)(2)(ii)(A)				
why temporary authorization is necessary	270.42(e)(2)(ii)(B)				
sufficient information to ensure compliance	270.42(e)(2)(ii)(C)				
to whom notice must be sent	270.42(e)(2)(iii)				
approve or deny temporary authorization quickly:	270.42(e)(3)				
authorized activities in compliance with Part 264	270.42(e)(3)(i)				
necessity of temporary authorization to achieve an objective:	270.42(e)(3)(ii)				
facilitate closure or corrective action activities	270.42(e)(3)(ii)(A)				
allow treatment or storage in tanks or containers of restricted wastes	270.42(e)(3)(ii)(B)				
prevent disruption of ongoing activities	270.42(e)(3)(ii)(C)				
respond to sudden changes in types or quantities of wastes managed	270.42(e)(3)(ii)(D)				
protection of human health and environment	270.42(e)(3)(ii)(E)				
reissuance of temporary authorization for Class 2 or 3	270.42(e)(4)				

SPA 9

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
reissuance of Class 2 in accordance with specific paragraphs	270.42(e)(4)(i)				
reissuance of Class 3 in accordance with specific paragraph	270.42(e)(4)(ii)				
heading for "Public notice and appeals of permit modification decisions"	270.42(f)				
when and to whom notification of grant, denial or automatic authoriza- tion decisions must be sent	270.42(f)(1)				
appeal of grant or denial decision	270.42(f)(2)				
appeal of automatic authorization	270.42(f)(3)				
heading for "Newly listed or identified wastes"	270.42(g)				
continued authority to manage wastes listed in Part 261:	270.42(g)(1)				
in existence as a hazardous waste facility on effective date of final rule listing or identifying waste	270.42(g)(1)(i)				
submit Class 1 modification request	270.42(g)(1)(ii)				
in compliance with 265 standards	270.42(g)(1)(iii)				
for Class 2 or 3 modifications, submit complete modification request within 180 days	270.42(g)(1)(iv)				

RCRA REVISION CHECKLIST 54: Permit Modifications for Hazardous Waste Management Facilities (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
certification that land disposal units are in compliance within 12 months	270.42(g)(1)(v)				
expansions are not under 25 percent capacity limit for Class 2 modifications	270.42(g)(2)				
maintenance and notice of updated list of permit modifications	270.42(h)				
remove 270.42(i) through 270.42(p)	270.42(i)-(p)				
add Appendix I; classification of modifications	270.42, Appendix I				

Appendix I to § 270.42—Classification of Permit Modification

Modifications	Class.
A. General Permit Provisions	
1. Administrative and informational changes.....	1
2. Correction of typographical errors.....	1
3. Equipment replacement or upgrading with functionally equivalent components (e.g., pipes, valves, pumps, conveyors, controls).....	1
4. Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee:	
a. To provide for more frequent monitoring, reporting, sampling, or maintenance.....	1
b. Other changes.....	2
5. Schedule of compliance:	
a. Changes in interim compliance dates, with prior approval of the Director.....	1
b. Extension of final compliance date.....	3
6. Changes in expiration date of permit to allow earlier permit termination, with prior approval of the Director.....	1
7. Changes in ownership or operational control of a facility, provided the procedures of § 270.40(b) are followed.....	1
B. General Facility Standards	
1. Changes to waste sampling or analysis methods:	
a. To conform with agency guidance or regulations.....	1
b. Other changes.....	2
2. Changes to analytical quality assurance/control plan:	
a. To conform with agency guidance or regulations.....	1
b. Other changes.....	2
3. Changes in procedures for maintaining the operating record.....	1
4. Changes in frequency or content of inspection schedules.....	2
5. Changes in the training plan:	
a. That affect the type or decrease the amount of training given to employees.....	2
b. Other changes.....	1
6. Contingency plan:	
a. Changes in emergency procedures (i.e., spill or release response procedures).....	2
b. Replacement with functionally equivalent equipment, upgrade, or relocate emergency equipment listed.....	1
c. Removal of equipment from emergency equipment list.....	2
d. Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan.....	1

Note: When a permit modification (such as introduction of a new unit) requires a change in facility plans or other general facility standards, that change shall be reviewed under the same procedures as the permit modification.

RCRA REVISION CHECKLIST 54: Permit Modifications for Hazardous Waste Management Facilities (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Modifications

C Ground-Water Protection

- 1 Changes to wells:
 - a Changes in the number, location, depth, or design of upgradient or downgradient wells of permitted ground-water monitoring system
 - b Replacement of an existing well that has been damaged or rendered inoperable, without change to location, design, or depth of the well
- 2 Changes in ground-water sampling or analysis procedures or monitoring schedule, with prior approval of the Director
- 3 Changes in statistical procedure for determining whether a statistically significant change in ground-water quality between upgradient and downgradient wells has occurred, with prior approval of the Director
- 4 Changes in point of compliance
- 5 Changes in indicator parameters, hazardous constituents, or concentration limits (including ACLs)
 - a As specified in the groundwater protection standard
 - b As specified in the detection monitoring program
- 6 Changes to a detection monitoring program as required by § 264.98(j), unless otherwise specified in this appendix
- 7 Compliance monitoring program:
 - a Addition of compliance monitoring program as required by §§ 264.98(h)(4) and 264.99
 - b Changes to a compliance monitoring program as required by § 264.99(k), unless otherwise specified in this appendix
- 8 Corrective action program:
 - a Addition of a corrective action program as required by §§ 264.99(i)(2) and 264.100
 - b Changes to a corrective action program as required by § 264.100(n), unless otherwise specified in this Appendix

D Closure

- 1 Changes to the closure plan:
 - a Changes in estimate of maximum extent of operations or maximum inventory of waste on-site at any time during the active life of the facility, with prior approval of the Director
 - b Changes in the closure schedule for any unit, changes in the final closure schedule for the facility, or extension of the closure period, with prior approval of the Director
 - c Changes in the expected year of final closure, where other permit conditions are not changed, with prior approval of the Director
 - d Changes in procedures for decontamination of facility equipment or structures, with prior approval of the Director
 - e Changes in approved closure plan resulting from unexpected events occurring during partial or final closure, unless otherwise specified in this appendix
- 2 Creation of a new landfill unit as part of closure
- 3 Addition of the following new units to be used temporarily for closure activities:
 - a Surface impoundments
 - b Incinerators
 - c Waste piles that do not comply with § 264.250(c)
 - d Waste piles that comply with § 264.250(c)
 - e Tanks or containers (other than specified below)
 - f Tanks used for neutralization, dewatering, phase separation, or component separation, with prior approval of the Director

E Post-Closure

- 1 Changes in name, address, or phone number of contact in post-closure plan
- 2 Extension of post-closure care period
- 3 Reduction in the post-closure care period
- 4 Changes to the expected year of final closure, where other permit conditions are not changed
- 5 Changes in post-closure plan necessitated by events occurring during the active life of the facility, including partial and final closure

F Containers

- 1 Modification or addition of container units:
 - a Resulting in greater than 25% increase in the facility's container storage capacity
 - b Resulting in up to 25% increase in the facility's container storage capacity
- 2
 - a Modification of a container unit without increasing the capacity of the unit
 - b Addition of a roof to a container unit without alteration of the containment system
- 3 Storage of different wastes in containers:
 - a That require additional or different management practices from those authorized in the permit
 - b That do not require additional or different management practices from those authorized in the permit

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes.

- 4 Other changes in container management practices (e.g., aisle space, types of containers, segregation)

G Tanks

- 1
 - a Modification or addition of tank units resulting in greater than 25% increase in the facility's tank capacity, except as provided in G(1)(c) and G(1)(d) of this appendix
 - b Modification or addition of tank units resulting in up to 25% increase in the facility's tank capacity, except as provided in G(1)(d) of this appendix

RCRA REVISION CHECKLIST 54: Permit Modifications for Hazardous Waste Management Facilities (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Modifications

- c Addition of a new tank that will operate for more than 90 days using any of the following physical or chemical treatment technologies: neutralization, dewatering, phase separation, or component separation.....
- d After prior approval of the Director, addition of a new tank that will operate for up to 90 days using any of the following physical or chemical treatment technologies: neutralization, dewatering, phase separation, or component separation.....
- 2 Modification of a tank unit or secondary containment system without increasing the capacity of the unit.....
- 3 Replacement of a tank with a tank that meets the same design standards and has a capacity within $\pm 10\%$ of the replaced tank provided:
 - The capacity difference is no more than 1500 gallons.
 - The facility's permitted tank capacity is not increased; and
 - The replacement tank meets the same conditions in the permit.
- 4 Modification of a tank management practice.....
- 5 Management of different wastes in tanks:
 - a That require additional or different management practices, tank design, different fire protection specifications, or significantly different tank treatment process from that authorized in the permit.....
 - b That do not require additional or different management practices, tank design, different fire protection specifications, or significantly different tank treatment process than authorized in the permit.....

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes

H. Surface Impoundments

- 1 Modification or addition of surface impoundment units that result in increasing the facility's surface impoundment storage or treatment capacity.....
- 2 Replacement of a surface impoundment unit.....
- 3 Modification of a surface impoundment unit without increasing the facility's surface impoundment storage or treatment capacity and without modifying the unit's liner, leak detection system, or leachate collection system.....
- 4 Modification of a surface impoundment management practice.....
- 5 Treatment, storage, or disposal of different wastes in surface impoundments:
 - a That require additional or different management practices or different design of the liner or leak detection system than authorized in the permit.....
 - b That do not require additional or different management practices or different design of the liner or leak detection system than authorized in the permit.....

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes

I. Enclosed Waste Piles. For all waste piles except those complying with § 264.250(c), modifications are treated the same as for a landfill. The following modifications are applicable only to waste piles complying with § 264.250(c).

- 1 Modification or addition of waste pile units:
 - a Resulting in greater than 25% increase in the facility's waste pile storage or treatment capacity.....
 - b Resulting in up to 25% increase in the facility's waste pile storage or treatment capacity.....
- 2 Modification of waste pile unit without increasing the capacity of the unit.....
- 3 Replacement of a waste pile unit with another waste pile unit of the same design and capacity and meeting all waste pile conditions in the permit.....
- 4 Modification of a waste pile management practice.....
- 5 Storage or treatment of different wastes in waste piles:
 - a That require additional or different management practices or different design of the unit.....
 - b That do not require additional or different management practices or different design of the unit.....

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes

J. Landfills and Unenclosed Waste Piles

- 1 Modification or addition of landfill units that result in increasing the facility's disposal capacity.....
- 2 Replacement of a landfill.....
- 3 Addition or modification of a liner, leachate collection system, leachate detection system, run-off control, or final cover system.....
- 4 Modification of a landfill unit without changing a liner, leachate collection system, leachate detection system, run-off control, or final cover system.....
- 5 Modification of a landfill management practice.....
- 6 Landfill different wastes:
 - a That require additional or different management practices, different design of the liner, leachate collection system, or leachate detection system.....
 - b That do not require additional or different management practices, different design of the liner, leachate collection system, or leachate detection system.....

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes

K. Land Treatment

- 1 Lateral expansion of or other modification of a land treatment unit to increase areal extent.....
- 2 Modification of run-on control system.....
- 3 Modify run-off control system.....
- 4 Other modifications of land treatment unit component specifications or standards required in permit.....
- 5 Management of different wastes in land treatment units:
 - a That require a change in permit operating conditions or unit design specifications.....
 - b That do not require a change in permit operating conditions or unit design specifications.....

Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes

- 6 Modification of a land treatment unit management practice to:
 - a. Increase rate or change method of waste application.....
 - b. Decrease rate of waste application.....

RCRA REVISION CHECKLIST 54: Permit Modifications for Hazardous Waste Management Facilities (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Modifications					
7. Modification of a land treatment unit management practice to change measures of pH or moisture content, or to enhance microbial or chemical reactions.....					2
8. Modification of a land treatment unit management practice to grow food chain crops, to add to or replace existing permitted crops with different food chain crops, or to modify operating plans for distribution of animal feeds resulting from such crops.....					3
9. Modification of operating practice due to detection of releases from the land treatment unit pursuant to § 264.278(g)(2).....					3
10. Changes in the unsaturated zone monitoring system, resulting in a change to the location, depth, number of sampling points, or replace unsaturated zone monitoring devices or components of devices with devices or components that have specifications different from permit requirements.....					3
11. Changes in the unsaturated zone monitoring system that do not result in a change to the location, depth, number of sampling points, or that replace unsaturated zone monitoring devices or components of devices with devices or components having specifications different from permit requirements.....					2
12. Changes in background values for hazardous constituents in soil and soil-pore liquid.....					2
13. Changes in sampling, analysis, or statistical procedure.....					2
14. Changes in land treatment demonstration program prior to or during the demonstration.....					2
15. Changes in any condition specified in the permit for a land treatment unit to reflect results of the land treatment demonstration, provided performance standards are met, and the Director's prior approval has been received.....					1
16. Changes to allow a second land treatment demonstration to be conducted when the results of the first demonstration have not shown the conditions under which the wastes can be treated completely, provided the conditions for the second demonstration are substantially the same as the conditions for the first demonstration and have received the prior approval of the Director.....					1
17. Changes to allow a second land treatment demonstration to be conducted when the results of the first demonstration have not shown the conditions under which the wastes can be treated completely, where the conditions for the second demonstration are not substantially the same as the conditions for the first demonstration.....					3
18. Changes in vegetative cover requirements for closure.....					2
L. Incinerators					
1. Changes to increase by more than 25% any of the following limits authorized in the permit: A thermal feed rate limit, a waste feed rate limit, or an organic chlorine feed rate limit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means.....					3
2. Changes to increase by up to 25% any of the following limits authorized in the permit: A thermal feed rate limit, a waste feed limit, or an organic chlorine feed rate limit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means.....					2
3. Modification of an incinerator unit by changing the internal size or geometry of the primary or secondary combustion units, by adding a primary or secondary combustion unit, by substantially changing the design of any component used to remove HCl or particulate from the combustion gases, or by changing other features of the incinerator that could affect its capability to meet the regulatory performance standards. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means.....					3
4. Modification of an incinerator unit in a manner that would not likely affect the capability of the unit to meet the regulatory performance standards but which would change the operating conditions or monitoring requirements specified in the permit. The Director may require a new trial burn to demonstrate compliance with the regulatory performance standards.....					2
5. Operating requirements:					
a. Modification of the limits specified in the permit for minimum combustion gas temperature, minimum combustion gas residence time, or oxygen concentration in the secondary combustion chamber. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means.....					3
b. Modification of any stack gas emission limits specified in the permit, or modification of any conditions in the permit concerning emergency shutdown or automatic waste feed cutoff procedures or controls.....					3
c. Modification of any other operating condition or any inspection or recordkeeping requirement specified in the permit.....					2
6. Incineration of different wastes:					
a. If the waste contains a POHC that is more difficult to incinerate than authorized by the permit or if incineration of the waste requires compliance with different regulatory performance standards than specified in the permit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means.....					3
b. If the waste does not contain a POHC that is more difficult to incinerate than authorized by the permit and if incineration of the waste does not require compliance with different regulatory performance standards than specified in the permit.....					
* Also see technical correction to the rule at 53 FR 41649 (October 24, 1988).					
Note: See § 270.42(g) for modification procedures to be used for the management of newly listed or identified wastes.					
7. Shakedown and trial burn:					
a. Modification of the trial burn plan or any of the permit conditions applicable during the shakedown period for determining operational readiness after construction, the trial burn period, or the period immediately following the trial burn.....					2
b. Authorization of up to an additional 720 hours of waste incineration during the shakedown period for determining operational readiness after construction, with the prior approval of the Director.....					1
c. Changes in the operating requirements set in the permit for conducting a trial burn, provided the change is minor and has received the prior approval of the Director.....					1
d. Changes in the ranges of the operating requirements set in the permit to reflect the results of the trial burn, provided the change is minor and has received the prior approval of the Director.....					1
8. Substitution of an alternate type of fuel that is not specified in the permit.....					1

**RCRA REVISION CHECKLIST 54: Permit Modifications
for Hazardous Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART F - SPECIAL FORMS OF PERMITS

† **HAZARDOUS WASTE INCINERATOR PERMITS**

revise last sentence
by omitting

parenthetical phrase 270.62(a)

revise last sentence
by omitting "as a

minor modification" 270.62(b)(10)

† **PERMITS FOR LAND TREATMENT DEMONSTRATIONS USING FIELD TEST OR LABORATORY ANALYSES**

remove "as a minor
modification"; add

a new sentence on
second phase of

permit 270.63(d)(1)

remove phrase on

minor modifications 270.63(d)(2)

remove paragraph 270.63(d)(3)

The Land Disposal Restrictions
Checklists - 34, 39, 50, 62, 63 and 66

The following versions of
Revision Checklists 34, 39, 50, 62, 63 and 66
should replace the current versions
of these checklists in SAM Appendix J

RCRA REVISION CHECKLIST 34

Land Disposal Restrictions

51 FR 40572-40654

November 7, 1986

as amended on June 4, 1987, at 52 FR 21010-21018

(HSA Cluster I)

Notes: 1) The following Part 268 sections are not delegable to States because of the national concerns which must be considered when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for an alternate treatment method); and 268.44 (variance from a treatment standard). The preamble (51 FR 40618) to the November 7, 1986 rule (the first LDR rule), addressed by this present checklist, clearly states that 268.5 is not delegable. The second LDR rule, called the California List Waste Rule (52 FR 25760, July 8, 1987; Revision Checklist 39), clarified that 268.42(b) and 268.44 are nondelegable. It also clarified the delegability of 268.6. "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant these petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective as is the case for decisions under 268.5, 268.42(b), or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

2) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of Revision Checklist 34 which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations because this incorporation aids the regulated community in knowing that the extensions, exemptions and variances addressed by the nondelegable sections of code are available to them. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to exclude these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelegable sections, see Appendix J of the State Authorization Manual (SAM).

3) Note that while 268.40 is delegable to States, "Administrator" in the following phrase "Approved by the Administrator under the procedures set for this in 268.42(b)" should not be replaced with an analogous State term because it is referring to decisions under 268.42(b). Such decisions will be made by the EPA Administrator.

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

4) Revision Checklist 50 (53 FR 31138, August 17, 1988) amends certain sections of code addressed by Revision Checklist 34, but does not affect the delegability outlined in the previous note. Other related checklists include Revision Checklist 62 (54 FR 18836, May 2, 1989), Revision Checklist 63 (54 FR 26594, June 23, 1989), Revision Checklist 66 (54 FR 36967, September 6, 1989), Revision Checklist 78 (55 FR 22520, June 1, 1990), and Revision Checklist 83 (56 FR 3864).

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

insert "and 268"	260.1(a)				
insert "and 268"	260.1(b)(1)				
insert "and 268"	260.1(b)(2)				
insert "and 268"	260.1(b)(3)				
insert "and 268"	260.1(b)(4)				

AVAILABILITY OF INFORMATION; CONFIDENTIALITY OF INFORMATION

insert "and 268"	260.2(a)				
insert "and 268"	260.2(b)				

USE OF NUMBER AND GENDER

insert "and 268"	260.3				
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SUBPART B - DEFINITIONS

DEFINITIONS					
insert "and 268"	260.10				

SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - RULEMAKING PETITIONS

GENERAL

† insert "and 268"	260.20(a)				
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PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SUBPART A - GENERAL

PURPOSE AND SCOPE

insert "268,"	261.1(a)				
insert ", 268"	261.1(a)(1)				
EXCLUSIONS					
insert "268,"	261.4(c)				
remove "267"					
insert "268"	261.4(d)(1)				

SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE GENERATED BY
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS

insert ", 268,"	261.5(b)				
insert ", 268,"	261.5(c)				
insert ", 268,"	261.5(e)				
insert ", 268,"	261.5(f)(2)				
insert ", 268,"	261.5(g)(2)				

REQUIREMENTS FOR RECYCLABLE MATERIALS

insert "268,"	261.6(a)(3)				
insert "268,"	261.6(c)(1)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

RESIDUES OF HAZARDOUS WASTE IN EMPTY CONTAINERS

insert "268,"	261.7(a)(1)(ii)				
insert "268,"	261.7(a)(2)(ii)				

SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE

GENERAL					
insert "268,"	261.20(b)				

SUBPART D - LISTS OF HAZARDOUS WASTES

GENERAL					
insert "268,"	261.30(c)				

PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART A - GENERAL

HAZARDOUS WASTE DETERMINATION

reference to exclusions/ restrictions	262.11(d)				
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PART 263 - STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE

SUBPART A - GENERAL

TRANSFER FACILITY REQUIREMENTS

insert ", 268"	263.12				
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SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE AND DISPOSAL FACILITIES

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

1 facilities to which Part 264 applies	264.1(h)				
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SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

1 insert "Part 268"	264.13(a)(1)				
insert "268.7"	264.13(b)(6)				
exempted surface impoundment plan specifications	264.13(b)(7)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATING RECORD

add "268.4(a)" and "268.7"	264.73(b)(3)				
land disposal units under an extension or petition and notice by generator under §268.7(a)(3)	264.73(b)(10)				
off-site treatment facility	264.73(b)(11)				
on-site treatment facility	264.73(b)(12)				
off-site land disposal facility	264.73(b)(13)				
1 on-site land disposal facility	264.73(b)(14)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

facilities to which part 265 applies	265.1(e)				
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SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

insert "Part 268"	265.13(a)(1)				
insert "268.7"	265.13(b)(6)				
exempt surface impoundment plan specifications	265.13(b)(7)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

OPERATING RECORD

add "268.4(a)" and "268.7"	265.73(b)(3)				
land disposal units under an extension or petition	265.73(b)(8)				
off-site treatment facility	265.73(b)(9)				
on-site treatment facility	265.73(b)(10)				
off-site land disposal facility	265.73(b)(11)				
on-site land disposal facility	265.73(b)(12)				

PART 268 - LAND DISPOSAL RESTRICTIONS

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

purpose	268.1(a)				
applicability	268.1(b)				
conditions for continued land disposal	268.1(c)				
persons with an extension	268.1(c)(1)				
1 persons with an exemption	268.1(c)(2)				
1 CERCLA/corrective action	268.1(c)(3)				
1 waste from small quantity generators <100 kg/mo as defined in 261.5	268.1(c)(4)				

DEFINITIONS APPLICABLE TO THIS PART

"hazardous constituent or constituents"	268.2(a)				
1 "land disposal"	268.2(a)				
all other terms	268.2(b)				

DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT

dilution not substitute for treatment	268.3				
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† TREATMENT SURFACE IMPOUNDMENT EXEMPTION

1 exempt treatment surface impoundments	268.4(a)				
1 treatment in impoundments	268.4(a)(1)				
sampling, operating, waste removal and waste handling procedures	268.4(a)(2)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 design requirements/ exemptions	268.4(a)(3)				
exempt under 264.221(d),(e) or 265.221(c),(d)	268.4(a)(3)(i)				
1 meets §3005(j)(2)	268.4(a)(3)(ii)				
1 satisfies §3005(j)(11) no migration	268.4(a)(3)(iii)				
1 written certification	268.4(a)(4)				

 Guidance note: 268.5 is **NOT DELEGABLE**. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

application to EPA Administrator for an extension to effective date of any Part 268, Subpart C restriction; what the applicant must demonstrate:	268.5(a)				
good-faith effort to locate and contract with treatment, recovery, or disposal facilities nationwide to manage waste according to Subpart C effective date	268.5(a)(1)				
binding contractual commitment for alter- native capacity that meets Subpart D treatment standards	268.5(a)(2)				

SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
demonstration that alternative capacity cannot reasonably be available by effective date due to circumstances beyond applicant's control; how this must be demonstrated	268.5(a)(3)				
capacity being constructed or provided by applicant must be sufficient capacity for entire quantity of waste	268.5(a)(4)				
1 detailed schedule for obtaining required permits or outlines of how and when alleviate capacity available	268.5(a)(5)				
arranged for adequate capacity during extension and documented in all site locations where wastes will be managed	268.5(a)(6)				
surface impoundment or landfill used must meet 268.5(h)(2) requirements	268.5(a)(7)				
1 certification by authorized representative signing an application	268.5(b)				
Administrator may request additional information	268.5(c)				
extension applies only to waste generated at individual facility covered by extension	268.5(d)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 Administrator may grant extension of up to 1 year from effective date; extension for 1 additional year if 268.5(a) demonstration can still be made; no extension beyond 24 months from 268, Subpart C effective date; length of extension determined by Administrator and basis; public notice and comment; final decision published in Federal Register	268.5(e)				
notify Administrator of change in certified conditions	268.5(f)				
written progress reports at intervals designated by Administrator; what progress reports must include; conditions for revocation of extension by Administrator	268.5(g)				
during period established by Administrator for which extension is in effect:	268.5(h)				
268.5(a)(1) storage restrictions do not apply	268.5(h)(1)				
disposal at new units, replacement units, or lateral expansion of existing units in compliance with specific requirements	268.5(h)(2)				
1 interim status landfill requirements	268.5(h)(2)(i)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 permitted landfill requirements	268.5(h)(2)(ii)				
1 interim status surface impoundment requirements	268.5(h)(2)(iii)				
permitted surface impoundment requirements	268.5(h)(2)(iv)				
1 pending decision on application, compliance with all land disposal restrictions once effective date has been reached	268.5(i)				

 Guidance note: 268.6 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

PETITIONS TO ALLOW LAND DISPOSAL OF A WASTE PROHIBITED
 UNDER SUBPART C OF PART 268

submit petition to Administrator; demonstration of no waste migration; demonstration components	268.6(a)				
identify specific unit and waste	268.6(a)(1)				
waste analysis	268.6(a)(2)				
comprehensive disposal unit characterization	268.6(a)(3)				
criteria which demonstration must meet	268.6(b)				
accurate and reproducible sampling, tests and data	268.6(b)(1)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Administrator approved sampling, testing and estimation techniques	268.6(b)(2)				
model calibration; models verified with actual data	268.6(b)(3)				
quality assurance/ control plan approved by Administrator	268.6(b)(4)				
uncertainty analysis	268.6(b)(5)				
petition submitted to Administrator	268.6(c)				
1 signed statement	268.6(d)				
Administrator may request additional information	268.6(e)				
waste unit to which petition applies	268.6(f)				
Administrator gives public notice in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	268.6(g)				
term of petition	268.6(h)				
1 requirements prior to Administrator's decision	268.6(i)				
1 petition granted by Administrator does not relieve responsibilities under RCRA	268.6(j)				

WASTE ANALYSIS

1 generator determines if restricted waste	268.7(a)				
1 notice by generator to treatment facility	268.7(a)(1)(i-iv)				

SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 generator notice/ certification to disposal facility	268.7(a)(2)				
information require- ments in notice to disposal facility	268.7(a)(2)(i)				
1 certification signature/statement	268.7(a)(2)(ii)				
1 generator notice to disposal facility for wastes under exten- sion for variance	268.7(a)(3)				
1 maintenance of data supporting knowledge of waste	268.7(a)(4)				
1 tests by treatment facility for wastes with treatment standards	268.7(b)				
1 notice by treatment facility to land disposal facility/ information needed	268.7(b)(1)(i-iv)				
1 certification of each shipment	268.7(b)(2)				
wastes with concentration standards	268.7(b)(2)(i)				
1 wastes with technology standards	268.7(b)(2)(ii)				
1 requirements for land disposal facility	268.7(c)				

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES

1 prohibited spent solvent wastes	268.30(a)				
small quantity generator 2-year exemption	268.30(a)(1)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
CERCLA/corrective action 2-year exemption	268.30(a)(2)				
1 concentration specific exemption (solvent waste with 1% total solvent constituent)	268.30(a)(3)				
landfill/surface impoundment disposal situations where (a) and (b) do not apply	268.30(b) 268.30(c)				
1 wastes meet Subpart D, 268 standards	268.30(c)(1)				
1 disposal at facility with successful no- migration petition	268.30(c)(2)				
1 wastes for which case-by-case ex- tension has been granted	268.30(c)(3)				
WASTE SPECIFIC PROHIBITION - DIOXIN-CONTAINING WASTES					
1 prohibited dioxin- containing wastes in- cluding FO22 wastes	268.31(a)				
situations where (a) doesn't apply	268.31(b)				
1 waste treated to meet Subpart D, 268	268.31(b)(1)				
1 disposal at facility with petition	268.31(b)(2)				
1 extension	268.31(b)(3)				
1 landfill/surface impoundment disposal	268.31(c)				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART D - TREATMENT STANDARDS

APPLICABILITY OF TREATMENT STANDARDS

2 applicability/ relationship to prohibition	268.40				
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TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

1 treatment standards/ Table CCWE	268.41(a)				
standards for common constituents in combined wastes	268.41(b)				

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

waste treated by identified technologies	268.42(a)				
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Guidance note: 268.42 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this paragraph into their code.

submit application to Administrator demonstrating alternate treatment method; criteria for Administrator to approve	268.42(b)				
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TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS

section reserved	268.43				
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RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.44 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

VARIANCE FROM A TREATMENT STANDARD

conditions for variance; petition Administrator; what must be demonstrated	268.44(a)				
procedures in accordance with 260.20	268.44(b)				
1 statement signed by petitioner or authorized representative	268.44(c)				
1 additional information or samples may be requested by Administrator; additional copies for affected States and region	268.44(d)				
1 Administrator gives public notification in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	268.44(e)				
268.7 waste analysis requirements must be followed for wastes covered by variance	268.44(f)				

SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
1 requirements during petition review	268.44(g)				

SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES					
1 exemptions to storage prohibitions	268.50(a)				
1 on-site storage exemption for generator	268.50(a)(1)				
1 treatment, storage, and disposal facility exemption	268.50(a)(2)				
1 container labeling	268.50(a)(2)(i)				
1 tank labeling	268.50(a)(2)(ii)				
1 transporter exemption	268.50(a)(3)				
storage up to one year	268.50(b)				
storage longer than one year	268.50(c)				
1 wastes affected by a petition or exemption	268.50(d)				
wastes meeting specified treat- ment standards	268.50(e)				

APPENDIX I TO PART 268

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)					
1 description of TCLP	Appendix I				

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX II TO PART 268

TREATMENT STANDARDS (AS CONCENTRATIONS IN
THE TREATMENT RESIDUAL EXTRACT)

table	Appendix II				
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PART 270 - EPA-ADMINISTERED PERMIT PROGRAMS; THE HAZARDOUS
WASTE PERMIT PROGRAM

SUBPART B - PERMIT APPLICATIONS

CONTENTS OF PART B: GENERAL REQUIREMENTS

copy of notice of approval of petition or extension	270.14(b)(21)				
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SUBPART C - PERMIT CONDITIONS

ESTABLISHING PERMIT CONDITIONS

insert "through 268" remove "267"	270.32(b)(1)				
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SUBPART D - CHANGES TO PERMITS

3 MINOR MODIFICATIONS OF PERMITS

conditions for treating non- specified waste	270.42(o)				
prohibited from disposal/treat- ment standards	270.42(o)(1)				
treatment under standards/variance	270.42(o)(2)				
no increased or substantially different risks	270.42(o)(3)				

SPA 9

RCRA REVISION CHECKLIST 34: Land Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Federal/State approval; allowable modifications	270.42(o)(4)				

- ¹ Also see technical correction to the rule at 52 FR 21010 (June 4, 1987).
- ² The reference to "Administrator" near the end of this paragraph should not be replaced with an analogous State term. See Note 3 as the beginning of this checklist.
- ³ States need to add 270.42(o) only if they adopted an analog to 270.42 - Minor Modification of Permits - as part of their base program. Adoption of 270.42 is up to each State's discretion as it is not required under 271.14.

483

RCRA REVISION CHECKLIST 39

California List Waste Restrictions

52 FR 25760-25792

July 8, 1987

as amended on October 27, 1987, at 52 FR 41295-41296

(HSPA Cluster II)

Notes: 1) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

2) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of Revision Checklist 39 which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to except these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelagable sections, see Appendix J of the State Authorization Manual (SAM).

3) Note that while 268.40(b) is delegable to States, "Administrator" in the following phrase "approved by the Administrator under the procedures set forth in 268.42(b)" should not be replaced with an analogous State term because it is referring to decisions under 268.42(b) which will be made by the EPA Administrator.

4) Revision Checklist 50 (53 FR 31138, August 17, 1988) amends certain sections of code addressed by Revision Checklist 39, but does not affect the delegability outlined in the previous note. Other related Checklists include Revision Checklist 62 (54 FR 18836, May 2, 1989), Revision Checklist 63 (54 FR 26594, June 23, 1989), Revision Checklist 66 (54 FR 36967, September 6, 1989), Revision Checklist 78 (55 FR 22520, June 1, 1990), and Revision Checklist 83 (56 FR 3864, January 31, 1991).

402

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

SUBPART B - DEFINITIONS

REFERENCES

1	Parts 260 through 270	260.11(a)			
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PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART G - FARMERS

FARMERS

†	pesticide disposal				
2	by farmers	262.70			

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

annual removal of specific residues	264.13(b) (7) (iii)				
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PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

annual removal of specific residues	265.13(b) (7)(iii)				
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SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

† pesticide disposal by farmers	268.1(c)(5)				
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DEFINITIONS APPLICABLE TO THIS PART

add "halogenated organic compounds"	268.2(a)				
revise "land disposal"	268.2(a)				
add "polychlorinated biphenyls"	268.2(a)				

DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT

add restriction regarding circum- vention of effective dates and avoidance of prohibition of Subpart C or RCRA 3004	268.3				
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TREATMENT SURFACE IMPOUNDMENT EXEMPTION

provide clari- fication and add new section and statutory prohibi- tion references	268.4(a)(2)				
add section con- cerning hazardous constituent evaporation	268.4(b)				

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.5 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

add ending clause regarding situation where treatment standards have not been specified	268.5(a)(2)				
change "268.50(a)(1)" to "268.50(a)"	268.5(h)(1)				
add "and RCRA section 3005(j)(1)" to end of paragraph	268.5(h)(2)(iii)				
add new paragraph stating that land disposal of specified PCB wastes must also comply with 40 CFR 761.75 and Parts 264 and 265	268.5(h)(2)(v)				

Guidance note: 268.6 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

PETITIONS TO ALLOW LAND DISPOSAL OF A WASTE PROHIBITED UNDER SUBPART C OF PART 268

noneligibility of certain liquid PCB waste for "no migration" petitions under 268.6	268.6(k)				
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WASTE ANALYSIS AND RECORDKEEPING

268.32 exception:	268.7(a)				
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SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
add 268.32 and RCRA 3004(d) prohibition to notification restrictions:	268.7(a)(1)				
add 268.32 and RCRA 3004(d) treatment standards to notification	268.7(a)(1)(ii)				
add reference to Subpart D and prohibitions in 268.32 and 3004(d) to notice and certification:	268.7(a)(2)				
add prohibitions in 268.32 and RCRA 3004(d) to notice;	268.7(a)(2)(i)(B)				
add prohibitions in 268.32 and RCRA 3004(d) to certification	268.7(a)(2)(ii)				
add testing requirements of 268.32 for wastes prohibited under 268.32 or RCRA 3004(d):	268.7(b)				
add prohibitions in 268.32 and RCRA 3004(d) to notice;	268.7(b)(1)(ii)				
add prohibitions in 268.32 and RCRA 3004(d) to certification requirements:	268.7(b)(2)				
add 268.32 and RCRA 3004(d) prohibitions to certification requirements and to certification;	268.7(b)(2)(i)				
add testing requirements of 268.32 for wastes prohibited under 268.32 or RCRA 3004(d)	268.7(c)				

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES

add residues of 268.30 a(1), a(2), and a(3) to wastes not subject to November 8, 1986, land disposal pro- hibition	268.30(a)(4)				
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WASTE SPECIFIC PROHIBITIONS - CALIFORNIA LIST WASTE

prohibitions effec- tive July 8, 1987:	268.32(a)				
liquids/ph less than or equal to 2.0;	268.32(a)(1)				
liquids/PCBs greater than or equal to 50 ppm;	268.32(a)(2)				
liquids/HOCs greater than or equal to 1,000 mg/l and less than 10,000 mg/l	268.32(a)(3)				
November 8, 1988 date for contaminated soil or debris from response under CERCLA 104 or 106 or RCRA corrective action	268.32(d)				
prohibitions effec- tive July 8, 1989:	268.32(e)				
liquid/HOCs greater than or equal to 1,000 mg/l;	268.32(e)(1)				
nonliquid/HOCs greater than or equal to 1,000 mg/kg	268.32(e)(2)				

SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
July 8, 1987 and July 8, 1989 dates for disposal and landfills and surface impoundments meeting 268.5(h)(2) requirements	268.32(f)				
requirements don't apply when:	268.32(g)				
granted a 268.6 exemption;	268.32(g)(1)				
granted a 268.5 extension	268.32(g)(2)				
in compliance with Subpart D standards or RCRA 3004(d) or section prohibitions	268.32(g)(3)				
requirements do not apply when subject to Part 268, Subpart C prohibition	268.32(h)				
1 method 9095 required	268.32(i)				
applicability of waste analysis/recordkeeping requirements of 268.7:	268.32(j)				
initial generator must use 261.22(a)(1) procedures or knowledge of pH; pH less than 2.0 restriction;	268.32(j)(1)				
initial generator must test for or have knowledge of HOC or PCB concentration levels; restriction above levels	268.32(j)(2)				

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART D - TREATMENT STANDARDS

APPLICABILITY OF TREATMENT STANDARDS

3	land disposal if extract or residue meets 268.41 Table CCWE values	268.40(a)			
	land disposal after treatment is acceptable	268.40(b)			

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

standard for incineration of liquid hazardous wastes containing PCBs	268.42(a)(1)				
standard for incineration of non-liquid hazardous waste containing HOCs	268.42(a)(2)				

SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.42(b) is <u>NOT DELEGABLE</u> . States should see Note 2 at the beginning of this checklist regarding how to incorporate this paragraph into their code.					
replace "level" with "measure" before "of performance"; replace "will not present an unreasonable risk to human health or the environment" with "is in compliance with Federal, State and local requirements and is protective of human health and the environment"; in last sentence replace "certification" with "approval"	268.42(b)				

SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES

storage prohibition	268.50(a)				
† no prohibition where treatment standards are not specified or are met, or compliance with 268.32 or RCRA 3004 exists	268.50(e)				
liquid hazardous waste containing PCBs	268.50(f)				

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX III TO PART 268

add new appendix: HOC definition and list of HOCs regu- lated under 268.32	Appendix III				
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In determining the concentration of HOCs in a hazardous waste for purposes of the §268.32 land disposal prohibition, EPA has defined the HOCs that must be included in the calculation as any compounds having a carbon-halogen bond which are listed in this Appendix (see §268.2).

Appendix III to Part 268 consists of the following compounds: (For electronic version of checklist see 52 FR 25791.)

Volatiles

Bromodichloromethane
Bromomethane
Carbon Tetrachloride
Chlorobenzene
2-Chloro-1,3-butadiene
Chlorodibromomethane
Chloroethane
2-Chloroethyl vinyl ether
Chloroform
Chloromethane
3-Chloropropene
1,2-Dibromo-3-chloropropene
1,2-Dibromomethane
Dibromomethane
Trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane
1,1-Dichloroethane

1,2-Dichloroethane
1,1-Dichloroethylene
Trans-1,2-Dichloroethene
1,2-Dichloropropene
Trans-1,3-Dichloropropene
cis-1,3-Dichloropropene
Iodomethane
Methylene chloride
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Tribromomethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichloromono-fluoromethane
1,2,3-Trichloropropene
Vinyl chloride

SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
<i>Semivolatiles</i>					
Bis(2-chloroethoxy)ethane		Chlordane			
Bis(2-chloroethyl)ether		DDD			
Bis(2-chloroisopropyl) ether		DDE			
p-Chloroaniline		DDT			
Chlorobenzilate		Dieldrin			
p-Chloro-m-cresol		Endosulfan I			
2-Chloronaphthalene		Endosulfan II			
2-Chlorophenol		Endrin			
3-Chloropropionitrile		Endrin aldehyde			
m-Dichlorobenzene		Heptachlor			
o-Dichlorobenzene		Heptachlor epoxide			
p-Dichlorobenzene		Isodrin			
3,3'-Dichlorobenzidine		Kepone			
2,4-Dichlorophenol		Methoxychlor			
2,6-Dichlorophenol		Toxaphene			
Hexachlorobenzene					
Hexachlorobutadiene		<i>Phenoxyacetic Acid Herbicides</i>			
Hexachlorocyclopentadiene		2,4-Dichlorophenoxyacetic acid			
Hexachloroethane		Silvex			
Hexachloropropene		2,4,5-T			
Hexachloropropene					
4,4'-Methylenebis(2-chloroaniline)		<i>PCBs</i>			
Pentachlorobenzene		Aroclor 1016			
Pentachloroethane		Aroclor 1221			
Pentachloronitrobenzene		Aroclor 1232			
Pentachlorophenol		Aroclor 1242			
Pronamide		Aroclor 1246			
1,2,4,5-Tetrachlorobenzene		Aroclor 1254			
2,3,4,6-Tetrachlorophenol		Aroclor 1260			
1,2,4-Trichlorobenzene		PCBs not otherwise specified			
2,4,5-Trichlorophenol					
2,4,6-Trichlorophenol		<i>Dioxins and Furans</i>			
Tris(2,3-dibromopropyl)phosphate		Hexachlorodibenzo-p-dioxins			
<i>Organochlorine Pesticides</i>		Hexachlorodibenzofuran			
Aldrin		Pentachlorodibenzo-p-dioxins			
alpha-BHC		Pentachlorodibenzofuran			
beta-BHC		Tetrachlorodibenzo-p-dioxins			
delta-BHC		Tetrachlorodibenzofuran			
gamma-BHC		2,3,7,8-Tetrachlorodibenzo-p-dioxin			

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS
WASTE PERMIT PROGRAM

SUBPART D - CHANGES TO PERMITS

†,4 MINOR MODIFICATIONS OF PERMITS

add permitted when waste prohibited under RCRA Section 3004	270.42(o)(1)				
add permitted when treatment according to 268.4 and 268.3 and:	270.42(o)(2)				
treatment standards under 268.41, 268.42 or 268.44 are met; or	270.42 (o)(2)(i)				
no standards exist and treatment removes prohibitions of 268.32 and RCRA 3004	270.42(o)(2)(ii)				
allow facilities to change operation to treat or store if:	270.42(p)				
major permit modification is requested;	270.42(p)(1)				
demonstrates necessity to comply with 268 or RCRA 3004; and	270.42(p)(2)				
ensures compliance pending administrative determination	270.42(p)(3)				

SPA 9

RCRA REVISION CHECKLIST 39: California List Waste Restrictions (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART G - INTERIM STATUS

CHANGES DURING INTERIM STATUS

no reconstructing; changes do not include tank/ container changes to comply with land disposal restrictions	270.72(e)				
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- ¹ See amendment to rule at 52 FR 41295 (October 27, 1987).
- ² Note that the FR gives Subpart E, 262.51 as the citation for Farmers. This is not correct as the August 8, 1986 (51 FR 28664) final rule regarding exports changed this section and moved it to Subpart G, 262.70. This error was corrected at 53 FR 27164 (July 19, 1988).
- ³ The reference to "Administrator" near the end of this paragraph should not be replaced with an analogous State term. See note 3 at the beginning of this checklist.
- ⁴ Note that 270.42 is not required by 271.14. Thus, this optional change applies only to States that opted to include an analog to 270.42, i.e., Minor Modifications to Permits.

134

RCRA REVISION CHECKLIST 50

Land Disposal Restrictions for First Third

Scheduled Wastes

53 FR 31138-31222

August 17, 1988

as amended on February 27, 1989, at 54 FR 8264-8266
(HWSA Cluster II)

Notes: 1) The "First Third" Scheduled Waste rule addressed by this checklist is the third in a series of rules restricting the land disposal of hazardous waste. Previous related checklists include Revision Checklist 34 (51 FR 40572; November 7, 1986) and Revision Checklist 39 (52 FR 25760; July 8, 1987). The First Third Scheduled Waste rule was subsequently modified by corrections at 54 FR 18836 (May 2, 1989), and 54 FR 36967 (September 6, 1989) addressed by Revision Checklist 62 and Revision Checklist 66, respectively. Also, related to this present checklist are the Second Third Scheduled Wastes (54 FR 26594, Revision Checklist 63); the Third Third Scheduled Wastes (55 FR 22520, Revision Checklist 78), and a correction to the Third Third Scheduled Wastes (56 FR 3864; Revision Checklist 83). On August 19, 1991 (56 FR 41164; Revision Checklist 95), the treatment standards for the K061 nonwastewater in the high zinc subcategory were revised and finalized. The treatment standards for these wastes were first promulgated by the First Third Scheduled Wastes rule.

2) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

3) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of Revision Checklist 50 which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to exclude these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelagable sections, see Appendix J of the State Authorization Manual (SAM).

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

4) Certain sections or paragraphs of the land disposal restrictions are not delegable, specifically §§268.5, 268.42(b) and 268.44. These continue to be nondelegable. With regard to §268.6, "no-migration" petitions, EPA will continue to handle these petitions at Headquarters although States may be authorized to grant these petitions in the future.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE
TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART B - GENERAL WASTE ANALYSIS

GENERAL WASTE ANALYSIS

clarify language and apply testing to soft hammer wastes in treatment surface impoundments	264.13(b)(7) (iii)				
apply to wastes that do not meet treatment standards	264.13(b)(7) (iii)(A)				
apply to wastes for which no treatment standards are established	264.13(b)(7) (iii)(B)				
prohibited disposal of residues under 268.32 or 3004(d)	264.13(b)(7) (iii)(B)(1)				
prohibited disposal of residues under 268.33(f)	264.13(b)(7) (iii)(B)(2)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING AND REPORTING

1 OPERATING RECORD

remove "or" after 268.5; add clause on 268.8 certification; add "applicable" before "notice required"; change "268.7(a)(3)" to "268.7(a)"	264.73(b)(10)				
add "and the certification and demonstration, if applicable" and "or the owner or operator"; change "268.7(a)(1) to "268.7 or 268.8"	264.73(b)(11)				
add 1) clause on certification/ demonstration, and 2) "or the owner or operator"; substitute "268.7 or 268.8" for "268.7(a)(1)"; change placement of "except the manifest number," excluding the word "for."	264.73(b)(12)				
add "and demonstration if applicable"; move reference to generator; replace "268.7(b)(1) and (2)" and "268.7(a)(2)" with "268.7 and 268.8, whichever is applicable"	264.73(b)(13)				

19

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
change structure; add specific mention of "the generator" moving the place- ment of the refer- ence to "treater" and replacing it with "or owner or operator of a treatment facility"; replace "268.7(a)(2)" and "268.7(b)(1)" with "268.7"; add clause on certification/ demonstration referencing 268.8	264.73(b)(14)				
add new paragraph on off-site storage facility requirements	264.73(b)(15)				
add new paragraph on on-site storage facility requirements	264.73(b)(16)				

**PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF
HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES**

SUBPART B - GENERAL FACILITY STANDARDS

GENERAL WASTE ANALYSIS

clarify language and apply testing to soft hammer wastes in treatment surface impoundments	265.13(b)(7) (iii)				
apply to wastes that do not meet treatment standards	265.13(b)(7) (iii)(A)				

SPA 9

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
apply to wastes for which no treatment standards are established	265.13(b)(7)(iii)(B)				
prohibited disposal of residues under 268.32 or 3004(d)	265.13(b)(7)(iii)(B)(1)				
prohibited disposal of residues under 268.33(f)	265.13(b)(7)(iii)(B)(2)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

1 OPERATING RECORD

after 268.5 replace 1) "or" with "monitoring data required pursuant to" and 2) "pursuant to" with "under"; insert clause on certification after "268.8"; add "applicable" before "notice"; replace "268.7(a)(3)" with "268.7(a)"	265.73(b)(8)				
add 1) "a copy of" before "the notice," 2) "and the certification and demonstration if applicable" after "the notice" and 3) "or the owner or operator" after "generator"; replace "268.7(a)(1)" with "268.7 or 268.8"	265.73(b)(9)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
add 1) clause on certification/ demonstration, after "notice" and 2) "or the owner or operator" after "generator"; move manifest number clause; substitute "268.7 or 268.8" for "268.7(a)(1)"	265.73(b)(10)				
add 1) "a copy of" before "notice" and 2) "and demon- stration if applicable" after "certification"; restructure para- graph and move reference to generator; replace "268.7(b)" and "268.7(a)(2)" with 268.7 or 268.8"	265.73(b)(11)				
restructure para- graph moving clause on manifest number and placement of "treatment facility"; add 1) "owner or operator of a" before "treatment facility" and 2) "and the certifica- tion and demonstra- tion if applicable" before "required"; replace "268.7(a)(2)" and "268.7(b)(2)" with "268.7 or 268.8";	265.73(b)(12)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
add new paragraph on requirements for off-site storage facilities	265.73(b)(13)				
add new paragraph on requirements for on-site storage facilities	265.74(b)(14)				

**PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND
SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES**

SUBPART C - RECYCLABLE MATERIALS USED IN A MANNER CONSTITUTING DISPOSAL

APPLICABILITY

add language to reflect that products for general public's use are not subject to regulation if they meet treatment requirements of 268 Subpart D or prohibition levels of 268.32 or 3004(d) where no treatment standards; zinc-containing fertilizers using K061 not subject to this requirement	266.20(b)				
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**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART A - GENERAL

2 PURPOSE, SCOPE, AND APPLICABILITY

remove old 268.1(c)(3); redesignate 268.1(c)(4) as 268.1(c)(3)	268.1(c)(3)				
redesignate old 268.1(c)(5) as 268.1(c)(4) and revise	268.1(c)(4)				
add new 268.1(c)(5)-- landfills/surface impoundments, in compliance with 268.8 with respect to wastes not subject to specific treatment standards or prohibitions	268.1(c)(5)				
add new paragraph preserving waiver availability under 121(d)(4)	268.1(d)				

TREATMENT SURFACE IMPOUNDMENT EXEMPTION

clarify language and revise to apply to soft hammer wastes to treatment surface impoundments that meet a list of conditions:	268.4(a)(2)				
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**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
sampling and testing requirements for wastes with and without treatment standards; supernatant and sludge samples tested separately	268.4(a)(2)(i)				
annual removal of specific residues; residues subject to valid certification; flow-through standard of removal for supernatant	268.4(a)(2)(ii)				
requirements for subsequent management of treatment residues in another impoundment prohibited unless certification under 268.8 and standards of 268.8(a) are met	268.4(a)(2)(iii)				
recordkeeping requirements must be specified in the facility's waste analysis plan	268.4(a)(2)(iv)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Guidance note: 268.5 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

replace all of the text in the introductory paragraph after "may be disposed" with "in a landfill or surface impoundment unit only if such unit is in compliance with the following requirements:"	268.5(h)(2)				
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Guidance note: 268.6 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

**PETITIONS TO ALLOW LAND DISPOSAL OF A WASTE PROHIBITED
UNDER SUBPART C OF PART 268**

monitoring plan detecting migration at the earliest time	268.6(a)(4)				
sufficient information to assure Administrator that owner/operator is in compliance with other applicable Federal, State and local laws	268.6(a)(5)				
redesignate old 268.6(c) as 268.6(d); add new paragraph on what each petition must include:	268.6(c)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring plan including description of monitoring program to verify continued compliance with variance; information which must be included	268.6(c)(1)				
media monitored	268.6(c)(1)(i)				
type of monitoring	268.6(c)(1)(ii)				
monitoring station location	268.6(c)(1)(iii)				
monitoring interval	268.6(c)(1)(iv)				
specific hazardous constituents to be monitored	268.6(c)(1)(v)				
monitoring program implementation schedule	268.6(c)(1)(vi)				
monitoring station equipment	268.6(c)(1)(vii)				
sampling and analytical techniques employed	268.6(c)(1)(viii)				
data recording/reporting procedures	268.6(c)(1)(ix)				
268.6(c)(1) monitoring program must be in place by Administrator specified time period, as part of approval of the petition prior to prohibited waste receipt at unit	268.6(c)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
268.6(c)(1) monitoring data sent to Administrator according to monitoring plan must be according to approved format and schedule	268.6(c)(3)				
monitoring data as per 268.6(c)(1) monitoring plan must be kept in on-site operating record	268.6(c)(4)				
criteria the 268.6(c)(1) monitoring program must meet:	268.5(c)(5)				
Administrator approval for all sampling, testing, and analytical data; data accurate and reproducible	268.6(c)(5)(i)				
Administrator approval of all estimation and monitoring techniques	268.6(c)(5)(ii)				
QA/QC plan for all aspects of monitoring program provided to and approved by Administrator	268.6(c)(5)(iii)				
redesignate old 268.6(c) and (d) as 268.6(d) and (g) respectively	268.6(d)				
redesignate old 268.6(e) as 268.6(h); add new paragraph addressing the reporting of changes at unit and/or surrounding environment that significantly depart from variances and affect migration potential	268.6(e)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
changes to unit design, construction or operation proposed in writing and a demonstration to Administrator 30 days prior to change; Administrator makes determination if petition is invalidated and determines appropriate response; Administrator approval before changes can be made	268.6(e)(1)				
within 10 days of discovering change, written notification to Administrator if condition is not as predicted or modeled in petition; Administrator decides if change requires further action	268.6(e)(2)				
redesignate old 268.6(f) as 268.6(i); add new paragraph on owner/operator responsibilities if hazardous waste migration:	268.6(f)				
immediate suspension of restriction waste receipt	268.6(f)(1)				
within 10 days written notification to Administrator	268.6(f)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Administrator decision within 60 days as to continued receipt of prohibited waste; Administrator determines if further examination of any migration warranted	268.6(f)(3)				
redesignate old 268.6(d) as 268.6(g)	268.6(g)				
redesignate old 268.6(e) as 268.6(h)	268.6(h)				
redesignate old 268.6(f) as 268.6(i)	268.6(i)				
redesignate old 268.6(g) as 268.6(j)	268.6(j)				
redesignate old 268.6(h) as 268.6(k)	268.6(k)				
redesignate old 268.6(i) as 268.6(l)	268.6(l)				
redesignate old 268.6(j) as 268.6(m)	268.6(m)				
redesignate old 268.6(k) as 268.6(n)	268.6(n)				

3 WASTE ANALYSIS AND RECORDKEEPING

clarify language and provide exception to section 268.43 testing requirements	268.7(a)				
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**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
remove the clause after "treatment standards" which ends with "exceeds" and insert "set forth in Subpart D of this part or exceeds"; insert "or storage" after "treatment"; remove "of this part" after "268.32" and "section" before "3004(d)"	268.7(a)(1)				
insert "treatment storage, or" before "land disposal facility"; insert "levels" after "prohibition"; remove "of this part" after "268.32" and "section" before "3004(d)"	268.7(a)(2)				
remove "an extension under §268.1(c)(3)"; insert "with each shipment of waste" after "Subpart C"; replace "forward" with "submit"; remove "with the waste" and "land disposal"; add new notice requirements for facility receiving the waste	268.7(a)(3)				
EPA hazardous waste number	268.7(a)(3)(i)				
treatment standards and applicable 268.32 or 3004(d) prohibition	268.7(a)(3)(ii)				
manifest number of shipment	268.7(a)(3)(iii)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste analysis data	268.7(a)(3)(iv)				
date waste is subject to prohibition	268.7(a)(3)(v)				
redesignate old 268.7(a)(4) as 268.7(a)(5); add new paragraph 268.7(a)(4) requires generator notification for 268.33(f) only prohibited wastes	268.7(a)(4)				
EPA hazardous waste number	268.7(a)(4)(i)				
applicable 268.33(f) prohibitions	268.7(a)(4)(ii)				
manifest number of shipment	268.7(a)(4)(iii)				
waste analysis data	268.7(a)(4)(iv)				
add new requirement for retention of waste analysis data on-site in files	268.7(a)(5)				
add five-year reten- tion period for notices, certifica- tions, demonstra- tions, etc. produced relative to 268.7; extensions during enforcement actions	268.7(a)(6)				
clarify language and applicability of testing requirements	268.7(b)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste subject to 268.33(f) prohibitions, but not 268.32 prohibitions or subject to certification prior to disposal in landfill or surface impoundment unit and disposal is in accordance with 268.5(h)(2); same for wastes subject to 268.33(f) and 3004(d) prohibitions or codified 268.32 prohibitions	268.7(c)(3)				

LANDFILL AND SURFACE IMPOUNDMENT DISPOSAL RESTRICTIONS

disposal of 268.33(f) prohibited wastes in landfills or surface impoundments in compliance with 268.5(h)(2) if requirements of 268.8 are met	268.8(a)				
good faith generator effort to contract with treatment and recovery facilities providing greatest environmental benefit	268.8(a)(1)				
demonstration and certification submitted to Regional Administrator that 268.8(a)(1) requirements have been met	268.8(a)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
explanation and certification when no practically available treatment can be found	268.8(a)(2)(i)				
contracting and certification when practically available treatments are found	268.8(a)(2)(ii)				
copy of demonstration and certification sent to receiving facilities for shipments of waste with no practically available treatment; certification only for subsequent shipments; generator recordkeeping and five year retention	268.8(a)(3)				
generator copy of demonstration and certification sent to receiving facilities for shipments of wastes with practically available treatment; certification only for subsequent shipments; generator record-keeping and five year retention	268.8(a)(4)				
additional information for certification if requested by Regional Administrator	268.8(b)				
notification when change in conditions forming basis of certification	268.8(b)(1)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
redesignate old 268.7(b)(1) as 268.7(b)(4); add new paragraph 268.7(b)(1) derived from old 268.7(b) on testing when standards are expressed as concentrations in waste extract	268.7(b)(1)				
redesignate old 268.7(b)(2) as 268.7(b)(5); add new paragraph 268.7(b)(2) derived in part from old 268.7(b) on testing of 268.32 or 3004(d) prohibited wastes not subject to Subpart D treatment standards	268.7(b)(2)				
add new paragraph on testing for wastes with treatment standards expressed as concentrations in waste	268.7(b)(3)				
old 268.7(b)(1) redesignated as 268.7(b)(4)	268.7(b)(4)				
old 268.7(b)(2) redesignated as 268.7(b)(5)	268.7(b)(5)				
add new paragraph for compliance with generator notice/certification requirements if waste sent off-site	268.7(b)(6)				
notification with each shipment for waste subject to 268.33(f), but not subject to 268.32	268.7(b)(7)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
EPA hazardous waste number	268.7(b)(7)(i)				
applicable 268.33(f) prohibitions	268.7(b)(7)(ii)				
manifest number of waste shipment	268.7(b)(7)(iii)				
waste analysis data	268.7(b)(7)(iv)				
no 268.7(b)(4) notification for recyclable materials used in a manner constituting disposal and subject to 266.20(b); 268.7(b)(5) certification and 268.7(b)(4) notice to Regional Administrator; records of recipients of waste derived products	268.7(b)(8)				
clarify language	268.7(c)				
have copies of notice under 268.7(a) or (b) and certifications in 268.8 if applicable	268.7(c)(1)				
retain rest of old 268.7(c), starting with "test the waste," and designate as 268.7(c)(2)	268.7(c)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
invalidation when Regional Administrator finds practically available treatment method or a method yielding greater environmental benefit than certified	268.8(b)(2)				
when certification is invalidated, generator must cease shipment, communicate with facilities receiving waste, and keep records of communication	268.8(b)(3)				
receiving treatment, recovery or storage facilities keep copy of generator's demonstra- tion and certification	268.8(c)				
receiving treatment, storage or recovery facility certify waste treated according to generators' demonstration	268.8(c)(1)				
receiving treatment, recovery or storage facility must send generator demonstra- tion/certification and 268.8(c)(1) certification to facility receiving waste or treatment residues	268.8(c)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
4 disposal facility must assure certification prior to disposal in landfill or surface impoundment unit and units in accordance with 268.5(h)(2) for wastes prohibited under 268.33(f)	268.8(d)				
wastes may be disposed in landfill or surface impoundment meeting 268.5(h)(2) if certified and treated	268.8(e)				

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

5 WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES

repromulgate requirement to treat to applicable standard unless restricted solvent falls into treatability group for which EPA has determined no capacity exists	268.30(a)				
remove final clause starting with "not subject to..." and ending with "November 8, 1988"	268.30(a)(2)				
change hyphenation; add "; or" at end of paragraph	268.30(a)(3)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
change first "(2), and (3)" to "(2), (3), and (4)"; remove second sentence concerning disposal in landfills prior to November 8, 1988	268.30(b)				
redesignate old 268.30(c) as 268.30(d); add new paragraph 268.30(c) prohibiting after November 8, 1990 land disposal of F001-F005 solvent waste contaminated soil and debris (and their treatment residues) resulting from CERCLA action or RCRA corrective action; permitting disposal in landfill or surface impoundment unit in compliance with 268.5(h)(2) prior to November 8, 1990	268.30(c)				
old 268.30(c) is new 268.30(d); revise "(a) and (b)" to read "(a), (b), and (c)"; 268.30(d)(1)-(3) are the same as the old 268.30(c)(1)-(3) except in (3) add "and units" after "wastes"	268.30(d)				

6 WASTE SPECIFIC PROHIBITIONS--DIOXIN-CONTAINING WASTES

add phrase "unless the following condition applies:"	268.31(a)				
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**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
contaminated soil and debris waste resulting from response action under CERCLA or from a RCRA corrective action	268.31(a)(1)				
redesignate old 268.31(b) as 268.31(d); new paragraph 268.31(b) prohibiting land disposal of F020-F023 & F026-F028 dioxin- containing wastes after November 8, 1990	268.31(b)				
change years to "1988" and "1990," respectively; insert "(1)" after "(a)"; replace "the facility" with "such unit"	268.31(c)				
old 268.31(b) is new 268.31(d); in introductory sentence insert "and (b)" after "(a)"; 268.31(d)(1)-(3) are the same as old 268.31(b)(1)-(3) except in (3) change "extension from" to "extension to"	268.31(d)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
WASTE SPECIFIC PROHIBITIONS - CALIFORNIA LIST WASTES					
revise as an introductory paragraph to read "The requirements of (a) and (e) of this section do not apply until:"; redesignate remainder of old 268.32(d) as 268.32(d)(2)	268.32(d)				
add new paragraph with July 8, 1989 as the prohibition date for contaminated soil or debris <u>not</u> resulting from a CERCLA response or RCRA corrective action; disposal between July 8, 1987 and July 8, 1989 permitted in landfill or surface impoundment in compliance with 268.5(h)(2)	268.32(d)(1)				
redesignate majority of old 268.32(d) as 268.32(d)(2); change "1988" to "1990"; add sentence allowing disposal between November 8, 1988 and November 8, 1990 in landfill or surface impoundment in compliance with 268.5(h)(2)	268.32(d)(2)				
change date to November 8, 1988	268.32(e)				
add clause on not including wastes described in 268.32(d)	268.32(e)(2)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
change "July 8, 1989" to "November 8, 1988"; replace "described" with "included" and "the facility" with "such disposal"	268.32(f)				
insert ",(d)," after "(a)"	268.32(g)				
insert ",(d)," after "(a)(3)"	268.32(h)				

WASTE SPECIFIC PROHIBITIONS - FIRST THIRD WASTES

specific wastes prohibited from land disposal effective August 8, 1988	268.33(a)				
land disposal prohi- bition of K061 waste containing 15% or greater of zinc pursuant to 268.41 treatment standard for K061 containing less than 15% zinc	268.33(a)(1)				
wastes--K048, K049, K050, K051, K052, K061 (contain 5% or greater zinc), K071--prohibited from land disposal effective August 8, 1990	268.33(b)				

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective August 8, 1990, land disposal prohibition of wastes specified in 268.10 having a treatment standard in 268, based on incineration and which are contaminated soil and debris, Subpart D	268.33(c)				
between November 8, 1988 and August 8, 1990, landfill or surface impoundment disposal permitted if in compliance with 268.5(h)(2) of wastes included under 268(b) & (c)	268.33(d)				
requirements of 268(a)-(d) do not apply when:	268.33(e)				
waste meets applicable 268, Subpart D standards	268.33(e)(1)				
granted an exemption from prohibition for wastes and units under 268.6	268.33(e)(2)				
granted an extension to an effective date for wastes under 268.5	268.33(e)(3)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
prohibition of landfill or surface impoundment disposal of wastes specified in 268.10 for which treatment standards do not apply (other than 268.32 or section 3004(d) prohibitions) unless 268.8 demonstration and certification	268.33(f)				
for a waste listed in 268.10, initial generator testing to determine exceedance of 268.41 & 268.43 treatment standards and prohibition from land disposal if exceed standards	268.33(g)				

SUBPART D - TREATMENT STANDARDS

APPLICABILITY OF TREATMENT STANDARDS

replace "this subpart" with "§268.41"; remove "without further treatment"	268.40(a)				
land disposal of a restricted waste identified in 268.43 only if below listed constituent concentrations	268.40(c)				

322

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

in Table CCWE remove entry specified below; add subtables to Table CCWE in numerical order as specified below	268.41(a)				
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Delete the following entry:

	Concentration (in mg/l)	
	Wastewaters containing spent solvents	All other spent solvent wastes
F001-F005 spent solvents		

Methylene chloride (from the pharmaceutical industry).....	12.7	.96
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Add the following subtables to Table CCWE in numerical order by EPA Hazardous Waste Number:
(For electronic version of checklist, see 53 FR 31217.)

**TABLE CCWE—CONSTITUENT
CONCENTRATIONS IN WASTE EXTRACT**

F006 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Cadmium.....	0.066
Chromium (Total).....	5.2
Lead.....	.51
Nickel.....	.32
Silver.....	.072
Cyanides (Total).....	Reserved
K001 nonwastewaters (see also Table in § 268.43)	Concentration (in mg/l)
Lead.....	0.51

K022 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Chromium (Total).....	5.2
Nickel.....	0.32
K046 nonwastewaters (Nonreactive Subcategory)	Concentration (in mg/l)
Lead.....	0.18

320

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
K048, K049, K050, K051 and K052 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)	K071 nonwastewaters	Concentration (in mg/l)		
Arsenic.....	0.004	Mercury.....	0.025		
Chromium (Total).....	1.7				
Nickel.....	.048	K086 nonwastewaters (Solvent Washes Subcategory) see also Table CCW in § 268.43)	Concentration (in mg/l)		
Selenium.....	.025	Chromium (Total).....	0.094		
		Lead.....	.37		
K061 nonwastewaters (Low Zinc Subcategory—less than 15% total zinc)	Concentration (in mg/l)				
Cadmium.....	0.14	K087 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)		
Chromium (Total).....	5.2	Lead.....	0.51		
Lead.....	.24				
Nickel.....	.32	K101 and K102 nonwastewaters (Low Arsenic Subcategory—less than 1% Total Arsenic) (see also Table CCW in § 268.43)	Concentration (in mg/l)		
		Cadmium.....	0.066		
K061 nonwastewaters (High Zinc Subcategory—15% or greater total zinc): effective until 11/8/90	Concentration (in mg/l)	Chromium (Total).....	5.2		
Cadmium.....	0.14	Lead.....	.51		
Chromium (Total).....	5.2	Nickel.....	.32		
Lead.....	.24				
Nickel.....	.32				
K062 nonwastewaters	Concentration (in mg/l)				
Chromium (Total).....	0.094				
Lead.....	.37				

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

add ability to incinerate in boilers and industrial furnaces after "265, Subpart O"

268.42(a)(2)

TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS

introductory paragraph for Table CCW explaining table:

268.43(a)

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

Add new Table CCW as shown below. Subtables are arranged in numerical order by EPA Hazardous Waste Number. Additionally there is a listing after the subtables of "K" wastes which are prohibited from land disposal. (For electronic version of table, see 53 FR 31218-31221.)

TABLE CCW—CONSTITUENT
CONCENTRATIONS IN WASTES

F001, F002, F003, F004 and F005 wastewaters (Pharmaceutical Industry)	Concentra- tion (in mg/ l)
Methylene chloride	0.44
F006 nonwastewaters (see also Table CCWE in § 268.41)	Concentra- tion (in mg/ kg)
Cyanides (Total)	Reserved
K001 nonwastewaters (see also Table CCWE in § 268.41)	Concentra- tion (in mg/ kg)
Naphthalene	8.0
Pentachlorophenol	37
Phenanthrene	8.0
Pyrene	7.3
Toluene	.14
Xylenes	.16
K001 wastewaters	Concentra- tion (in mg/ l)
Naphthalene	0.15
Pentachlorophenol	.88
Phenanthrene	.15
Pyrene	.14
Toluene	.14
Xylenes	.16
Lead	.037
K015 wastewaters	Concentra- tion (in mg/ l)
Anthracene	1.0
Benzal chloride	28
Benzo (b and/or k) fluoranthene	29
Phenanthrene	27
Toluene	.15
Chromium (Total)	.32
Nickel	.44

K015 nonwastewaters	Concentra- tion (in mg/ kg)
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachlorocyclopentadiene	5.6
Hexachloroethane	28
Tetrachloroethene	6.0

K016 wastewaters	Concentra- tion (in mg/ l)
Hexachlorobenzene	0.033
Hexachlorobutadiene	.007
Hexachlorocyclopentadiene	.007
Hexachloroethane	.033
Tetrachloroethene	.007

K013 nonwastewaters	Concentra- tion (in mg/ kg)
Chloroethane	6.0
1,1-Dichloroethane	6.0
1,2-Dichloroethane	6.0
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachloroethane	28
Pentachloroethane	5.6
1,1,1-Trichloroethane	6.0

K018 wastewaters	Concentra- tion (in mg/ l)
Chloroethane	0.007
Chloromethane	.007
1,1-Dichloroethane	.007
1,2-Dichloroethane	.007
Hexachlorobenzene	.033
Hexachlorobutadiene	.007
Pentachloroethane	.007
1,1,1-Trichloroethane	.007

K019 nonwastewaters	Concentra- tion (in mg/ kg)
Bis(2-chloroethyl)ether	5.6
Chlorobenzene	6.0
Chloroform	6.0
1,2-Dichloroethane	6.0
Hexachloroethane	28
Naphthalene	5.6
Phenanthrene	5.6
Tetrachloroethene	6.0
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	6.0

K019 wastewaters	Concentra- tion (in mg/ l)
Bis(2-chloroethyl)ether	0.007
Chlorobenzene	.006
Chloroform	.007
p-Dichlorobenzene	.008
1,2-Dichloroethane	.007
Fluorene	.007
Hexachloroethane	.033
Naphthalene	.007
Phenanthrene	.007
1,2,4,5-Tetrachlorobenzene	.017
Tetrachloroethene	.007
1,2,4-Trichlorobenzene	.023
1,1,1-Trichloroethane	.007

K020 nonwastewaters	Concentra- tion (in mg/ kg)
1,2-Dichloroethane	6.0
1,1,2,2-Tetrachloroethane	5.6

K020 nonwastewaters	Concentra- tion (in mg/ kg)
Tetrachloroethene	6.0

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE

K020 wastewaters	Concentration (in mg/l)	K037 nonwastewaters	Concentration (in mg/kg)	K049 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
1,2-Dichloroethane	0.007	Disulfoton	0.1	Anthracene	6.2
1,1,2,2-Tetrachloroethane	.007	Toluene	28	Benzene	9.5
Tetrachloroethene	.007			Benzo(a)pyrene	0.84
				Bis(2-ethylhexyl)phthalate	.37
				Chrysene	2.2
				Ethylbenzene	.67
				Naphthalene	[Reserved]
				Phenanthrene	7.7
				Phenol	2.7
				Pyrene	2.0
				Toluene	9.5
				Xylenes	[Reserved]
				Cyanides (Total)	1.8

K022 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	K037 wastewaters	Concentration (in mg/l)	K049 wastewaters	Concentration (in mg/l)
Acetophenone	19	Disulfoton	0.003	Anthracene	0.039
Sum of Diphenylamine and Diphenylnitrosamine	13	Toluene	.028	Benzene	.011
Phenol	12			Benzo(a)pyrene	.047
Toluene	0.034			Bis(2-ethylhexyl)phthalate	.043
				Carbon disulfide	.011
				Chrysene	.043
				2,4-Dimethylphenol	.033
				Ethylbenzene	.011
				Naphthalene	.033
				Phenanthrene	.039

K024 nonwastewaters	Concentration (in mg/kg)	K048 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	K049 wastewaters	Concentration (in mg/l)
Phthalic acid	28	Benzene	9.5	Anthracene	0.039
		Benzo(a)pyrene	.84	Benzene	.011
		Bis(2-ethylhexyl)phthalate	.37	Benzo(a)pyrene	.047
		Chrysene	2.2	Bis(2-ethylhexyl)phthalate	.043
		Di-n-butyl phthalate	4.2	Carbon disulfide	.011
		Ethylbenzene	.67	Chrysene	.043
		Naphthalene	[Reserved]	2,4-Dimethylphenol	.033
		Phenanthrene	7.7	Ethylbenzene	.011
		Phenol	2.7	Naphthalene	.033
		Pyrene	2.0	Phenanthrene	.039
		Toluene	9.5		
		Xylenes	[Reserved]		
		Cyanides (Total)	1.8		

K024 wastewaters	Concentration (in mg/l)	K048 wastewaters	Concentration (in mg/l)	K049 wastewaters	Concentration (in mg/l)
Phthalic acid	0.54	Benzene	0.011	Phenol	.047
		Benzo(a)pyrene	.047	Pyrene	.045
		Bis(2-ethylhexyl)phthalate	.043	Toluene	.011
		Chrysene	.043	Xylenes	.011
		Di-n-butyl phthalate	.060	Chromium (Total)	.20
		Ethylbenzene	.011	Lead	.037
		Fluorene	.050		
		Naphthalene	.033		
		Phenanthrene	.039		
		Phenol	.047		
		Pyrene	.045		
		Toluene	.011		
		Xylenes	.011		
		Chromium (Total)	.20		
		Lead	.037		

K030 nonwastewaters	Concentration (in mg/kg)	K050 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Hexachlorobutadiene	5.6	Benzo(a)pyrene	0.84
Hexachloroethane	28	Phenol	2.7
Hexachloropropene	19	Cyanides (Total)	1.8
Pentachlorobenzene	28		
Pentachloroethane	5.6		
1,2,4,5-Tetrachlorobenzene	14		
Tetrachloroethene	6.0		
1,2,4-Trichlorobenzene	19		

K030 wastewaters	Concentration (in mg/l)		
o-Dichlorobenzene	0.008		
p-Dichlorobenzene	.008		
Hexachlorobutadiene	.007		
Hexachloroethane	.033		
Pentachloroethane	.007		
1,2,4,5-Tetrachlorobenzene	.017		
Tetrachloroethene	.007		
1,2,4-Trichlorobenzene	.023		

SPA 9

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE

K050 wastewaters	Concentration (in mg/l)	K052 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	K086 nonwastewaters—Solvent Washes Subcategory (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Benzo(a)pyrene.....	0.047	Benzene.....	9.5	Acetone.....	0.37
Phenol.....	.047	Benzo(a)pyrene.....	0.84	bis(2-ethylhexyl) phthalate.....	.49
Chromium (Total).....	20	o-Cresol.....	2.2	n-Butyl alcohol.....	.37
Lead.....	.037	p-Cresol.....	0.90	Cyclohexanone.....	.49
		Ethylbenzene.....	.67	1,2-Dichlorobenzene.....	.49
		Naphthalene.....	[Reserved]	Ethyl acetate.....	.37
		Phenanthrene.....	7.7	Ethyl benzene.....	.031
		Phenol.....	2.7	Methanol.....	.37
		Toluene.....	9.5	Methylene chloride.....	.037
		Xylenes.....	[Reserved]	Methyl ethyl ketone.....	.37
		Cyanides (Total).....	1.9	Methyl isobutyl ketone.....	.37
				Napthalene.....	.49
				Nitrobenzene.....	.49
				Toluene.....	.031
				1,1,1-Trichloroethane.....	.044
				Trichloroethylene.....	.031
				Xylenes.....	.015

K051 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	K052 wastewaters	Concentration (in mg/l)	K086 wastewaters—Solvent Washes Subcategory	Concentration (in mg/l)
Anthracene.....	6.2	Benzene.....	0.011	Acetone.....	0.015
Benzene.....	9.5	Benzo(a)pyrene.....	.047	bis(2-ethylhexyl)phthalate.....	.044
Benzo(a)anthracene.....	1.4	o-Cresol.....	.011	n-Butyl alcohol.....	.031
Benzo(a)pyrene.....	.84	p-Cresol.....	.011	Cyclohexanone.....	.022
Bis(2-ethylhexyl)phthalate.....	.37	2,4-Dimethylphenol.....	.033	1,2-Dichlorobenzene.....	.044
Chrysene.....	2.2	Ethylbenzene.....	.011	Ethyl acetate.....	.031
Di-n-butyl phthalate.....	4.2	Naphthalene.....	.033	Ethyl benzene.....	.015
Ethylbenzene.....	.67	Phenanthrene.....	.039	Methanol.....	.031
Naphthalene.....	[Reserved]	Phenol.....	.047	Methylene chloride.....	.031
Phenanthrene.....	7.7	Toluene.....	.011	Methyl ethyl ketone.....	.031
Phenol.....	2.7	Xylenes.....	.011	Methyl isobutyl ketone.....	.031
Pyrene.....	2.0	Chromium (Total).....	.20	Napthalene.....	.044
Toluene.....	9.5	Lead.....	.037	Nitrobenzene.....	.044
Xylenes.....	[Reserved]			Toluene.....	.029
Cyanides (Total).....	1.8			1,1,1-Trichloroethane.....	.031
				Trichloroethylene.....	.029
				Xylenes.....	.015
				Chromium (Total).....	.32
				Lead.....	.037

K051 wastewaters	Concentration (in mg/l)	K062 wastewaters	Concentration (in mg/l)	K087 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Acenaphthene.....	0.050	Chromium (Total).....	.032	Acenaphthalene.....	.34
Anthracene.....	.039	Lead.....	.04	Benzene.....	.071
Benzene.....	.011	Nickel.....	.44	Chrysene.....	.34
Benzo(a)anthracene.....	.043			Fluoranthene.....	.34
Benzo(a)pyrene.....	.047			Indeno (1,2,3-cd) pyrene.....	.34
Bis(2-ethylhexyl) phthalate.....	.043			Napthalene.....	.34
Chrysene.....	.043			Phenanthrene.....	.34
Di-n-butyl phthalate.....	.060			Toluene.....	.65
Ethylbenzene.....	.011			Xylenes.....	.070
Fluorene.....	.050				
Napthalene.....	.033				
Phenanthrene.....	.039				
Phenol.....	.047				
Pyrene.....	.045				
Toluene.....	.011				
Xylenes.....	.011				
Chromium (Total).....	20				
Lead.....	.037				

K071 wastewaters	Concentration (in mg/l)		
Mercury.....	0.030		

RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE

K087 wastewaters	Concentration (in mg/l)	K102 nonwastewaters (Low Arsenic Subcategory—less than 1% total arsenic) (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	K104 wastewaters	Concentration (in mg/l)
Acenaphthalene.....	.028	Ortho Nitrophenol.....	13	Aniline.....	4.5
Benzene.....	.014			Benzene.....	15
Chrysene.....	.028			2,4-Dinitrophenol.....	61
Fluoranthene.....	.028			Nitrobenzene.....	.073
Indeno (1,2,3-cd) pyrene.....	.028			Phenol.....	1.4
Naphthalene.....	.028			Cyanides (Total).....	2.7
Phenanthrene.....	.028				
Toluene.....	.008				
Xylenes.....	.014				
Lead.....	.037				

K099 nonwastewaters	Concentration (in mg/kg)	K102 wastewaters	Concentration (in mg/l)		
2,4-Dichlorophenoxyacetic acid.....	1.0	Ortho-Nitrophenol.....	0.028		
Hexachlorodibenzo-p-dioxins.....	.001	Arsenic.....	2.0		
Hexachlorodibenzofurans.....	.001	Cadmium.....	24		
Pentachlorodibenzo-p-dioxins.....	.001	Lead.....	.11		
Pentachlorodibenzofurans.....	.001	Mercury.....	.027		
Tetrachlorodibenzo-p-dioxins.....	.001				
Tetrachlorodibenzofurans.....	.001				

K099 wastewaters	Concentration (in mg/l)	K103 nonwastewaters	Concentration (in mg/kg)		
2,4-Dichlorophenoxyacetic acid.....	1.0	Aniline.....	5.6		
Hexachlorodibenzo-p-dioxins.....	.001	Benzene.....	6.0		
Hexachlorodibenzofurans.....	.001	2,4-Dinitrophenol.....	5.6		
Pentachlorodibenzo-p-dioxins.....	.001	Nitrobenzene.....	5.6		
Pentachlorodibenzofurans.....	.001	Phenol.....	5.6		
Tetrachlorodibenzo-p-dioxins.....	.001				
Tetrachlorodibenzofurans.....	.001				

K101 nonwastewaters (Low Arsenic Subcategory—less than 1% total arsenic) (see also Table CCWE in § 269.41)	Concentration (in mg/kg)	K103 wastewaters	Concentration (in mg/l)		
Ortho-Nitroaniline.....	14	Aniline.....	4.5		
		Benzene.....	.15		
		2,4-Dinitrophenol.....	.61		
		Nitrobenzene.....	.073		
		Phenol.....	1.4		

K101 wastewaters	Concentration (in mg/l)	K104 nonwastewaters	Concentration (in mg/kg)		
Ortho-Nitroaniline.....	0.27	Aniline.....	5.6		
Arsenic.....	2.0	Benzene.....	6.0		
Cadmium.....	24	2,4-Dinitrophenol.....	5.6		
Lead.....	.11	Nitrobenzene.....	5.6		
Mercury.....	.027	Phenol.....	5.6		
		Cyanides (Total).....	1.8		

No Land Disposal for:

- 1/ K004 Nonwastewaters [Based on No Generation]
- 1/ K008 Nonwastewaters [Based on No Generation]
- 2/ K015 Nonwastewaters [Based on No Ash] 3d 3d
- 1/ K021 Nonwastewaters [Based on No Generation]
- 1/ K025 Nonwastewaters [Based on No Generation]
- 1/ K036 Nonwastewaters [Based on No Generation]
- K044 [Based on Reactivity]
- K045 [Based on Reactivity]
- K047 [Based on Reactivity]
- 1/ K060 Nonwastewaters [Based on No Generation]
- 1/ K061 Nonwastewaters—High Zinc Subcategory (greater than or equal to 15% total zinc) [Based on Recycling] effective 8/8/90
- 1/ K069 Nonwastewaters—Non-Calcium Sulfate Subcategory [Based on Recycling]
- 2/ K083 Nonwastewaters—No Ash Subcategory (less than 0.01% ash) [Based on No Ash] 3d 3d
- 1/ K100 Nonwastewaters [Based on No Generation]

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
treatment standard for combinations of wastes with different treatment standards, must meet lowest standard	268.43(b)				

 Guidance note: 268.44 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

VARIANCE FROM A TREATMENT STANDARD

8 apply to Assistant Administrator of OSWER or delegated representative for site-specific variance from a treatment standard if specified conditions are appropriate; what applicant must demonstrate	268.44(h)				
260.20(b)(1)-(4) information must be included	268.44(i)				
Assistant Administrator or delegated representative may request additional information	268.44(j)				

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
if site-specific treatment standard variance then compliance with 268.7 waste analysis requirements	268.44(k)				
during application review process, compliance with land disposal restrictions once effective date for waste reached	268.44(l)				

SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES

add to end of paragraph "or a valid certification under 268.8"	268.50(d)				
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- ¹ In this section, the language is clarified and requirements are added to reflect soft hammer certification and retention of records and to apply to storage facilities.
- ² Revise this section to reflect soft hammer wastes.
- ³ In this section, apply testing and recordkeeping analyses to First Third wastes and storage facilities and add notification requirements for soft hammer wastes.
- ⁴ Note that 268.8(d) has a typographical error. The reference to 263.33(f) should be 268.33(f).
- ⁵ Note that while 268.30(a)(introduction), 268.30(a)(1), and 268.30(a)(4) appear in the FR addressed by this checklist, they have not been changed by this FR. As such, 268.30(a)(1) and 268.30(a)(4) were not included in this checklist. An entry for the 268.30(a) introduction was included, however, to help clarify the modifications to 268.30(a).
- ⁶ For this section, revise applicability from facility-wide to unit and reschedule CERCLA and RCRA corrective action soil and debris dioxin-containing wastes prohibition from land disposal.

SPA 9

**RCRA REVISION CHECKLIST 50: Land Disposal Restrictions for First Third
Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- ⁷ Note that the FR addressed by this checklist did not change 268.32(e)(1), even though it appears in the FR. Consequently, 268.32(e)(1) was not included in this checklist.
- ⁸ Note that Revision Checklist 66 (54 FR 36967; September 6, 1989) amended this paragraph replacing "Assistant Administrator of the Office of Solid Waste and Emergency Response" with "Administrator."

SPA 9

RCRA REVISION CHECKLIST 62

Land Disposal Restrictions Amendments to
First Third Scheduled Wastes

54 FR 18836-18838

May 2, 1989

(HWA Cluster II)

Notes: 1) This checklist amends the First Third Scheduled Waste requirements made to Part 268 by Revision Checklist 50 (53 FR 31138, August 17, 1988). Revision Checklist 66 (54 FR 36968, September 6, 1989) corrects the cross references in 268.33(a) to certain revisions made by this present checklist. Also, EPA rescheduled all K015 and K063 nonwastewaters to the Third Third as part of the May 2 rule addressed by Revision Checklist 62. Revision Checklist 66 removes these wastes from 268.33(a). States are encouraged to adopt the corrections addressed by both Revision Checklists 62 and 66 at the same time the provisions addressed by Revision Checklist 50 are adopted. States already authorized for the Revision Checklist 50 provisions are encouraged to adopt the amendments and corrections addressed by Revision Checklists 62 and 66 as soon as possible.

2) This checklist does not affect any of the nondelegable sections of Part 268.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART D - TREATMENT STANDARDS

TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS

revise Table CCW as shown below	268.43(a)				
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**RCRA REVISION CHECKLIST 62: Land Disposal Restrictions
Amendments to First Third Scheduled Wastes (cont'd)**

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
No Land Disposal for:					
K004 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)					K080 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)
K008 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)					K081 Nonwastewater—High Zinc Subcategory (greater than or equal to 15% total zinc) (Based on Recycling); effective 8/8/90
K021 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)					K089 Non-Calcium Sulfate Subcategory—Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on Recycling)
K023 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)					K100 Nonwastewater forms of those wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)
K036 Nonwastewater forms of these wastes generated by the process described in the waste listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes (Based on No Generation)					[FR Doc. 89-10471 Filed 5-1-89; 8:45 am]
K044 (Based on Reactivity)					
K045 (Based on Reactivity)					
K047 (Based on Reactivity)					

RCRA REVISION CHECKLIST 63

Land Disposal Restrictions for
Second Third Scheduled Wastes
54 FR 26594-26652
June 23, 1989
(HWSA Cluster II)

Notes: 1) This is the fifth in a series of checklists (i.e., Revision Checklists 34, 39, 50 and 62) addressing the land disposal restrictions. This present checklist (Revision Checklist 63) does not amend any of the presently nondelegable sections of code (268.5, 268.6, 268.42(b), and 268.44). Other checklists affecting the land disposal restrictions are Revision Checklists 66 (54 FR 36967; September 6, 1989), Revision Checklist 78 (55 FR 22520; June 1, 1990) and Revision Checklist 83 (56 FR 3864; January 21, 1991).

2) This checklist may be subject to change in the future. EPA's State Programs Branch is currently discussing the relationship of hazardous waste injection issues to the State authorization program. In question are the changes made to 40 CFR Part 148 by the final rule addressed by this checklist and whether they should be included in the checklist. This present checklist does not include these changes.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - SECOND THIRD WASTES

effective June 8, 1989 prohibition from land disposal of specific 261.31, 261.32 and 261.33 wastes	268.34(a)				
effective June 8, 1989 prohibition of land disposal, except underground injection pursuant to 148.14(f) and 148.15(d), certain 261.32 wastes	268.34(b)				
effective July 8, 1989 prohibition from land disposal of F006, F008, F009, F011 & F012	268.34(c)				

RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective July 8, 1989, F007 prohibited from land disposal except underground injection pursuant to 148.14(f)	268.34(c)(1)				
July 8, 1989 until December 8, 1989, F011 & F012 prohibited from land disposal pursuant to 268.41 & 268.43 treatment standards for F007, F008 & F009 nonwaste-waters; effective December 8, 1989, F011 & F012 prohibited from land disposal pursuant to 268.41 & 268.43 treatment standards for F011 & F012	268.34(c)(2)				
effective June 8, 1991 wastes, specified by section with Subpart D treatment standard based on incineration and which are contaminated soil and debris are prohibited from land disposal	268.34(d)				
requirements for landfill or surface impoundment disposal of wastes included in 268.34(c) & (d) between June 8, 1989 and June 8, 1991; applies to F007, F008, F009, F011 & F012 only between June 8, 1989 and July 8, 1989	268.34(e)				
when the requirements of 268.34(a)-(d) do not apply	268.34(f)				

**RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)**

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
meet applicable 268 Subpart D standards	268.34(f)(1)				
granted an exemption pursuant to a 268.6 petition for the wastes and units covered by the exemption	268.34(f)(2)				
268.34(a),(b) & (c) do not apply if granted extension under 268.5 for wastes covered by extension	268.34(g)				
between June 8, 1989 & May 8, 1990, prohibition from land disposal in landfills or surface impoundments of 268.11 wastes for which Subpart D treatment standards are not applicable, including California list wastes subject to prohibitions under 3004(d) or 268.32; exceptions under 268.8	268.34(h)				
initial generator testing to determine if a 268.10, 268.11 and 268.12 waste exceeds applicable 268.41 & 268.43 treatment standards; land disposal prohibited if constituents exceed Subpart D levels--all 268 requirements apply	268.34(i)				

RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART D - TREATMENT STANDARDS

TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

Table CCWE: remove "Cyanides (Total)*** Reserved" from the F006 nonwastewaters subtable; add the subtables shown below in alphabetical/ numerical order by EPA Hazardous Waste Number	268.41(a)				
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38.

RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

incineration or burning of the nonwastewater form of specified wastes listed in 268.10, 268.11 & 268.12	268.42(a)(3)				
treatment by carbon adsorption, incineration or pretreatment followed by carbon adsorption of the wastewater form of specified wastes listed in 268.10, 268.11 & 268.12	268.42(a)(4)				

TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS

add new sentence on the basis for the wastewater and nonwastewater treatment standards in Table CCW; Table CCW, as shown below and on pp. 26649-26652: 1) revise the following subtables-- F006 nonwastewaters, K024 wastewaters and nonwastewaters; 2) remove K004 and K008 from the subtable for No Land Disposal; 3) add subtables in alphabetical/numerical order by EPA hazardous waste number, and 4) add K005 and K007 to the subtable for No Land Disposal	268.43(a)				
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RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for Second Third Scheduled Wastes (cont'd)

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TABLE CCW—CONSTITUENT CONCENTRATION IN WASTES					
F006 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)				
Cyanides (Total)	590				
Cyanides (Amenable)	30				
F007, F008, and F009 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)				
Cyanides (Total)	590				
Cyanides (Amenable)	30				
F007, F008, and F009 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)				
Cyanides (Total)	1.9				
Cyanides (Amenable)	0.10				
Chromium (Total)	0.32				
Lead	0.04				
Nickel	0.44				
F010 nonwastewaters	Concentration (in mg/kg)				
Cyanides (Total)	1.5				
F010 wastewaters	Concentration (in mg/l)				
Cyanides (Total)	1.9				
Cyanides (Amenable)	0.10				
F011 and F012 nonwastewaters ¹	Concentration (in mg/kg)				
Cyanides (Total)	110				
Cyanides (Amenable)	9.1				

F011 and F012 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)				
Cyanides (Total)	1.9				
Cyanides (Amenable)	0.10				
Chromium (Total)	0.32				
Lead	0.04				
Nickel	0.44				
F024 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)				
2-Chloro-1,3-butadiene	0.28				
3-Chloropropene	0.28				
F024 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)				
1,1-Dichloroethane	0.014				
1,2-Dichloroethane	0.014				
1,2-Dichloropropane	0.014				
cis-1,3-Dichloropropene	0.014				
trans-1,3-Dichloropropene	0.014				
Bis(2-ethylhexyl)phthalate	1.8				
Hexachloroethane	1.8				
Hexachlorodibenzo-furans	0.001				
Hexachlorodibenzo-p-dioxins	0.001				
Pentachlorodibenzo-furans	0.001				
Pentachlorodibenzo-p-dioxins	0.001				
Tetrachlorodibenzo-furans	0.001				
F024 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)				
2-Chloro-1,3-butadiene	0.28				
3-Chloropropene	0.28				
1,1-Dichloroethane	0.014				
1,2-Dichloroethane	0.014				
1,2-Dichloropropane	0.014				
cis-1,3-Dichloropropene	0.014				
trans-1,3-Dichloropropene	0.014				
Bis(2-ethylhexyl) phthalate	0.036				
Hexachloroethane	0.036				
Hexachlorodibenzo-furans	0.001				
Hexachlorodibenzo-p-dioxins	0.001				
Pentachlorodibenzo-furans	0.001				
Pentachlorodibenzo-p-dioxins	0.001				
Tetrachlorodibenzo-furans	0.001				
Chromium (Total)	0.35				
Nickel	0.47				
K009 and K010 nonwastewaters	Concentration (in mg/kg)				
Chloroform	6.0				

K009 and K010 wastewaters	Concentration (in mg/l)				
Chloroform	0.10				
K011, K013, and K014 nonwastewaters	Concentration (in mg/kg)				
Acetonitrile	1.8				
Acrylonitrile	1.4				
Acrylamide	23				
Benzene	0.03				
Cyanides (Total)	57				
K023, K093, and K094 nonwastewaters	Concentration (in mg/kg)				
Phthalic anhydride (measured as Phthalic acid)	28				
K023, K093, and K094 wastewaters	Concentration (in mg/l)				
Phthalic anhydride (measured as Phthalic acid)	0.54				
K024 nonwastewaters	Concentration (in mg/kg)				
Phthalic anhydride (measured as Phthalic acid)	28				
K024 wastewaters	Concentration (in mg/l)				
Phthalic anhydride (measured as Phthalic acid)	0.54				
K028 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)				
1,1-Dichloroethane	6.0				
trans-1,2-Dichloroethane	6.0				
Hexachlorocyclopentadiene	5.6				
Hexachloroethane	28				
Pentachloroethane	5.6				
1,1,1,2-Tetrachloroethane	5.6				
1,1,2,2-Tetrachloroethane	5.6				
1,1,1-Trichloroethane	6.0				
1,1,2-Trichloroethane	6.0				
Tetrachloroethylene	6.0				

¹ Effective December 8, 1989; from July 8, 1989 until December 8, 1989, these wastes are subject to the same treatment standards as F007, F008, and F009 nonwastewaters (see also Table CCWE in § 268.41).

**RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)**

SPA 9

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
P063 nonwastewaters	Concentration (in mg/kg)	P094 wastewaters	Concentration (in mg/l)	P106 nonwastewaters	Concentration (in mg/kg)
Cyanides (Total)	110	Phorate	0.025	Cyanides (Total)	110
Cyanides (Amenable)	9.1			Cyanides (Amenable)	9.1
P063 wastewaters	Concentration (in mg/l)	P097 nonwastewaters	Concentration (in mg/kg)	P106 wastewaters	Concentration (in mg/l)
Cyanides (Total)	1.9	Famphur	0.1	Cyanides (Total)	1.9
Cyanides (Amenable)	0.10			Cyanides (Amenable)	0.10
P071 nonwastewaters	Concentration (in mg/kg)	P097 wastewaters	Concentration (in mg/l)	P121 nonwastewaters	Concentration (in mg/kg)
Methyl parathion	0.1	Famphur	0.025	Cyanides (Total)	110
				Cyanides (Amenable)	9.1
P071 wastewaters	Concentration (in mg/l)	P098 nonwastewaters	Concentration (in mg/kg)	P121 wastewaters	Concentration (in mg/l)
Methyl parathion	0.025	Cyanides (Total)	110	Cyanides (Total)	1.9
		Cyanides (Amenable)	9.1	Cyanides (Amenable)	0.10
P074 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	P098 wastewaters	Concentration (in mg/l)	U028 nonwastewaters	Concentration (in mg/kg)
Cyanides (Total)	110	Cyanides (Total)	1.9	Bis-(2-ethylhexyl) phthalate	28
Cyanides (Amenable)	9.1	Cyanides (Amenable)	0.10		
P074 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)	P099 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	U028 wastewaters	Concentration (in mg/l)
Cyanides (Total)	1.9	Cyanides (Total)	110	Bis-(2-ethylhexyl) phthalate	0.54
Cyanides (Amenable)	0.10	Cyanides (Amenable)	9.1		
Nickel	0.44	P099 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)	U069 nonwastewaters	Concentration (in mg/kg)
P089 nonwastewaters	Concentration (in mg/kg)	Cyanides (Total)	1.9	Di-n-butyl phthalate	28
Parathion	0.1	Cyanides (Amenable)	0.10		
P089 wastewaters	Concentration (in mg/l)	P104 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)	U069 wastewaters	Concentration (in mg/l)
Parathion	0.025	Cyanides (Total)	110	Di-n-butyl phthalate	0.54
		Cyanides (Amenable)	9.1		
P094 nonwastewaters	Concentration (in mg/kg)	P104 wastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/l)	U088 nonwastewaters	Concentration (in mg/kg)
Phorate	0.1	Cyanides (Total)	1.9	Diethyl phthalate	28
		Cyanides (Amenable)	0.10		

RCRA REVISION CHECKLIST 63: Land Disposal Restrictions for
Second Third Scheduled Wastes (cont'd)

SPA 9

FEDERAL REQUIREMENT		FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
U088 wastewaters	Concentration (in mg/l)	U107 wastewaters	Concentration (in mg/l)	U235 wastewaters	Concentration (in mg/l)	
Diethyl phthalate	0.54	Di-n-octyl phthalate	0.54	tris-(2,3-Dibromopropyl) phosphate	0.025	
U102 nonwastewaters	Concentration (in mg/kg)	U190 nonwastewaters	Concentration (in mg/kg)			
Dimethyl phthalate	28	Phthalic anhydride (measured as Phthalic acid)	28			
U102 wastewaters	Concentration (in mg/l)	U190 wastewaters	Concentration (in mg/l)			
Dimethyl phthalate	0.54	Phthalic anhydride (measured as Phthalic acid)	0.54			
U107 nonwastewaters	Concentration (in mg/kg)	U235 nonwastewaters	Concentration (in mg/kg)			
Di-n-octyl phthalate	28	tris-(2,3-Dibromopropyl) phosphate	0.1			

No Land Disposal for:

K005 Nonwastewaters generated by the process described in the waste listing description, and disposed after June 8, 1989 and not generated in the course of treating wastewater forms of these wastes. (Based on No Generation)

K007 Nonwastewaters generated by the process described in the waste listing description, and disposed after June 8, 1989 and not generated in the course of treating wastewater forms of these wastes. (Based on No Generation)

meet lowest constituent treatment standard when mix wastes with differing treatment standards for a constituent of concern	268.43(b)					
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RCRA REVISION CHECKLIST 66

Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes
54 FR 36967
September 6, 1989
as amended on June 13 1990, at 55 FR 23935
(HWA Cluster II)

Notes: 1) This is a correction and clarification of 53 FR 31138 (August 17, 1988) and 54 FR 18836 (May 2, 1989) addressed by Revision Checklists 50 and 62 which cover the First Third Scheduled Wastes. As such, States which are not yet authorized for these checklists are encouraged to apply for Revision Checklist 66 at the same time the provisions in Revision Checklists 50 and 62 are applied for. States already authorized for Revision Checklists 50 and 62 requirements are encouraged to adopt the corrections addressed by Checklist 66 as quickly as possible.

2) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

3) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of Revision Checklist 66 which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations because this incorporation aids the regulated community in knowing that the extensions, exemptions and variances addressed by the nondelegable sections of code are available to them. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to exclude these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelegable sections, see Appendix J of the State Authorization Manual (SAM).

340

**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC
HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS
WASTE MANAGEMENT FACILITIES**

**SUBPART C - RECYCLABLE MATERIALS USED IN A MANNER
CONSTITUTING DISPOSAL**

APPLICABILITY

delete the word
"constituent" from the
parenthetical phrase
following "recyclable
material"; add sentence
exempting from
regulation commercial
fertilizers produced
for the general
public's use that
contain recyclable
materials

266.20(b)

PART 268 - LAND DISPOSAL RESTRICTIONS

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

substitute "restricted" for "prohibited"	268.1(c)				
remove paragraph	268.1(c)(3)				
remove paragraph	268.1(c)(4)				
wastes which are not subject to any provisions of Part 268	268.1(e)				

**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
wastes generated by generators of less than 100 kg of hazardous waste and less than 1 kg of acute hazardous waste	268.1(e)(1)				
waste pesticides pursuant to 262.70	268.1(e)(2)				
wastes identified or listed as hazardous after November 8, 1984 for which EPA has not promulgated land disposal prohibitions or treatment standards	268.1(e)(3)				

Guidance note: 268.5 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

replace "the following requirements:" with "the technical require- ments of the following provisions regardless of whether such unit is existing, new or a replacement for lateral expansion"	268.5(h)(2)				
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**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

 Guidance note: 268.6 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

**PETITIONS TO ALLOW LAND DISPOSAL
OF A WASTE PROHIBITED UNDER SUBPART C OF PART 268**

amend paragraph to read "Immediately suspend receipt of prohibited waste at the unit, and"	268.6(f)(1)				
*****	*****	*****	*****	*****	*****
WASTE ANALYSIS add language to indicate that exemption from prohibition is not limited to extensions under 268.5, exemptions under 268.6 or a nationwide capacity variance under Subpart C	268.7(a)(3)				
after "268.33(f)" add parenthetical state- ment including wastes disposed of in units other than landfills or surface impoundments	268.7(a)(4)				
after "266.20(b)" insert "regarding treatment standards and prohibition levels,"; insert "i.e.," preceding "the recycler"	268.7(b)(8)				
disposal of recyclable material subject to 266.20(b)	268.7(c)(4)				

**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
LANDFILL AND SURFACE IMPOUNDMENT DISPOSAL RESTRICTIONS					
specific requirements for generator if no practically available treatment for waste:	268.8(a)(2)				
prior to initial shipment, demonstration/ certification to Regional Administrator	268.8(a)(2)(i)				
demonstration and certification with initial shipment; certification with subsequent shipments; recordkeeping and record retention	268.8(a)(2)(ii)				
requirements for generator if there are practically available treatments for waste:	268.8(a)(3)				
prior to initial shipment, demonstration/ certification to Regional Administrator	268.8(a)(3)(i)				
demonstration and certification with initial shipment; certification with subsequent shipments; recordkeeping and retention	268.8(a)(3)(ii)				
add language requiring submission of new demonstration and certification to the receiving facility	268.8(b)(1)				

**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
insert ", for each initial shipment of waste," between "must" and "send"; add "(i) or 268.8(a)(3)(i)" after "268.8(a)(2)"; add sentence to end requiring submission of certification with subsequent shipments	268.8(c)(2)				
change "263.33(f)" to "268.33(f)"	268.8(d)				

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS--CALIFORNIA LIST WASTES

replace "such disposal" with "such unit"	268.32(f)				
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**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
WASTE SPECIFIC PROHIBITIONS--FIRST THIRD WASTES					
change "K004 (nonwastewater)" to "K004 wastes specified in 268.43(a)"; change "K008 (nonwastewaters)" to "K008 wastes specified in 268.43(a)"; remove "K015 wastewaters"; change "K021 (nonwastewater)" to "K021 wastes specified in 268.43(a)"; add "nonwastewaters specified in 268.43(a) following "K025"; remove "K083 (nonwastewaters)"; add "nonwastewaters specified in 268.43(a) following "K100"; add "(wastewater), K101 (nonwastewater, low arsenic subcategory - less than 1% total arsenic)." following "K101"; add "(wastewater), K102 (nonwastewater, low arsenic subcategory - less than 1% total arsenic)." following "K102"	268.33(a)				

**RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
replace "are not applicable" with "have not been promulgated"; replace "unless the wastes are the subject of a valid demonstration and certification pursuant" with "unless a demonstration and certification have been submitted"	268.33(f)				
2 replace "extract or the waste" with "extract or the waste, or the generator may use knowledge of the waste"	268.33(g)				

SUBPART D - TREATMENT STANDARDS

 Guidance note: 268.44 is NOT DELEGABLE. States should see Note 3 at the beginning of this checklist regarding how to incorporate this section into their code.

VARIANCE FROM A TREATMENT STANDARD

replace "Assistant Administrator of the Office of Solid Waste and Emergency Response" with "Administrator"	268.44(h)				
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SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES

reword paragraph regarding exemptions from land disposal prohibitions	268.50(d)				
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RCRA REVISION CHECKLIST 66: Land Disposal Restrictions; Correction to the
First Third Scheduled Wastes (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
			EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

- 1 An error in the September 6, 1989 rule (54 FR 36967) makes it appear that the revisions to 268.8(a) include the removal of 268.8(a)(4). This was not the Agency's intent and 268.8(a)(4) remains in the Federal code as introduced by Revision Checklist 50.
- 2 See technical correction at 55 FR 23935, June 13, 1990.

The following pages should replace
pages 1 through 3 of SAM Appendix G.

APPENDIX G

Table G-1. List of Revision Checklists by Cluster

**Table G-2. Numerical Listing of Revision Checklists
and Corresponding Cluster**

Cluster Rule 51 FR 33712 (September 22, 1986)

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER

Purpose of Table G-1: This table lists revision checklists by cluster and includes the Federal Register reference and date for each checklist as well as the due date for each cluster. States should use this table for guidance on the timeframes for submitting the program revisions represented by each checklist. For specific guidance on how the overall cluster system works, States should refer to the requirements incorporated as part of the Cluster Rule at 51 FR 33712 (September 22, 1986). For convenience, this rule has been included at the end of this appendix.

"Non-Checklist" Entries: In addition to the checklists, Table G-1 contains two types of entries:

- unnumbered, unbracketed entries--Many of these are "non-checklist" requirements which States must adopt. These are also organized by cluster and include: State availability of information, direct action (third party) against insurers, and radioactive mixed waste. The rest of the "unbracketed, unnumbered" entries are HSWA provisions that were subsequently dealt with by Revision Checklist 17--the HSWA Codification Rule. These have a reference to Revision Checklists 17 A - 17 S.
- numbers in parentheses, bracketed entries--These typically are corrections or amendments to a major final rule that were incorporated into the checklist for that major final rule. Thus, the parenthesized number is used to indicate that the listed rule (in brackets) is not the main rule for the indicated checklist. These corrected amendments are usually close enough in time to the initial final rule that the correction/amendment was included on the checklist for the initial rule, rather than develop a new checklist for the correction.

"Optional" Checklists are denoted by the "†" which precedes the checklist number. In an optional checklist, all changes represented by the checklist are less stringent than existing Federal code. Thus, States are not required to adopt these regulatory changes. However, if a State chooses to adopt similar provisions, they must be at least as stringent as the Federal requirements. Note that, in most cases, it will make sense for a State that adopts part of an optional checklist to adopt all of the provisions in that checklist. Also, technical corrections which are included on "optional checklists" with numbers in parentheses (see "non-checklist-entries") are not marked as optional because, if a State chooses to adopt that checklist, the technical corrections included on that checklist are not optional. The reference to the checklist within the entry indicates whether or not the overall checklist is optional.

In regard to checklists that contain both required and optional provisions, the State need not adopt the less stringent requirements. For further information on optional provisions, see the discussion in Appendix J, p. 4.

Updates: Table G-1 will be updated semiannually by the State Program Advisories providing new revision checklists.

**TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS
AND CORRESPONDING CLUSTER**

Purpose of Table G-2: This table lists the revision checklists numerically. Also listed is the cluster for each checklist. This table was developed as a quick reference for determining which cluster a checklist is in. Previously, a table similar to Table G-1 listing the revision checklists by cluster was used for this information. However, as the number of revision checklists has grown, that table has become too lengthy to use efficiently for this information.

Placement of Checklists in Each Cluster: For information on how a checklist is placed in a cluster, see the discussion above for Table G-1.

Optional Checklists: See the discussion for Table G-1.

Updates: Table G-2 will be updated semiannually by the State Program Advisories providing new revision checklists.

ATTACHMENT D

Updated Consolidated Checklists
and Model Attorney General's Statement

Consolidated Checklists

The following checklists should replace
Consolidated Checklists C-1 through C-9
of SAM Appendix K

SPA 9

CONSOLIDATED CHECKLIST C1

Hazardous Waste Management System: General
40 CFR Part 260 as of June 30, 1990

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

part provides definition of terms, general standards, and overview information	*,34	260.1(a)				
purpose of 260.2	*,34	260.1(b)(1)				
purpose of 260.3	*,34	260.1(b)(2)				
purpose of 260.10	*,34	260.1(b)(3)				
purpose of 260.20	*,34	260.1(b)(4)				
purpose of 260.21	*	260.1(b)(5)				
purpose of 260.22	*	260.1(b)(6)				

USE OF NUMBER AND GENDER

use of number and gender in 260-265 and 268	*,34	260.3				
masculine includes feminine and neuter words in singular	*	260.3(a)				
include plural words in plural	*	260.3(b)				
include singular words in plural	*	260.3(c)				

SUBPART B - DEFINITIONS

DEFINITIONS

terms have the following meanings throughout 260-265 and 268	*,34	260.10(intro)				
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**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"above ground tank"	28	260.10				
"Act" or "RCRA"	*	260.10				
"active life"	24	260.10				
"active portion"	*	260.10				
"Administrator"	*	260.10				
"ancillary equipment"	28	260.10				
"aquifer"	*	260.10				
"authorized rep- resentative"	*	260.10				
		260.10				
		(1)i				
		(1)(ii)				
		(1)(iii)				
		(1)(iv)				
"boiler"	13	(2)				
"certification"	*	260.10				
"closed portion"	*	260.10				
"component"	28	260.10				
"confined aquifer"	*	260.10				
"container"	*	260.10				
"contingency plan"	*	260.10				
"corrosion expert"	28	260.10				
"designated facility"	*,†13,71	260.10				
"dike"	*	260.10				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
"discharge" or "hazardous waste discharge"	*	260.10				
"disposal"	*	260.10				
"disposal facility"	*	260.10				
"elementary neutralization unit"	*,52	260.10				
		(1)				
		(2)				
"EPA hazardous waste number"	*	260.10				
"EPA identification number"	*	260.10				
"EPA region"	*	260.10				
"equivalent method"	*	260.10				
"existing hazardous waste management (HWM) facility" or "existing facility"	*	260.10				
		(1)				
		(2)(i)				
		(2)(ii)				
"existing portion"	*	260.10				
"existing tank system" or "existing component"	28	260.10				
"facility"	*	260.10				
"Federal agency"	*	260.10				
"Federal, State and local approvals or permits necessary to begin physical construction"	*	260.10				
"final closure"	24	260.10				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"food-chain crops"	*	260.10				
"free liquids"	*	260.10				
"freeboard"	*	260.10				
"generator"	*	260.10				
"ground water"	*	260.10				
"hazardous waste"	*	260.10				
"hazardous waste constituent"	*	260.10				
"hazardous waste management unit"	24	260.10				
"in operation"	*	260.10				
"inactive portion"	*	260.10				
"incinerator"	*,13	260.10				
		260.10				
		(1)				
"incompatible waste"	*	(2)				
"individual generation site"	*	260.10				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		260.10				
		(1)				
		(2)				
		(3)				
		(4)				
		(5)				
		(6)				
		(7)				
		(8)				
		(9)				
		(10)				
		(11)				
		(12)				
		(12)(i)				
		(12)(ii)				
		(12)(iii)				
		(12)(iv)				
		(12)(v)				
"industrial furnace"	13	(12)(vi)				
"inground tank"	28	260.10				
"injection well"	*	260.10				
"inner liner"	*	260.10				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"installation inspector"	28	260.10				
"international shipment"	*	260.10				
"landfill"	*,45	260.10				
"landfill cell"	*	260.10				
"land treatment facility"	*	260.10				
"leachate"	*	260.10				
"leak detection system"	28	260.10				
"liner"	*	260.10				
"management" or "hazardous waste management"	*	260.10				
"manifest"	*,5	260.10				
"manifest document number"	*,5	260.10				
"mining overburden returned to the mine site"	*	260.10				
"miscellaneous unit"	45	260.10				
"movement"	*	260.10				
"new hazardous waste management facility" or "new facility"	*	260.10				
"new tank system" or "new tank component"	28	260.10				
"on ground tank"	28	260.10				
"on-site"	*	260.10				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
		260.10				
		(1)				
		(2)				
"open burning"	*	(3)				
"operator"	*	260.10				
"owner"	*	260.10				
"partial closure"	*,24	260.10				
"person"	*	260.10				
"personnel" or "facility personnel"	*	260.10				
"pile"	*	260.10				
"point source"	*	260.10				
"publicly owned treatment works" or "POTW"	*	260.10				
"Regional Administrator"	*	260.10				
"representative sample"	*	260.10				
"run-off"	*	260.10				
"run-on"	*	260.10				
"saturated zone" or "zone of saturation"	*	260.10				
"sludge"	*	260.10				
"Small Quantity Generator"	23	260.10				
"solid waste"	*	260.10				
"State"	*	260.10				
"storage"	*	260.10				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"sump"	28	260.10				
"surface impoundment" or "impoundment"	*	260.10				
"tank"	*	260.10				
"tank system"	28	260.10				
"thermal treatment"	*	260.10				
"totally enclosed treatment facility"	*	260.10				
"transfer facility"	*	260.10				
"transport vehicle"	*	260.10				
"transportation"	*	260.10				
"transporter"	*	260.10				
"treatability study"	†49	260.10				
"treatment"	*	260.10				
"treatment zone"	*	260.10				
"underground injection"	*	260.10				
"underground tank"	28	260.10				
"unfit-for-use tank system"	28	260.10				
"unsaturated zone" or "zone of aeration"	*	260.10				
"United States"	*	260.10				
"uppermost aquifer"	*	260.10				
"vessel"	*	260.10				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		260.10				
		(1)				
		(2)				
"wastewater treatment unit"	*,52	(3)				
"water (bulk shipment)"	*	260.10				
"well"	*	260.10				
"well injection"	*	260.10				
"zone of engineering control"	28	260.10				
REFERENCES						
"Parts 260 through 270"	*,39	260.11				
"ASTM Standard Test Methods for Flash Point of Liquids by Setaflash Closed Tester"	*	260.11(a)				
"ASTM Standard Test Methods for Flash Point by Pensky-Martens Closed Tester"	*	260.11(a)				
"ASTM Standard Method for Analysis of Reformed Gas by Gas Chromatography"	79	260.11(a)				
"ASTM Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter"	79	260.11(a)				
"ASTM Standard Practices for General Techniques of Ultraviolet-Visible Quantitative Analysis"	79	260.11(a)				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"ASTM Standard Practices for General Techniques of Infrared Quantitative Analysis"	79	260.11(a)				
"ASTM Standard Practice for Packed Column Gas Chromatography"	79	260.11(a)				
"ASTM Standard Test Method for Aromatics in Light Naphthas and Aviation Gasolines by Gas Chromatography"	79	260.11(a)				
"ASTM Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteriscope"	79	260.11(a)				
"APTI Course 415: Control of Gaseous Emissions"	79	260.11(a)				
"Flammable and Combustible Liquids Code"	*	260.11(a)				
"Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods," Second Edition	*,11 35,67	260.11(a)				
47 analytical testing methods in Third Edition of "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	73	260.11(a)				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
references available at Office of the Federal Register; approved by director; incorporation and changes	*	260.11(b)				

SUBPART C - RULEMAKING PETITIONS

† GENERAL

petition to modify or revoke any provision in Parts 260-265 and 268; purpose of 260.21 and 260.22	*,†34	260.20(a)				
submission by certified mail and what each petition must contain	*	260.20(b)				
		260.20(b)(1)				
		260.20(b)(2)				
		260.20(b)(3)				
		260.20(b)(4)				
Administrator makes tentative decision to grant or deny; notice of decision	*	260.20(c)				
informal public hearing	*	260.20(d)				
final decision by Administrator	*	260.20(e)				

† PETITIONS FOR EQUIVALENT TESTING OR ANALYTICAL METHODS

petitions for a regulatory amendment to add testing or analytical methods; what must be demonstrated to the Administrator	*	260.21(a)				
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**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
what the petition must include	*	260.21(b)				
		260.21(b)(1)				
		260.21(b)(2)				
		260.21(b)(3)				
		260.21(b)(4)				
		260.21(b)(5)				
additional information	*	260.21(c)				
where an amendment for a new test method will be incorporated	*,11	260.21(d)				

† PETITIONS TO AMEND PART 261 TO EXCLUDE A WASTE PRODUCED AT A PARTICULAR FACILITY

petitions to exclude a waste at a particular generating facility	*,†17 B	260.22(a)				
		260.22(a)(1)				
		260.22(a)(2)				
procedures for exclusion from 261.3(a)(2)(ii) or (c) a waste described in these sections and is listed in or is derived from a waste in Subpart D; demonstration the petitioner must make; operation of 261, Subpart C	*,†17 B	260.22(b)				
waste listed with codes "I", "C", "R" or "E" in Subpart D	*,†17 B	260.22(c)				
		260.22(c)(1)				
	†17 B	260.22(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste listed with code "T" in Subpart D	*,†17 B	260.22(d)				
		260.22(d)(1)				
		260.22(d)(1)(i)				
		260.22(d)(1)(ii)				
	†17 B	260.22(d)(2)				
		260.22(d)(3)				
		260.22(d)(4)				
waste listed with an "H" code in Subpart D reserved for listing radioactive waste reserved for listing infectious waste demonstration samples	*,†17 B	260.22(e)				
		260.22(e)(1)				
		260.22(e)(2)				
	†17 B	260.22(e)(3)				
		260.22(e)(4)				
	*	260.22(f)				
	*	260.22(g)				
	*	260.22(h)				

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what each petition must include in addition to 260.20(b) requirements	*	260.22(i)				
		260.22(i)(1)				
		260.22(i)(2)				
		260.22(i)(3)				
		260.22(i)(4)				
		260.22(i)(5)				
		260.22(i)(6)				
		260.22(i)(7)				
		260.22(i)(8)				
		260.22(i)(9)				
		260.22(i)(10)				
		260.22(i)(11)				
		260.22(i)(12)				
additional information	*	260.22(j)				
waste to which exclu- sion applies	*	260.22(k)				
exclusion by Administrator of only part of waste for which demonstration was submitted	*	260.22(l)				
remove paragraph 260.22(m)	*,†17 B	260.22(m)				

† VARIANCES FROM CLASSIFICATION AS A SOLID WASTE

speculative accumulation	13	260.30(a)				
returned to process	13	260.30(b)				
further reclamation	13	260.30(c)				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

† **STANDARDS AND CRITERIA FOR VARIANCES FROM CLASSIFICATION AS A SOLID WASTE**

speculative accumula- tion; standards and criteria on which Regional Administra- tor's decisions will be based	13	260.31(a)				
		260.31(a)(1)				
		260.31(a)(2)				
		260.31(a)(3)				
		260.31(a)(4)				
		260.31(a)(5)				
returned to process; criteria on which Regional Administra- tor's determination will be based	13	260.31(b)				
		260.31(b)(1)				
		260.31(b)(2)				
		260.31(b)(3)				
		260.31(b)(4)				
		260.31(b)(5)				
		260.31(b)(6)				
		260.31(b)(7)				
		260.31(b)(8)				

382

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
further reclamation; factors on which Regional Administra- tor's determination will be based	13	260.31(c)				
		260.31(c)(1)				
		260.31(c)(2)				
		260.31(c)(3)				
		260.31(c)(4)				
		260.31(c)(5)				
		260.31(c)(6)				

† **VARIANCE TO BE CLASSIFIED AS A BOILER**

case-by-case determination; criteria which must be considered	13	260.32				
provisions for recovering and exporting thermal energy	13	260.32(a)				
integral design	13	260.32(b)				
efficiency of energy recovery	13	260.32(c)				
exported energy utili- zation	13	260.32(d)				
customary use as a "boiler"	13	260.32(e)				
other factors	13	260.32(f)				

† **PROCEDURES FOR VARIANCES FROM CLASSIFICATION AS A SOLID WASTE OR TO BE
CLASSIFIED AS A BOILER**

procedures for evalu- ating applications	13	260.33				
where to apply and what the application must address	13	260.33(a)				

SPA 9

**CONSOLIDATED CHECKLIST C1: Hazardous Waste
Management System: General (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
tentative decision; notice/public hearing; final decision; no appeal	13	260.33(b)				

†,1 **ADDITIONAL REGULATION OF CERTAIN HAZARDOUS WASTE RECYCLING ACTIVITIES ON A CASE-BY-CASE BASIS**

case-by-case deter- mination; factors which will be consid- ered	13	260.40(a)				
types of materials accumulated or stored	13	260.40(a)(1)				
method of accumula- tion or storage	13	260.40(a)(2)				
length of time release to the environment	13	260.40(a)(3)				
	13	260.40(a)(4)				
other factors	13	260.40(a)(5)				

†,1 **PROCEDURES FOR CASE-BY-CASE REGULATION OF HAZARDOUS WASTE RECYCLING ACTIVITIES**

procedures Regional Administrator will use for determination	13	260.41				
notice to generator who is accumulating, setting forth factual basis for decision and 262 Subpart A, C, D & E compliance; public hearing; final order; appeals	13	260.41(a)				
accumulation as a storage facility; permit required; when to apply; ways to challenge decision; public comment period	13	260.41(b)				

¹ Not needed if the state does not allow the exclusion of 261.6(a)(2)(iv).

SPA 9

CONSOLIDATED CHECKLIST C2

Identification and Listing of Hazardous Waste
40 CFR Part 261 as of June 30, 1990

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE AND SCOPE

† identification of wastes regulated under 262-265, 268, 270, 271, 124 and subject to notification	*,34	261.1(a)				
† Subpart A's purpose	*,23,34	261.1(a)(1)				
† Subpart B's purpose	*	261.1(a)(2)				
† Subpart C's purpose	*	261.1(a)(3)				
† Subpart D's purpose	*	261.1(a)(4)				
solid waste definition applies only to waste also hazardous for purpose of implementation Subtitle C	13	261.1(b)(1)				
identification of only some of the materials that are solid hazardous wastes	*,13	261.1(b)(2)				
conditions under which a waste is still a solid/hazardous waste	*,13	261.1(b)(2)(i)&(ii)				
definitions	13	261.1(c)				
"spent material"	13	261.1(c)(1)				
"sludge"	13	261.1(c)(2)				
"by-product"	13	261.1(c)(3)				
"reclaimed"	13	261.1(c)(4)				
"used or reused"	13	261.1(c)(5)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"scrap metal"	13	261.1(c)(6)				
"recycled"	13	261.1(c)(7)				
"accumulated speculatively"	13	261.1(c)(8)				

1 DEFINITION OF SOLID WASTE

discarded/not excluded	13	261.2(a)(1)				
"discarded material" is:	13	261.2(a)(2)				
abandoned	13	261.2(a)(2)(i)				
recycled	13	261.2(a)(2)(ii)				
inherently wastelike	13	261.2(a)(2)(iii)				
"abandoned" means:	13	261.2(b)				
disposed of	13	261.2(b)(1)				
burned/incinerated	13	261.2(b)(2)				
accumulated, stored, or treated in lieu of disposal	13	261.2(b)(3)				
materials are solid wastes when recycled	13	261.2(c)				
used in a manner constituting disposal	13	261.2(c)(1)				
		261.2(c)(1)(i)(A)&(B)				
		261.2(c)(1)(ii)				
burning for energy recovery	13	261.2(c)(2)				
		261.2(c)(2)(i)(A)&(B)				
		261.2(c)(2)(ii)				
reclaimed	13	261.2(c)(3)				
accumulated speculatively	13	261.2(c)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
inherently wastelike F020, F021, F022, F023, F026, & F028	13	261.2(d)				
	13	261.2(d)(1)				
		261.2(d)(2)				
		261.2(d)(2)(i)(A)&(B)				
criteria Administrator will use to add to list	13	261.2(d)(2)(ii)				

† **Materials That Are Not Solid Wastes When Recycled**

criteria for showing materials are not solid wastes when recycled	13	261.2(e)(1)				
		261.2(e)(1)(i)				
		261.2(e)(1)(ii)				
		261.2(e)(1)(iii)				
materials that are solid waste even when recycling involves use, reuse, or return to original process:	13	261.2(e)(2)				
		261.2(e)(2)(i)				
		261.2(e)(2)(ii)				
		261.2(e)(2)(iii)				
		261.2(e)(2)(iv)				
documentation of claims for not solid waste or conditionally exempt from regulation	13	261.2(f)				

DEFINITION OF HAZARDOUS WASTE

solid waste is hazardous if:	I A	261.3(a)				
not excluded by 261.4(b)	I A	261.3(a)(1)				
criteria to be met	I A	261.3(a)(2)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
exhibits characteristic of Subpart C; exception for specific waste mixtures	I A, 65	261.3(a)(2)(i)				
is listed in Subpart D mixture of solid waste and a Subpart D hazardous waste; exceptions	I A	261.3(a)(2)(ii)				
	I A, 65	261.3(a)(2)(iii)				
		261.3(a)(2)(iv)				
		261.3(a)(2)(iv)(A)				
		261.3(a)(2)(iv)(B)				
		261.3(a)(2)(iv)(C)				
		261.3(a)(2)(iv)(D)				
mixture exemptions	I A	261.3(a)(2)(iv)(E)				
specific events under which a solid waste becomes hazardous	I A	261.3(b)				
Subpart D wastes, when first meet listing description	I A	261.3(b)(1)				
mixture, when hazardous waste added	I A	261.3(b)(2)				
when exhibits Subpart C characteristics	I A	261.3(b)(3)				
unless and until waste meets paragraph (d) criteria:	I A	261.3(c)				
remains a hazardous waste	I A	261.3(c)(1)				
derived from a hazardous waste	I A, †8, †13	261.3(c)(2)(i)				
exemptions:	†8		261.3(c)(2)(ii)			
waste pickle liquor sludge	†8	261.3(c)(2)(ii)(A)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
wastes from burning material exempted at 261.6(a)(3)(v) through (ix)	19	261.3(c)(2)(ii)(B)				
solid waste not hazardous if it meets criteria:	I A	261.3(d)				
wastes not exhibiting characteristics	I A	261.3(d)(1)				
excluded under 260.20 and 260.22	I A	261.3(d)(2)				

EXCLUSIONS

materials which are not solid wastes	I A	261.4(a)				
domestic sewage	I A	261.4(a)(1)(i)				
domestic sewage mixture	I A	261.4(a)(1)(ii)				
industrial wastewater discharges	I A	261.4(a)(2)				
irrigation return flows	I A	261.4(a)(3)				
nuclear materials as defined by the Atomic Energy Act, 1954	I A	261.4(a)(4)				
in-situ mining	I A	261.4(a)(5)				
pulping liquors	†13	261.4(a)(6)				
spent sulfuric acid	†13	261.4(a)(7)				
reclaimed secondary materials returned to original process generating them	28	261.4(a)(8)				
		261.4(a)(8)(i)				
		261.4(a)(8)(ii)				
		261.4(a)(8)(iii)				
		261.4(a)(8)(iv)				
solid wastes which are not hazardous wastes	I A	261.4(b)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
household waste	I A,†9, †17 C	261.4(b)(1)				
		261.4(b)(1)(i)				
		261.4(b)(1)(i)(A)&(B)				
		261.4(b)(1)(ii)				
crop and animal waste returned to soil as fertilizers	I A	261.4(b)(2)				
		261.4(b)(2)(i)				
		261.4(b)(2)(ii)				
mining overburden	I A	261.4(b)(3)				
ash waste	I A	261.4(b)(4)				
drilling fluids waste failing Toxicity Characteristic test because of chromium	I A, 74	261.4(b)(5)				
specific provisions for exemption	I A	261.4(b)(6)(i)(A)				
		261.4(b)(6)(i)(B)				
		261.4(b)(6)(i)(C)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
specific wastes meeting 261.4(b)(6)(i) (A),(B)&(C) standards	I A	261.4(b)(6)(ii)				
		261.4(b)(6)(ii)(A)				
		261.4(b)(6)(ii)(B)				
		261.4(b)(6)(ii)(C)				
		261.4(b)(6)(ii)(D)				
		261.4(b)(6)(ii)(E)				
		261.4(b)(6)(ii)(F)				
		261.4(b)(6)(ii)(G)				
		261.4(b)(6)(ii)(H)				
ore processing waste	I A,53 65,71	261.4(b)(7)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
2 specific solid wastes from the processing of ores and minerals cement kiln dust waste discarded wood meeting certain criteria	I A, 65,71	261.4(b)(7)(i)				
		261.4(b)(7)(ii)				
	I A, 71	261.4(b)(7)(iii)				
		261.4(b)(7)(iv)				
		261.4(b)(7)(v)				
		261.4(b)(7)(vi)				
	71	261.4(b)(7)(vii)				
		261.4(b)(7)(viii)				
		261.4(b)(7)(ix)				
		261.4(b)(7)(x)				
		261.4(b)(7)(xi)				
		261.4(b)(7)(xii)				
		261.4(b)(7)(xiii)				
		261.4(b)(7)(xiv)				
		261.4(b)(7)(xv)				
		261.4(b)(7)(xvi)				
		261.4(b)(7)(xvii)				
		261.4(b)(7)(xviii)				
		261.4(b)(7)(xix)				
		261.4(b)(7)(xx)				
	I A	261.4(b)(8)				
	I A, 74	261.4(b)(9)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
petroleum-contaminated media and debris that fail the 261.24 Toxicity Characteristic test (D018 through D043 only) and are subject to Part 280 corrective action	74	261.4(b)(10)				
exempt hazardous waste	I A,34	261.4(c)				
sample exemption	I A,34	261.4(d)(1)				
		261.4(d)(1)(i)				
		261.4(d)(1)(ii)				
		261.4(d)(1)(iii)				
		261.4(d)(1)(iv)				
		261.4(d)(1)(v)				
criteria	I A	261.4(d)(1)(vi)				
		261.4(d)(2)				
		261.4(d)(2)(i)				
		261.4(d)(2)(ii)				
		261.4(d)(2)(ii)(A)				
criteria for sample collector & laboratory, to qualify for exemption	I A	261.4(d)(2)(ii)(A)(1)-(5)				
when exemption does not apply	I A	261.4(d)(2)(ii)(B)				
	I A	261.4(d)(3)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Treatability Study Samples						
regulation of treata- bility study samples and relation to quantity determina- tion of 261.5 and 262.34(d)	49	261.4(e)(1)				
collection and preparation of sample for transport	49	261.4(e)(1)(i)				
accumulation or storage of sample prior to transport	49	261.4(e)(1)(ii)				
transport of sample to laboratory or testing facility	49	261.4(e)(1)(iii)				
applicability of provisions for exemption under 261.4(e)(1)	49	261.4(e)(2)				
sample size limit by hazardous waste type for sample collector	49	261.4(e)(2)(i)				
weight limit for each sample shipment	49	261.4(e)(2)(ii)				
packaging require- ments for sample	49	261.4(e)(2)(iii)				
compliance with U.S. DOT, USPS or other for transport	49	261.4(e)(2)(iii)(A)				
information required if DOT, USPS, or other do not apply to shipment	49	261.4(e)(2)(iii)(B) (1)-(5)				
laboratory or testing facility requirements	49	261.4(e)(2)(iv)				
3 year maintenance of specified records	49	261.4(e)(2)(v)				
records which must be maintained	49	261.4(e)(2)(v) (A)-(C)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
biennial report requirements	49	261.4(e)(2)(vi)				
granting of requests for additional quantities; application procedure	49	261.4(e)(3)				
reason for request and additional quantity needed	49	261.4(e)(3)(i)				
required documentation	49	261.4(e)(3)(ii)				
description of technical modifications	49	261.4(e)(3)(iii)				
equipment and mechanical failure information	49	261.4(e)(3)(iv)				
other information	49	261.4(e)(3)(v)				

† **Samples Undergoing Treatability Studies at Laboratories and Testing Facilities**

requirements for samples undergoing treatability studies at labs and testing facilities	49	261.4(f)				
notification requirements	49	261.4(f)(1)				
EPA identification number of laboratory or testing facility	49	261.4(f)(2)				
single day quantity restrictions on initiation of treatment studies	49	261.4(f)(3)				
limitations on storage of treatability study samples	49	261.4(f)(4)				
exclusion of treatability study residues	49	261.4(f)(4)(i)				
exclusion of added treatment materials	49	261.4(f)(4)(ii)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
90 day/1 year limitations on duration of exemption	49	261.4(f)(5)				
land placement and open burning of study samples not allowed	49	261.4(f)(6)				
3 year maintenance of treatability study records	49	261.4(f)(7)				
list of specific information needed for each treatability study	49	261.4(f)(7)(i)-(vii)				
3 year maintenance of shipping records and treatability study contract	49	261.4(f)(8)				
laboratory or treatability study facility annual report requirement	49	261.4(f)(9)				
required annual report information	49	261.4(f)(9)(i)-(vii)				
hazardous waste determination for unused samples by facility	49	261.4(f)(10)				
notification when facility discontinues treatability studies	49	261.4(f)(11)				

**SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE GENERATED BY CONDITIONALLY
EXEMPT SMALL QUANTITY GENERATORS**

definition of a conditionally exempt small quantity generator	I A, 23	261.5(a)				
exceptions to CESQG regulatory exemption	I A, 17 A, 19, 23, 34	261.5(b)				
quantity determination	I A, †13, 23, 34	261.5(c)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		261.5(d)				
		261.5(d)(1)				
		261.5(d)(2)				
quantity exclusions	I A,23	261.5(d)(3)				
acute hazardous	I A,23,					
quantity limitations	34,47	261.5(e)				
1 kg acute hazard- ous waste listed in 261.31, 261.32 or 261.33(e)	I A,14, 23	261.5(e)(1)				
100 kg of spill debris resulting from a spill of acute hazardous waste	I A,14, 23	261.5(e)(2)				
requirements for exclusion of acute hazardous waste	I A, †17 A, 23	261.5(f)				
Section 262.11	23	261.5(f)(1)				
accumulation	I A,23, 34,47	261.5(f)(2)				
		261.5(f)(3)				
		261.5(f)(3)(i)				
		261.5(f)(3)(ii)				
		261.5(f)(3)(iii)				
		261.5(f)(3)(iv)				
		261.5(f)(3)(v)				
		261.5(f)(3)(v)(A)				
treatment/disposal	23,31	261.5(f)(3)(v)(B)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
generator require- ments for hazardous waste to be conditionally exempt	I A, †17 A, 23	261.5(g)				
Section 262.11	I A	261.5(g)(1)				
accumulation	I A,23, 34	261.5(g)(2)				
		261.5(g)(3)				
		261.5(g)(3)(i)				
		261.5(g)(3)(ii)				
		261.5(g)(3)(iii)				
		261.5(g)(3)(iv)				
		261.5(g)(3)(v)				
		261.5(g)(3)(v)(A)				
treatment/disposal	I A,23, 31	261.5(g)(3)(v)(B)				
mixing with non- hazardous waste	I A, †17 A,23	261.5(h)				
mixtures exceeding exclusion level	I A, †17 A,23	261.5(i)				
mixtures with used oil	†17 A,23	261.5(j)				
removed	19,23	261.5(k)				
REQUIREMENTS FOR RECYCLABLE MATERIALS						
requirements recycled hazardous waste is subject to	I A,13	261.6(a)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
regulation under Part 266	I A,13	261.6(a)(2)				
	13	261.6(a)(2)(i)				
	13	261.6(a)(2)(ii)				
	13,17 J, 19	261.6(a)(2)(iii)				
	13	261.6(a)(2)(iv)				
	13	261.6(a)(2)(v)				
exemptions from rule generator and transporter requirements	I A,13, 34	261.6(a)(3)				
	13,31	261.6(a)(3)(i)				
	31	261.6(a)(3)(i)(A)				
	31	261.6(a)(3)(i)(B)				
	13	261.6(a)(3)(ii)				
	13,19	261.6(a)(3)(iii)				
	13	261.6(a)(3)(iv)				
	13	261.6(a)(3)(v)				
	13	261.6(a)(3)(vi)				
	13,19	261.6(a)(3)(vii)				
		261.6(a)(3)(viii)(A)				
		261.6(a)(3)(viii)(B)				
		261.6(a)(3)(viii)(C)				
	†19	261.6(a)(3)(ix)				
	I A,13	261.6(b)				

388

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
recycling facility requirements owners or operators of RCRA facilities are subject to Subparts AA and BB of Parts 264 and 265 if they recycle hazardous wastes	13,34, 79	261.6(c)(1)				
		261.6(c)(2)				
		261.6(c)(2)(i)				
		261.6(c)(2)(ii)				
	79	261.6(c)(2)(iii)				
	79	261.6(d)				

RESIDUES OF HAZARDOUS WASTE IN EMPTY CONTAINERS

waste remaining in container	I A,34	261.7(a)(1)				
container not empty	I A,34	261.7(a)(2)				
definition of empty	I A,14	261.7(b)(1)				
		261.7(b)(1)(i)				
		261.7(b)(1)(ii)				
		261.7(b)(1)(iii)(A)				
	I A	261.7(b)(1)(iii)(B)				
definition of empty for compressed gas	I A	261.7(b)(2)				
definition of empty for acute hazardous wastes listed in 261.31, 261.32 or 261.33(e)	I A,14	261.7(b)(3)				
		261.7(b)(3)(i)				
		261.7(b)(3)(ii)				
	I A	261.7(b)(3)(iii)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

PCB WASTES REGULATED UNDER TOXIC SUBSTANCE CONTROL ACT

exemption for certain PCB-containing wastes	74	261.8				
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†,3

**SUBPART B - CRITERIA FOR IDENTIFYING THE CHARACTERISTICS
OF HAZARDOUS WASTE AND FOR LISTING HAZARDOUS WASTE**

CRITERIA FOR IDENTIFYING THE CHARACTERISTICS OF HAZARDOUS WASTE

Administrator shall identify and define a characteristic of hazardous waste in Subpart C, only upon specific determinations	*	261.10(a)				
		261.10(a)(1)				
		261.10(a)(1)(i)&(ii)				
		261.10(a)(2)				
		261.10(a)(2)(i)&(ii)				

CRITERIA FOR LISTING HAZARDOUS WASTE

meets one of the following criteria	*	261.11(a)				
exhibits a Subpart C characteristic	*	261.11(a)(1)				
fatal to humans; specific toxicity levels; acute hazardous waste	*	261.11(a)(2)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
contains any Appendix VIII toxic constituent; factors the Administrator must assess; toxic hazardous waste	* ,76	261.11(a)(3)				
		261.11(a)(3)(i)				
		261.11(a)(3)(ii)				
		261.11(a)(3)(iii)				
		261.11(a)(3)(iv)				
		261.11(a)(3)(v)				
		261.11(a)(3)(vi)				
		261.11(a)(3)(vii)				
		261.11(a)(3)(viii)				
		261.11(a)(3)(ix)				
		261.11(a)(3)(x)				
	*	261.11(a)(3)(xi)				
hazardous under the RCRA 1004(5) definition of hazardous waste	*	261.11(b)				
criteria for establishing exclusion limits	*	261.11(c)				

SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE

GENERAL

solid waste exhibiting characteristics of Subpart C	*	261.20(a)				
EPA hazardous waste number	* ,34, 78	261.20(b)				
sample obtained using Appendix I sampling methods	*	261.20(c)				

SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

CHARACTERISTIC OF IGNITABILITY

liquid; flash point less than 60C.	I C	261.21(a)				
		261.21(a)(1)				
non-liquid; burns under standard temperature and pressure	I C	261.21(a)(2)				
		261.21(a)(3)				
ignitable compressed gas	I C	261.21(a)(4)				
oxidizer	I C	261.21(b)				
EPA Number D001	I C, 78					

CHARACTERISTIC OF CORROSIVITY

aqueous; ph < 2 or > 12.5	I C	261.22(a)				
		261.22(a)(1)				
liquid; corrodes steel	I C	261.22(a)(2)				
EPA Number D002	I C, 78	261.22(b)				

CHARACTERISTIC OF REACTIVITY

unstable; undergoes violent change	I C	261.23(a)				
		261.23(a)(1)				
reacts violently with water	I C	261.23(a)(2)				
potentially explosive	I C	261.23(a)(3)				
generates toxic gases	I C	261.23(a)(4)				
cyanide or sulfide bearing and can generate toxic gases	I C	261.23(a)(5)				
detonation or explosion, if heated	I C	261.23(a)(6)				
detonation or explosion at STP	I C	261.23(a)(7)				

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
forbidden explosive	I C	261.23(a)(8)				
EPA Number D003	I C, 78	261.23(b)				

4 TOXICITY CHARACTERISTIC

test criteria and waste list	I C, 74	261.24(a)				
EPA Numbers as in Table 1	I C, 74,78	261.24(b)				

SUBPART D - LISTS OF HAZARDOUS WASTES

GENERAL

hazardous if listed in this subpart; exclusions	I B	261.30(a)				
hazard codes	I B, 74	261.30(b)				
EPA hazardous waste number	I B, 34	261.30(c)				
261.31 or 261.32 listed wastes subject to 261.5 exclusion limits--F020, F021, F022, F023, F026 and F027	14	261.30(d)				

HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

list of "F" wastes	I B,4, 13,14, 20,22, 69,72,78	261.31				
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The correct list of "F" wastes to use for this consolidated base program checklist is the 261.31 table found in the July 1, 1990 CFR.

HAZARDOUS WASTES FROM SPECIFIC SOURCES

list of "K" wastes	I B,18, 21,26, 33,53, 68,75	261.32				
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SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

The correct list of "K" wastes to use for this consolidated base program checklist is the 261.32 table found in the July 1, 1990 CFR.

DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF

hazardous when discarded	I B,13, 17 J,37	261.33				
chemical product or intermediate	I B	261.33(a)				
off-specification product or chemical intermediate	I B	261.33(b)				
container/inner liner residues	I B, 41, 78	261.33(c)				
spill cleanup debris	I B	261.33(d)				
acute hazardous wastes	I B,7, 29,46,57	261.33(e)				

The correct list of "P" wastes to use for this consolidated base program checklist is the 261.33(e) table found in the July 1, 1990 CFR.

toxic wastes	I B,7, 14,18, 22,23, 29,46,56	261.33(f)				
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The correct list of "U" wastes to use for this consolidated base program checklist is the 261.33(f) table found in the July 1, 1990 CFR.

APPENDIX I TO PART 261

REPRESENTATIVE SAMPLING METHODS

list of sampling protocols to be followed in collecting waste samples with various properties	*	Appendix I				
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**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX II TO PART 261

5 METHOD 1311 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

TCLP procedures used to identify wastes which are hazardous	*,74	Appendix II				
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APPENDIX III TO PART 261

CHEMICAL ANALYSIS TEST METHODS

analytical procedures to determine whether a sample contains Appendix VII or VIII constituents; Tables 1 through 3 which cover analysis methods for organic chemicals, analysis methods for inorganic chemicals and miscellaneous groups of analytes, and sampling and analysis methods contained in SW-846	*,14,18, 21,22,33, 67,68,73, 75	Appendix III				
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APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

table of EPA hazardous waste numbers and the hazardous constituents for which each is listed	*,4,14, 18,21,22, 33,53,68, 69,75,78	Appendix VII				
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SPA 9

**CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX VIII TO PART 261

HAZARDOUS CONSTITUENTS

table listing common names, chemical abstracts names, chemical abstracts numbers, and EPA hazardous waste numbers for all hazardous constituents	*,4,14, 18,22, 29,46, 56,57,69	Appendix VIII				
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APPENDIX X TO PART 261

METHOD OF ANALYSIS FOR CHLORINATED DIBENZO-P-DIOXINS AND -DIBENZOFURANS

analytical procedure to measure concentration of chlorinated dibenzo-p-dioxins and dibenzofurans in chemical wastes	14	Appendix X				
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- 1 Paragraph 261.2(a)-(e) originally appeared on Base Program Checklist I A, but Revision Checklist 13 completely superseded the original code.
- 2 The list of excluded wastes from the processing of ores and minerals, currently represented by 261.4(b)(7)(i)-(xx) as per Revision Checklist 71, has undergone extensive formatting changes over time. Checklist I A addressed a fairly short list of wastes numbered 261.4(b)(7)(i)-(vi). Revision Checklist 65 made significant changes in that 261.4(b)(7)(i)(A)-(E) represented five wastes retained under the exclusion, and 261.4(b)(7)(ii)(A)-(T) represented twenty wastes conditionally retained under the exclusion. Citations numbered (b)(7)(iii)-(vi) were omitted at that point in time. Finally, Revision Checklist 71 resulted in a list of 20 wastes retained under the exclusion, numbered 261.4(b)(7)(i)-(xx). Therefore, the references to Checklists I A and 65 in Column 2 are relevant only insofar as the numbering format of the Federal RCRA citations are concerned, as opposed to the text of the citations. Many of the wastes addressed by Revision Checklist 65 under paragraphs (i) and (ii) are addressed in paragraphs (i)-(xx) in Revision Checklist 71.
- 3 States do not have to include this subpart as long as they regulate all of the wastes which are listed by EPA or determined to be hazardous by the characteristics given in Subpart C of 40 CFR Part 261.

CONSOLIDATED CHECKLIST C2: Identification
and Listing of Hazardous Waste (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- 4 The title of this section was changed by Revision Checklist 74 from "CHARACTERISTIC OF EP TOXICITY" to "TOXICITY CHARACTERISTIC."
- 5 Revision Checklist 74 replaced the EP toxicity test procedures in this appendix with the toxicity characteristic leaching procedures.

SPA 9

CONSOLIDATED CHECKLIST C3

Standards Applicable to Generators of Hazardous Waste
40 CFR 262 as of June 30, 1990

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

establish standards for generators	*	262.10(a)				
on-site generator requirements	II,48	262.10(b)				
importer requirements	II	262.10(c)				
farmer's requirements	II,48	262.10(d)				
compliance requirements and penalties	II	262.10(e)				
requirements for initiators of shipment	II	262.10(f)				

HAZARDOUS WASTE DETERMINATION

determine if a waste is a hazardous waste	*	262.11				
excluded under 261.4	II	262.11(a)				
listed in Subpart D, Part 261	II	262.11(b)				
identified in Subpart C, Part 261	II,78	262.11(c)				
testing	II	262.11(c)(1)				
characteristics	II	262.11(c)(2)				
refer to Parts 264, 265, 268 for possible exclusions or restrictions in use	34	262.11(d)				

EPA IDENTIFICATION NUMBERS

EPA identification number required	II	262.12(a)				
application for EPA ID number	II	262.12(b)				

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
hazardous waste must not be offered to transporters or TSDFs without EPA ID numbers	II	262.12(c)				

SUBPART B - THE MANIFEST

GENERAL REQUIREMENTS

offsite transportation; manifest preparation	II,5	262.20(a)				
designated facility permitted to handle waste	II	262.20(b)				
designated alternate facility	II	262.20(c)				
procedures when transporter unable to deliver	II	262.20(d)				
exemption for generators of 100 kg to 1000 kg/month under specified conditions	23	262.20(e)				
		262.20(e)(1)				
		262.20(e)(1)(i)				
		262.20(e)(1)(ii)				
		262.20(e)(2)				

1 ACQUISITION OF MANIFESTS

use consignment State's manifest	5	262.21(a)				
use generator State's manifest	5	262.21(b)				
obtain manifest from any source	5	262.21(c)				

NUMBER OF COPIES

file copies; copy returned to generator	II	262.22				
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SPA 9

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

USE OF THE MANIFEST

generator's duties	II	262.23(a)				
generator's signature	II	262.23(a)(1)				
initial transporter's signature & date	II	262.23(a)(2)				
retain copy	II	262.23(a)(3)				
copies to transporter	II	262.23(b)				
shipment by water	II	262.23(c)				
		262.23(d)				
		262.23(d)(1)				
		262.23(d)(2)				
shipment by rail	II	262.23(d)(3)				
shipment to state lacking authorization for particular waste	71	262.23(e)				

SUBPART C - PRE-TRANSPORT REQUIREMENTS**PACKAGING**

package according to DOT regulations on packaging under 49 CFR 173, 178 & 179	II	262.30				
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LABELING

label according to DOT regulations on hazardous materials under 49 CFR 172	II	262.31				
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**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
MARKING						
mark each package according to DOT regulations on hazardous materials under 49 CFR 172	II	262.32(a)				
mark each container of 110 gal. or less; specific wording in accordance with 49 CFR 172.304	II	262.32(b)				
PLACARDING						
placard prior to off-site shipment; DOT regulations for hazardous materials under 49 CFR 172, Subpart F	II	262.33				
ACCUMULATION TIME						
90 days accumulation without a permit; specific provisions which must be met	II,23	262.34(a)				
specific portions of 265 which apply	II,28	262.34(a)(1)				
date each period of accumulation begins is marked and visible	II	262.34(a)(2)				
labeled or marked "Hazardous Waste"	II	262.34(a)(3)				
compliance with 265, Subparts C and D, 265.16, and 268.7(a)(4)	II,78	262.34(a)(4)				
consequences of accumulation for longer than 90 days; criteria for extension beyond this period	II	262.34(b)				

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
accumulation of up to 55 gal. of hazardous waste or 1 qt. acutely hazardous at point of generation; provisions which must be complied with; procedure if quantity limit is exceeded	12	262.34(c)(1)				
		262.34(c)(1)(i)				
		262.34(c)(1)(ii)				
		262.34(c)(2)				
180 day accumulation for 100 kg to 1,000 kg/month generator, provided:	23	262.34(d)				
quantity never exceeds 6000 kg	23	262.34(d)(1)				
compliance with 265, Subpart I, except 265.176	23,28	262.34(d)(2)				
compliance with 265.201	28	262.34(d)(3)				
2 compliance with 262.34(a)(2)&(3) and 265, Subpart C	23,28	262.34(d)(4)				

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
2 compliance with specific emergency precautions and procedures	23,28	262.34(d)(5)				
		262.34(d)(5)(i)				
		262.34(d)(5)(ii)				
		262.34(d)(5)(ii)(A)				
		262.34(d)(5)(ii)(B)				
		262.34(d)(5)(ii)(C)				
		262.34(d)(5)(iii)				
		262.34(d)(5)(iv)				
		262.34(d)(5)(iv)(A)				
		262.34(d)(5)(iv)(B)				
		262.34(d)(5)(iv)(C)				
		262.34(d)(5)(iv) (C)(1)-(5)				
200 miles or more transport, 270 day accumulation time; compliance with 262.34(d)	23	262.34(e)				
requirements if accumulation in excess of 6000 kg or longer than 180 days (270 days)	23	262.34(f)				

SUBPART D - RECORDKEEPING AND REPORTING

RECORDKEEPING

manifest copy reten- tion for 3 years	II	262.40(a)				
biennial report and exception report retention for 3 years	II,†1	262.40(b)				

SPA 9

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
test results and waste analyses retention for 3 years	II	262.40(c)				
automatic extension of retention periods during unresolved enforcement action	II	262.40(d)				

BIENNIAL REPORT

off-site shipper must submit a biennial report; form used and what must be submitted	II,1,31	262.41(a)				
EPA ID number	II	262.41(a)(1)				
calendar year covered	II	262.41(a)(2)				
off-site TSD facility information	II,31	262.41(a)(3)				
transporter information	II,31	262.41(a)(4)				
hazardous waste information and how it must be reported	II,31	262.41(a)(5)				
describe efforts to reduce volume and toxicity	17 D	262.41(a)(6)				
a description of changes in volume and toxicity	17 D	262.41(a)(7)				
3 certification	II, 17 D	262.41(a)(8)				
on-site handler; separate annual reports for exports	II,1,31	262.41(b)				

EXCEPTION REPORTING

generators of greater than 1000 kg/month; requirements if manifest copy not received within 35 days	II,42	264.42(a)(1)				
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**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
if manifest copy not received within 45 days, must submit exception report; what the report must include	II,42	262.42(a)(2)				
		262.42(a)(2)(i)&(ii)				
generators of 100 to 1000 kg/month; requirements if manifest copy not received within 60 days	42	262.42(b)				

ADDITIONAL REPORTING

additional information may be required under 2002(a) and 3002(6) of RCRA regarding quantity and disposition	II	262.43				
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SPECIAL REQUIREMENTS FOR GENERATORS OF BETWEEN 100 AND 1000 KG/MONTH

requirements the generator of 100 to 1000 kg/month is subject to	23,42	262.44				
		262.44(a)				
		262.44(b)				
		262.44(c)				

4,5

SUBPART E - EXPORTS OF HAZARDOUS WASTE**APPLICABILITY**

establishes applicability	31	262.50				
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6 DEFINITIONS

"consignee"	31	262.51				
"EPA Acknowledgment of Consent"	31	262.51				
"primary exporter"	31	262.51				

SPA 9

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"receiving country"	31	262.51				
"transit country"	31	262.51				
GENERAL REQUIREMENTS						
exports prohibited unless:	31	262.52				
notification	31	262.52(a)				
consent of receiving country	31	262.52(b)				
EPA Acknowledgment of Consent	31	262.52(c)				
conformation to terms	31	262.52(d)				
NOTIFICATION OF INTENT TO EXPORT						
contents of notification	31	262.53(a)				
		262.53(a)(1)				
		262.53(a)(2)				
		262.53(a)(2)(i)				
		262.53(a)(2)(ii)				
		262.53(a)(2)(iii)				
		262.53(a)(2)(iv)				
		262.53(a)(2)(v)				
		262.53(a)(2)(vi)				
		262.53(a)(2)(vii)				
		262.53(a)(2)(viii)				
office to notify	31	262.53(b)				
changes in original notification	31	262.53(c)				

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
additional information	31	262.53(d)				
EPA notification to receiving and transit countries	31	262.53(e)				
EPA notification to primary exporter	31	262.53(f)				

SPECIAL MANIFEST REQUIREMENTS

compliance with 260.20 through 262.23 requirements; exceptions:	31	262.54				
consignee	31	262.54(a)				
alternate consignee	31	262.54(b)				
point of departure	31	262.54(c)				
item 16 of manifest	31	262.54(d)				
obtaining manifest acknowledgment of receipt by consignee	31	262.54(e)				
		262.54(g)				
		262.54(g)(1)				
		262.54(g)(2)				
procedures when unable to deliver	31	262.54(g)(3)				
copy of Consent	31	262.54(h)				
manifest copy to Customs official at border	31	262.54(i)				

EXCEPTION REPORTS

exporter requirements for exception reports	31	262.55				
manifest within 45 days	31	262.55(a)				

SPA 9

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
confirmation within 90 days	31	262.55(b)				
returned waste	31	262.55(c)				

ANNUAL REPORTS

reporting require- ments; contents of report office filed with	31	262.56(a)				
		262.56(a)(1)				
		262.56(a)(2)				
		262.56(a)(3)				
		262.56(a)(4)				
		262.56(a)(5)				
		262.56(a)(5)(i)&(ii)				
		262.56(a)(6)				
	31	262.56(b)				

RECORDKEEPING

length to keep records retention period extension	31	262.57(a)				
		262.57(a)(1)				
		262.57(a)(2)				
		262.57(a)(3)				
		262.57(a)(4)				
	31	262.57(b)				

INTERNATIONAL AGREEMENTS

reserved	31	262.58				
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**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART F - IMPORTS OF HAZARDOUS WASTE

IMPORTS OF HAZARDOUS WASTE

applicability	31	262.60(a)				
manifest requirements; exceptions	31	262.60(b)				
		262.60(b)(1)				
		262.60(b)(2)				
		262.60(c)				

SUBPART G - FARMERS

6 FARMERS

provisions for variance	31,†39	262.70				
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APPENDIX TO PART 262

UNIFORM HAZARDOUS WASTE MANIFEST AND INSTRUCTIONS (EPA FORMS 8700-22 AND 8700-22A AND THEIR INSTRUCTIONS)

uniform hazardous waste manifest form; instructions	*5, 17 D, 31,32,58	Appendix				
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- ¹ This section appeared in Base Program Checklist II but was completely reorganized and reworded by Revision Checklist 5.
- ² Note that 262.34(d)(1)-(4) was originally introduced by Revision Checklist 23. Revision Checklist 28 added a new 262.34(d)(3) and redesignated 262.34(d)(3) and (4) as 262.34(d)(4) and (5).
- ³ This requirement appeared in the original program addressed by Base Program Checklist II as 262.41(a)(6).
- ⁴ This subpart appeared in the original program addressed by Base Program Checklist II (amended by Revision Checklist 5 and 17 R) as "Special Conditions". However Revision Checklist 31 (51 FR 28664, August 8, 1986) completely changed this subpart renaming it "Exports of Hazardous Waste".

SPA 9

**CONSOLIDATED CHECKLIST C3: Standards Applicable
to Generators of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- 5 Special Notes: (1) States cannot assume the authority to receive "Notifications of Intent to Export." In addition, States are not authorized to transmit such information to foreign countries through the Department of State or to transmit "Acknowledgements of Consent" (see 50 FR 28678 (August 8, 1986) and the instructions to Appendix J of the Revised SAM for further clarification). (2) Hazardous waste, identified or listed by the State as part of its authorized program which are broader in scope (not in the Federal universe), will not be subject to the export regulations.
- 6 Note that 262.51 was incorrectly changed to "Farmers" at 52 FR 25760 (July 8, 1987); however, this error was caught when the Revision Checklist (39) for this rule was developed and it was not incorporated into this checklist. This section was subsequently moved back to its correct place and the appropriate 262.51 put back into the CFR by the final rule (53 FR 27164, July 19, 1988) addressed by Revision Checklist 48.

SPA 9

CONSOLIDATED CHECKLIST C4

Standards Applicable to Transporters of Hazardous Waste
40 CFR Part 263 as of June 30, 1990

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

SCOPE

transportation standards	III	263.10(a)				
on-site transportation excluded	III	263.10(b)				
compliance with 262 required if transporter:	III	263.10(c)				
transports waste into U.S. from abroad	III	263.10(c)(1)				
mixes wastes of different DOT shipping descriptions	III	263.10(c)(2)				

EPA IDENTIFICATION NUMBER

EPA identification number required	III	263.11(a)				
application for EPA ID number	III	263.11(b)				

TRANSFER FACILITY REQUIREMENTS

exception for storage of 10 days or less	III,34	263.12				
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SUBPART B - COMPLIANCE WITH THE MANIFEST SYSTEM AND RECORDKEEPING

THE MANIFEST SYSTEM

manifest required; conditions for accepting exported waste	III,31	263.20(a)				
signature and date; copy to generator	III	263.20(b)				
manifest accompanies waste; EPA Acknowledgment of Consent also accompanies exports	III,31	263.20(c)				

**CONSOLIDATED CHECKLIST C4: Standards Applicable
to Transporters of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
procedures when delivering waste to another transporter or to the designated facility	III	263.20(d)				
		263.20(d)(1)				
		263.20(d)(2)				
		263.20(d)(3)				
water transporters, conditions under which 263.20(c), (d) & (f) do not apply	III	263.20(e)				
delivered by water	III	263.20(e)(1)				
shipping paper; EPA Acknowledgment of Consent for exports	III,31	263.20(e)(2)				
signature of owner	III	263.20(e)(3)				
signature of transporter	III	263.20(e)(4)				
copies retained	III	263.20(e)(5)				
rail shipments; con- ditions under which 263.201(c), (d) & (e) do not apply	III	263.20(f)				
duties of the initial rail transporter	III	263.20(f)(1)				
		263.20(f)(1)(i)				
		263.20(f)(1)(ii)				
		263.20(f)(1)(iii)				
		263.20(f)(1)(iii)(A)-(C)				
		263.20(f)(1)(iv)				
shipping paper; EPA Acknowledgment of Consent for exports	III,31	263.20(f)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C4: Standards Applicable
to Transporters of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
procedures when waste is delivered to designated facility	III	263.20(f)(3)				
		263.20(f)(3)(i)				
		263.20(f)(3)(ii)				
procedures when delivering to non-rail transporter	III	263.20(f)(4)				
		263.20(f)(4)(i)				
		263.20(f)(4)(ii)				
acceptance from a rail transporter by a non-rail transporter	III	263.20(f)(5)				
procedures when transporting waste out of U.S.	III	263.20(g)				
date waste left U.S.	III	263.20(g)(1)				
signature and copy retention	III	263.20(g)(2)				
return signed copy to generator	III,31	263.20(g)(3)				
copy to U.S. Customs official at departure point	31	263.20(g)(4)				
transporters of waste from a generator of 100 kg/mo to 1000 kg/mo not subject to 263.20 or 263.22 provided:	23	263.20(h)				
reclamation agreement provided for in 262.20(e)	23	263.20(h)(1)				

**CONSOLIDATED CHECKLIST C4: Standards Applicable
to Transporters of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what the transporter must record	23	263.20(h)(2)				
		263.20(h)(2)(i)				
		263.20(h)(2)(ii)				
		263.20(h)(2)(iii)				
		263.20(h)(2)(iv)				
handling of records	23	263.20(h)(3)				
3-year record retention	23	263.20(h)(4)				

COMPLIANCE WITH THE MANIFEST

delivery of entire quantity to:	III	263.21(a)				
designated facility	III	263.21(a)(1)				
alternate designated facility	III	263.21(a)(2)				
next designated transporter	III	263.21(a)(3)				
designated place outside the U.S.	III	263.21(a)(4)				
requirements if unable to deliver waste	III	263.21(b)				

RECORDKEEPING

3-year record retention	III	263.22(a)				
water transporter, 3 year record retention of shipping paper	III	263.22(b)				
for shipments by rail:	III	263.22(c)				
initial transporter retains manifest and shipping paper for 3 years	III	263.22(c)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C4: Standards Applicable
to Transporters of Hazardous Waste (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
final transporter retains manifest or shipping paper for 3 years	III	263.22(c)(ii)				
transporter of waste out of U.S. retains manifest for 3 years	III	263.22(d)				
automatic extension of retention periods	III	263.22(e)				

SUBPART C - HAZARDOUS WASTE DISCHARGES

IMMEDIATE ACTION

transporter action in event of discharge	III	263.30(a)				
removal/authorization by Official	III	263.30(b)				
duties of transporter:	III	263.30(c)				
notice to National Response Center	III	263.30(c)(1)				
written report to DOT	III	263.30(c)(2)				
water transporter must give same notice as required by 33 CFR 153.203 for oil and hazardous substances	III	263.30(d)				

DISCHARGE CLEAN UP

transporter must clean up hazardous waste discharge	III	263.31				
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SPA 9

CONSOLIDATED CHECKLIST C5

Standards for Owners and Operators of Hazardous Waste
Treatment, Storage, and Disposal Facilities
40 CFR Part 264 as of June 30, 1990

Note: Several sections of Part 264, Subpart H, were revised by the September 1, 1988 final rule (53 FR 33938, i.e., reserved Revision Checklist 51), entitled "Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Liability Coverage." Pursuant to the settlement agreement resulting from litigation surrounding this rule, EPA will be amending this rule in the future. States should not incorporate changes made by the September 1, 1988 rule until the amendments are promulgated, even though the changes were incorporated in the 1989 and the 1990 Code of Federal Regulations (CFR) when they were published by the Office of the Federal Register. Paragraphs that were changed, removed, or renumbered by the September 1, 1988 rule are marked with an "V" in this consolidated checklist. Because the September 1988 rule is the only rule since July 1, 1988 to affect these specific paragraphs, States may use the text of the 1988 CFR as guidance in modifying such paragraphs or in assessing their equivalency with Federal code. In addition to the changes to existing paragraphs, the September 1, 1988 rule inserted the following new paragraphs: 264.141(h), 264.147(a)(4)-(7), 264.147(b)(5)-(7), 264.147(h)-(j), and 264.151(k)-(m). These paragraphs will not be added to Consolidated Checklist C5 until the amendments to the rule are published. The following paragraphs were revised by Revision Checklist 51: 264.147(a); 264.147(a)(2)&(3); 264.147(b), (b)(2), (b)(3) and (b)(4); 264.147(g), (g)(1), and (g)(2); and 264.151(b)&(g)-(j). Revision Checklist 51 removed and reserved 264.147(g)(1)(i) and redesignated 264.147(h) as 264.147(k).

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

purpose	*	264.1(a)				
applies to all owners and operators of TSDFs with exceptions	IV A	264.1(b)				
ocean disposal/permit by rule	IV A	264.1(c)				
UIC/permit by rule	IV A	264.1(d)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
POTW/permit by rule	IV A	264.1(e)				
post-authorization rulemaking	IV A	264.1(f)				
		264.1(f)(1)				
		264.1(f)(2)				
		264.1(f)(3)				
		264.1(f)(3)				
exceptions	IV A	264.1(g)				
wastes excluded by 261.5	IV A	264.1(g)(1)				
recyclable materials generator	IV A,13	264.1(g)(2)				
accumulating waste in compliance with 262.34	IV A	264.1(g)(3)				
farmers	IV A,48	264.1(g)(4)				
enclosed treatment facilities as defined in 260	IV A	264.1(g)(5)				
elementary neutrali- zation units as defined in 260	IV A	264.1(g)(6)				
reserved		264.1(g)(7)				
person involved in treatment or containment activities during an immediate response; list of situations	IV A	264.1(g)(8)(i)				
		264.1(g)(8)(i)(A)				
		264.1(g)(8)(i)(B)				
		264.1(g)(8)(i)(C)				
		264.1(g)(8)(ii)				
		264.1(g)(8)(iii)				
		264.1(g)(8)(iii)				
transfer facilities	IV A	264.1(g)(9)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
addition of absorbent materials applies to all facilities that treat, store, or dispose of hazardous waste referred to in 268	IV A 34	264.1(g)(10) 264.1(h)				
reserved		264.2				

RELATIONSHIP TO INTERIM STATUS STANDARDS

compliance with 265 until final permit issued	*	264.3				
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IMMINENT HAZARD ACTION

enforcement actions under RCRA 7003	*	264.4				
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SUBPART B - GENERAL FACILITY STANDARDS**APPLICABILITY**

subpart applies to hazardous waste facilities except as provided in 264.1	*	264.10(a)				
264.18(b) applies only to facilities regulated under Subparts I-O and X	*,45	264.10(b)				

IDENTIFICATION NUMBER

EPA identification number required	IV A	264.11				
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REQUIRED NOTICES

hazardous waste from foreign source	IV A	264.12(a)				
hazardous waste from off-site source	IV A	264.12(b)				
requirements under ownership transfer	IV A	264.12(c)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
GENERAL WASTE ANALYSIS						
analysis required prior to handling any hazardous waste or 264.113(d) non- hazardous waste	IV A,34, †64	264.13(a)(1)				
data to be included in the analysis	IV A,78	264.13(a)(2)				
when analysis must be repeated	IV A	264.13(a)(3)				
	IV A,†64	264.13(a)(3)(i)				
	IV A	264.13(a)(3)(ii)				
inspect each shipment	IV A	264.13(a)(4)				
develop and follow written waste analysis plan:	IV A	264.13(b)				
parameters which will be analyzed	IV A,†64	264.13(b)(1)				
test methods	IV A	264.13(b)(2)				
		264.13(b)(3)				
		264.13(b)(3)(i)				
sampling method	IV A	264.13(b)(3)(ii)				
frequency of reviewing or repeating analysis	IV A	264.13(b)(4)				
analyses from generators	IV A	264.13(b)(5)				
meeting of additional waste analysis requirements	IV A, 16,34,79	264.13(b)(6)				
for surface impound- ments exempted from land disposal restrictions under 268.4(a):	34	264.13(b)(7)				
sampling impound- ment contents	34	264.13(b)(7)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
analysis procedures	34	264.13(b)(7)(ii)				
annual removal of residues; criteria:	34,39, 50	264.13(b)(7)(iii)				
do not meet 268, Subpart D, treatment standards	50	264.13(b)(7)(iii)(A)				
where no treatment standards established	50	264.13(b)(7)(iii)(B)				
		264.13(b)(7)(iii)(B) (1)				
		264.13(b)(7)(iii)(B) (2)				
analysis plan for off-site facilities	IV A	264.13(c)				
procedures for identifying each waste moved at facility	IV A	264.13(c)(1)				
sampling method used to obtain a representative sample	IV A	264.13(c)(2)				

SECURITY

prevent unknowing entry and minimize unauthorized entry unless can demonstrate 264.14(a)(1) & (2) if demonstration not successful:	IV A	264.14(a)				
		264.14(a)(1)				
		264.14(a)(2)				
24-hour surveillance	IV A	264.14(b)(1)				
barrier around active portion and control of entry	IV A	264.14(b)(2)(i)				
		264.14(b)(2)(ii)				
sign	IV A	264.14(c)				

GENERAL INSPECTION REQUIREMENTS

what must be inspected for	IV A	264.15(a)				
develop and follow written schedule	IV A	264.15(b)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
keep schedule at facility	IV A	264.15(b)(2)				
identify items that are to be looked for	IV A	264.15(b)(3)				
frequency of inspection	IV A, 28,45,79	264.15(b)(4)				
remedy of problems inspection uncovers	IV A	264.15(c)				
recordkeeping	IV A	264.15(d)				

PERSONNEL TRAINING

personnel complete training to ensure compliance with 264	IV A	264.16(a)(1)				
director of training program	IV A	264.16(a)(2)				
must be designed to respond effectively to emergencies	IV A	264.16(a)(3)				
		264.16(a)(3)(i)				
		264.16(a)(3)(ii)				
		264.16(a)(3)(iii)				
		264.16(a)(3)(iv)				
		264.16(a)(3)(v)				
		264.16(a)(3)(vi)				
timing of instruction	IV A	264.16(b)				
annual review of initial training required at 264.16(a)	IV A	264.16(c)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		264.16(d)				
		264.16(d)(1)				
		264.16(d)(2)				
		264.16(d)(3)				
recordkeeping	IV A	264.16(d)(4)				
how long training records must be kept		IV A	264.16(e)			

GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

precautions to prevent waste ignition or reaction	IV A	264.17(a)				
		264.17(b)				
		264.17(b)(1)				
		264.17(b)(2)				
		264.17(b)(3)				
precautions to prevent specified reactions	IV A	264.17(b)(4)				
documentation of compliance with 264.17(a) & (b)	IV A	264.17(b)(5)				
		264.17(c)				

LOCATION STANDARDS

seismic considerations:	IV A	264.18(a)				
distance to faults	IV A	264.18(a)(1)				
definitions:	IV A	264.18(a)(2)				
"fault"	IV A	264.18(a)(2)(i)				
"displacement"	IV A	264.18(a)(2)(ii)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"Holocene"	IV A	264.18(a)(2)(iii)				
floodplains:	IV A	264.18(b)				
if located in 100 year floodplain, special construction, unless:	IV A	264.18(b)(1)				
removal procedures in place	IV A	264.18(b)(1)(i)				
washout would not be hazardous considering specific factors	IV A,45	264.18(b)(1)(ii)				
		264.18(b)(1)(ii)(A)				
		264.18(b)(1)(ii)(B)				
		264.18(b)(1)(ii)(C)				
	IV A	264.18(b)(1)(ii)(D)				
definitions:	IV A	264.18(b)(2)				
"100-year floodplain"	IV A	264.18(b)(2)(i)				
"washout"	IV A	264.18(b)(2)(ii)				
"100-year flood"	IV A	264.18(b)(2)(iii)				
prohibition of waste in salt domes, salt bed formations, underground mines, and caves	17 E	264.18(c)				

SUBPART C - PREPAREDNESS AND PREVENTION

APPLICABILITY

all HW facilities,
except as 264.1
provides

*

264.30

DESIGN AND OPERATION OF FACILITY

requirements regarding
design and operation

IV A

264.31

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
REQUIRED EQUIPMENT						
what a facility must be equipped with	*	264.32				
internal communica- tions or alarm	IV A	264.32(a)				
telephone or equivalent	IV A	264.32(b)				
fire extinguisher, fire control equipment, spill control equip- ment, and decon- tamination equipment	IV A	264.32(c)				
water of adequate volume and pressure	IV A	264.32(d)				
TESTING AND MAINTENANCE OF EQUIPMENT						
what equipment must be tested and maintained	IV A	264.33				
ACCESS TO COMMUNICATIONS OR ALARM SYSTEM						
handling hazardous waste--what equipment personnel must have immediate access to	IV A	264.34(a)				
what equipment must be immediately available when one employee only	IV A	264.34(b)				
REQUIRED AISLE SPACE						
determination of space between aisles	IV A	264.35				
reserved		264.36				

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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
ARRANGEMENTS WITH LOCAL AUTHORITIES						
specific arrangements which must be made	IV A	264.37(a)				
		264.37(a)(1)				
		264.37(a)(2)				
		264.37(a)(3)				
		264.37(a)(4)				
document refusals to enter into arrangement in operating record	IV A	264.37(b)				

SUBPART D - CONTINGENCY PLAN AND EMERGENCY PROCEDURES

APPLICABILITY

applies to all HW facilities, except as 264.1 provides	*	264.50				
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PURPOSE AND IMPLEMENTATION OF CONTINGENCY PLAN

contingency plan required; purpose	IV A	264.51(a)				
when to implement plan	IV A	264.51(b)				

CONTENT OF CONTINGENCY PLAN

describes actions to take when emergency	IV A	264.52(a)				
relationship to SPCC or other plans	IV A	264.52(b)				
arrangements with local police, fire department, etc.	IV A	264.52(c)				
list names and addresses; keep up to date; listed in order to assume responsibility as alternates	IV A	264.52(d)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
list of emergency equipment at facility	IV A	264.52(e)				
evacuation plan	IV A	264.52(f)				

COPIES OF CONTINGENCY PLAN

copies of plan and all revisions must be:	*	264.53				
maintained at facility	IV A	264.53(a)				
submitted to local police, fire department, hospitals, etc.	IV A	264.53(b)				

AMENDMENT OF CONTINGENCY PLAN

when plan must be reviewed, and if necessary, amended:	*	264.54				
facility permit revision	IV A	264.54(a)				
plan fails in an emergency	IV A	264.54(b)				
facility change	IV A	264.54(c)				
list of emergency coordinators changes	IV A	264.54(d)				
1 list of equipment changes	IV A, †54	264.54(e)				

EMERGENCY COORDINATOR

duties	IV A	264.55				
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EMERGENCY PROCEDURES

procedures for imminent or actual emergency	IV A	264.56(a)				
		264.56(a)(1)				
		264.56(a)(2)				
release, fire, explosion	IV A	264.56(b)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
hazard assessment	IV A	264.56(c)				
report of emergency coordinator's findings	IV A	264.56(d)				
notify local authorities	IV A	264.56(d)(1)				
report to on-scene coordinator or Nation- al Response Center coordinator; what the report must include measures during emergency	IV A	264.56(d)(2)				
		264.56(d)(2)(i)				
		264.56(d)(2)(ii)				
		264.56(d)(2)(iii)				
		264.56(d)(2)(iv)				
		264.56(d)(2)(v)				
		264.56(d)(2)(vi)				
procedures if facility stops operation	IV A	264.56(e)				
treatment, storage, or disposal of material resulting from emergency	IV A	264.56(f)				
procedures after emergency	IV A	264.56(g)				
		264.56(h)				
		264.56(h)(1)				
notifications prior to resuming operations	IV A	264.56(h)(2)				
operating record information; written report to Regional Administrator	IV A	264.56(i)				
	IV A	264.56(j)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what the report to Regional Administrator must include	IV A	264.56(i)(1)				
		264.56(i)(2)				
		264.56(i)(3)				
		264.56(i)(4)				
		264.56(i)(5)				
		264.56(i)(6)				
		264.56(i)(7)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

APPLICABILITY

subpart applies to both on- and off-site facilities; exceptions	IV A, 17 D	264.70				
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USE OF MANIFEST SYSTEM

duties of owner or operator when receiving waste accompanied by manifest	IV A	264.71(a)				
		264.71(a)(1)				
		264.71(a)(2)				
		264.71(a)(3)				
		264.71(a)(4)				
		264.71(a)(5)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
duties of owner or operator when receiving waste accompanied by shipping paper facility that initiates shipment must comply with 262	IV A	264.71(b)				
		264.71(b)(1)				
		264.71(b)(2)				
		264.71(b)(3)				
		264.71(b)(4)				
		264.71(b)(5)				
	*	264.71(c)				

MANIFEST DISCREPANCIES

definition of manifest discrepancies	IV A	264.72(a)				
		264.72(a)(1)				
		264.72(a)(2)				
actions on discovering a discrepancy	IV A	264.72(b)				

OPERATING RECORD

written operating record at facility	IV A	264.73(a)				
information which must be recorded:	IV A	264.73(b)				
description and quantity of waste; dates of treatment, storage, and disposal	IV A	264.73(b)(1)				
location of waste and quantity at each location	IV A	264.73(b)(2)				
records and results of waste analyses	IV A, 16,34,79	264.73(b)(3)				
reports of incidents which require implementing contingency plan	IV A	264.73(b)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
records and results of inspections	IV A	264.73(b)(5)				
ground-water monitoring, testing, data, and corrective action	IV A, 28,45,79	264.73(b)(6)				
notices to generators	IV A	264.73(b)(7)				
closure and post-closure cost estimates	IV A	264.73(b)(8)				
annual certification regarding waste minimization	17 D	264.73(b)(9)				
records of hazardous waste placed in land disposal units under extension, petition, or certification; 268.7(a) notice by generator	34,50	264.73(b)(10)				
off-site treatment facility requirements	34,50	264.73(b)(11)				
on-site treatment facility requirements	34,50	264.73(b)(12)				
off-site land disposal facility requirements	34,50	264.73(b)(13)				
on-site land disposal facility requirements	34,50	264.73(b)(14)				
off-site storage facility requirements	50	264.73(b)(15)				
on-site storage facility requirements	50	264.73(b)(16)				

AVAILABILITY, RETENTION, AND DISPOSITION OF RECORDS

all records available for inspection	IV A	264.74(a)				
retention period extension under unresolved enforcement action	IV A	264.74(b)				
copy of records to Regional Administrator and local authority at closure	IV A	264.74(c)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

BIENNIAL REPORT

when to submit, what form, and what must be reported:	IV A,†1	264.75				
EPA identification number	IV A	264.75(a)				
calendar year covered by report	IV A	264.75(b)				
EPA I.D.'s of generators; name and address for foreign generators	IV A	264.75(c)				
description and quantity of wastes received	IV A	264.75(d)				
methods of handling	IV A	264.75(e)				
reserved	IV A	264.75(f)				
closure cost estimate; post-closure cost estimate	IV A	264.75(g)				
volume and toxicity reduction efforts	30	264.75(h)				
volume and toxicity reduction achieved	30	264.75(i)				
2 signed certification	IV A,30	264.75(j)				

UNMANIFESTED WASTE REPORT

when an unmanifested report is required; form which must be used; information it must include	IV A,1	264.76				
EPA identification number	IV A	264.76(a)				
date waste received	IV A	264.76(b)				
generator and transporter EPA identification numbers; address and name	IV A	264.76(c)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
description and quantity of unmanifested waste	IV A	264.76(d)				
handling method	IV A	264.76(e)				
signed certification	IV A	264.76(f)				
explanation of why unmanifested	IV A	264.76(g)				

ADDITIONAL REPORTS

what else must be reported to Regional Administrator	*,†1	264.77				
releases, fires, explosions	IV A	264.77(a)				
3 facility closures	IV A	264.77(b)				
as otherwise required by Subparts F, K through N, AA and BB	*,79	264.77(c)				

SUBPART F - RELEASES FROM SOLID WASTE MANAGEMENT UNITS**APPLICABILITY**

applies to all HW facilities; satisfy requirements of 264.90(a)(2)	IV A, 17 L	264.90(a)(1)				
what each solid waste management unit must comply with	IV A, 17 L	264.90(a)(2)				
exemptions from Subpart F's requirements:	IV A, †17 I	264.90(b)				
exempted by 264.1	IV A, †17 I	264.90(b)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
4 operates a unit which Regional Admin- istrator finds meets certain requirements	IV A, †17 I	264.90(b)(2)				
		264.90(b)(2)(i)				
		264.90(b)(2)(ii)				
		264.90(b)(2)(iii)				
		264.90(b)(2)(iv)				
		264.90(b)(2)(v)				
		264.90(b)(2)(vi)				
		264.90(b)(2)(vii)				
HW levels not statistically above background levels; unsaturated zone monitoring meets 264.278; only for post-closure care period	IV A, †17 I	264.90(b)(3)				
no potential for migration; certifi- cation by qualified geologist or geotechnical engineer	IV A, †17 I	264.90(b)(4)				
5 designs and operates pile in compliance with 264.250(c)	IV A, †17 I	264.90(b)(5)				
requirements under Subpart F apply during active life; after closure:	IV A	264.90(c)				
requirements not apply if all wastes, etc. removed or decontaminated	IV A	264.90(c)(1)				
requirements apply during post-closure if detection monitoring	IV A	264.90(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements apply during compliance period if compliance monitoring or corrective action	IV A	264.90(c)(3)				
Subpart F require- ments apply to miscellaneous units when necessary to comply with 264.601 through 264.603	45	264.90(d)				

REQUIRED PROGRAMS

monitoring and response program	IV A	264.91(a)				
when hazardous constituents detected at compliance point; compliance monitoring; "detected" defined	IV A, 55	264.91(a)(1)				
corrective action program when ground- water protection standard is exceeded; "exceeded" defined	IV A, 55	264.91(a)(2)				
corrective action program when hazardous constituents exceed concentration limits	IV A	264.91(a)(3)				
in other cases detection monitoring instituted	IV A	264.91(a)(4)				
specific elements of monitoring and response program specified in permit	IV A	264.91(b)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
GROUND-WATER PROTECTION STANDARD						
owner must comply with permit conditions designed to ensure that 264.93 hazardous constituents entering ground water not exceed 264.94 concentration limits; ground-water protection standard	IV A,55	264.92				
HAZARDOUS CONSTITUENTS						
hazardous constituents specified in permit to which 264.92 ground-water protection standard applies; hazardous constituents are identified in 261, Appendix VIII and have been detected in uppermost aquifer	IV A	264.93(a)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		264.93(b)				
		264.93(b)(1)				
		264.93(b)(1)(i)				
		264.93(b)(1)(ii)				
		264.93(b)(1)(iii)				
		264.93(b)(1)(iv)				
		264.93(b)(1)(v)				
		264.93(b)(1)(vi)				
		264.93(b)(1)(vii)				
		264.93(b)(1)(viii)				
		264.93(b)(1)(ix)				
		264.93(b)(2)				
		264.93(b)(2)(i)				
		264.93(b)(2)(ii)				
		264.93(b)(2)(iii)				
		264.93(b)(2)(iv)				
		264.93(b)(2)(v)				
		264.93(b)(2)(vi)				
		264.93(b)(2)(vii)				
		264.93(b)(2)(viii)				
		264.93(b)(2)(ix)				
exclusion of Appendix VIII constituents from permit; what Regional Administrator must consider before granting an exemption	IV A	264.93(b)(2)(x)				

331

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination regarding use of ground water around facility; ID of drinking water sources and exempted aquifers under 144.8	IV A	264.93(c)				

CONCENTRATION LIMITS

Regional Administrator will specify ground-water concentration limits for 264.93 hazardous constituents	IV A	264.94(a)				
not exceed background	IV A	264.94(a)(1)				
not exceed Table 1 constituents	IV A	264.94(a)(2)				
not exceed an alternate limit set by Regional Administrator	IV A	264.94(a)(3)				
factors Regional Administrator will consider for setting alternate limits	IV A	264.94(b)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
potential adverse effects on ground-water quality considering specific factors	IV A	264.94(b)(1)				
		264.94(b)(1)(i)				
		264.94(b)(1)(ii)				
		264.94(b)(1)(iii)				
		264.94(b)(1)(iv)				
		264.94(b)(1)(v)				
		264.94(b)(1)(vi)				
		264.94(b)(1)(vii)				
		264.94(b)(1)(viii)				
		264.94(b)(1)(ix)				
potential adverse effects on hydraulically connected surface-water quality considering specific factors	IV A	264.94(b)(2)				
		264.94(b)(2)(i)				
		264.94(b)(2)(ii)				
		264.94(b)(2)(iii)				
		264.94(b)(2)(iv)				
		264.94(b)(2)(v)				
		264.94(b)(2)(vi)				
		264.94(b)(2)(vii)				
		264.94(b)(2)(viii)				
		264.94(b)(2)(ix)				
		264.94(b)(2)(x)				

505

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
in determining use of ground water around facility, Regional Administrator must consider any identification of underground sources of drinking water and exempted aquifers under 144.8	IV A	264.94(c)				

POINT OF COMPLIANCE

point of compliance specified in permit for 264.92 ground-water protection standard; point of compliance defined	IV A	264.95(a)				
		264.95(b)				
		264.95(b)(1)				
definition of waste management area	IV A	264.95(b)(2)				

COMPLIANCE PERIOD

compliance period specified in permit for 264.92 ground-water protection standard; definition of compliance period	IV A	264.96(a)				
when compliance period begins	IV A	264.96(b)				
end of period; extension until meet ground-water protection standard of 264.99	IV A	264.96(c)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

GENERAL GROUND-WATER MONITORING REQUIREMENTS

owner or operator must comply with the following ground-water monitoring program requirements:	*	264.97				
sufficient number of wells installed at appropriate locations and depths that:	IV A	264.97(a)				
represent background quality	IV A,55	264.97(a)(1)				
6 sample wells not hydraulically upgradient where specific conditions are met	IV A,55	264.97(a)(1)(i)				
		264.97(a)(1)(i)(A)				
		264.97(a)(1)(i)(B)				
represent ground-water quality passing point of compliance	IV A	264.97(a)(2)				
contamination detection when migration to uppermost aquifer	55	264.97(a)(3)				
separate ground-water monitoring units not needed for multiple units if meet certain requirements	IV A	264.97(b)				
well casing requirements	IV A	264.97(c)				
consistent sampling and analysis procedures that are reliable	IV A	264.97(d)				
		264.97(d)(1)				
		264.97(d)(2)				
		264.97(d)(3)				
		264.97(d)(4)				
appropriate and accurate sampling and analysis methods	IV A	264.97(e)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
ground-water surface elevation determination for each sample	IV A	264.97(f)				
detection monitoring, sampling procedures; number and kinds of samples, sample size	IV A,55	264.97(g)				
sequencing of at least four samples; requirements to determine interval between	IV A,55	264.97(g)(1)				
alternate sampling procedure	IV A,55	264.97(g)(2)				
		264.97(g)(3)				
		264.97(g)(3)(i)				
6 removed	IV A,55	264.97(g)(3)(ii)				
removed	IV A,55	264.97(g)(4)				
specify statistical evaluation methods for ground-water data and specify in permit; requirements for use of listed methods	IV A,55	264.97(h)				
parametric ANOVA followed by multiple comparisons procedures	IV A,55	264.97(h)(1)				
ANOVA based on ranks followed by multiple comparisons procedures	IV A,55	264.97(h)(2)				
tolerance or prediction interval procedure	55	264.97(h)(3)				
control chart approach	55	264.97(h)(4)				
another statistical method approved by Regional Administrator	55	264.97(h)(5)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance standards for statistical methods chosen under 264.97(h):	55	264.97(i)				
appropriate for distribution of chemical parameters or hazardous constituents; transformed or distribution-free test	55	264.97(i)(1)				
individual well comparison - 0.01 Type I error; multiple comparisons - 0.05 Type I error, but maintain 0.01 Type I error for individual wells	55	264.97(i)(2)				
for control chart approach, what must be approved by Regional Administrator	55	264.97(i)(3)				
for tolerance or prediction interval, what must be approved by Regional Administrator	55	264.97(i)(4)				
account for data below detection limit and requirements	55	264.97(i)(5)				
procedures to correct or control for seasonal and spatial variability	55	264.97(i)(6)				
maintenance of ground-water monitoring data in facility operating record; when data must be reviewed	55	264.97(j)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

DETECTION MONITORING PROGRAM

owner's responsibilities:	*	264.98				
owner or operator must monitor for indicator parameters; Regional Administrator will specify parameters in permit	IV A	264.98(a)				
		264.98(a)(1)				
		264.98(a)(2)				
		264.98(a)(3)				
		264.98(a)(4)				
owner or operator must have ground-water monitoring system at compliance point and comply with 264.97(a)(2), (b) & (c)	IV A	264.98(b)				
ground-water monitoring program for each chemical parameter and hazardous constituent; record of ground-water analytical data	IV A,55	264.98(c)				
Regional Administrator specifies frequency of samples and tests; four well samples per well semi-annually	IV A,55	264.98(d)				
owner must determine ground-water flow rate and direction at least annually	IV A	264.98(e)				
7 determine if statistically significant evidence of contamination	IV A,55	264.98(f)				
7 methods which can be used	IV A,55	264.98(f)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
7 determine evidence of contamination at each monitoring well at compliance point; time period determined and specified in permit by Regional Administrator	IV A,55	264.98(f)(2)				
8 what owner or operator must do if statistically significant evidence of contamination	IV A,55	264.98(g)				
8 notification of Regional Administrator	IV A,55	264.98(g)(1)				
8 immediate determination if 264, Appendix IX constituents are in ground water	IV A,55	264.98(g)(2)				
8 for constituents found, resample in one month; if confirmed, form basis of compliance monitoring; no resample - initial analysis is basis	IV A,55	264.98(g)(3)				
application for permit modification	IV A,55	264.98(g)(4)				
8,9 identification of Appendix IX constituent concentration	IV A,55	264.98(g)(4)(i)				
8 proposed changes to ground-water monitoring system	IV A,55	264.98(g)(4)(ii)				
8 proposed additions or changes to monitoring frequency	IV A,55	264.98(g)(4)(iii)				
8 proposed concentration limit or notice of intent for alternate concentration limit	IV A,55	264.98(g)(4)(iv)				
8 what must be submitted within 180 days	IV A,55	264.98(g)(5)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
8 data to justify alternate concentra- tion limit	IV A,55	264.98(g)(5)(i)				
8 engineering feasibility plan for corrective action	IV A,55	264.98(g)(5)(ii)				
8 concentration of 264.98(g)(2) constituents does not exceed values of Table 1, 264.94	IV A,55	264.98(g)(5)(ii)(A)				
8 alternate concentration limit	IV A,55	264.98(g)(5)(ii)(B)				
demonstration that a source other than regulated unit caused contamination	55	264.98(g)(6)				
notify Regional Administrator of intent to submit demonstration	55	264.98(g)(6)(i)				
within 90 days, report demonstrating that another source caused contamination or there was an error in sampling, analysis or evaluation	55	264.98(g)(6)(ii)				
within 90 days, application for permit modification	55	264.98(g)(6)(iii)				
continue to monitor according to detection monitoring program	55	264.98(g)(6)(iv)				
10 what must be done if detection monitoring program no longer satisfies requirements	IV A, 40,55	264.98(h)				
removed	IV A,55	264.98(i)				
10 removed	IV A,55	264.98(j)				
removed	IV A,55	264.98(k)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
COMPLIANCE MONITORING PROGRAM						
owner or operator responsibilities:	*	264.99				
monitor ground water to determine if in compliance with 264.92; Regional Administrator specifies ground-water protection standard in the facility permit	IV A	264.99(a)				
		264.99(a)(1)				
		264.99(a)(2)				
		264.99(a)(3)				
		264.99(a)(4)				
		ground-water monitoring system at compliance point; what it must comply with	IV A	264.99(b)		
Regional Administrator specifies procedures and statistical methods	IV A,55	264.99(c)				
sampling program for each chemical parameter or hazardous constituent	IV A,55	264.99(c)(1)				
record of ground-water analytical data	IV A,55	264.99(c)(2)				
statistical evidence of increased contamination of any chemical parameter or hazardous constituent	IV A,55	264.99(d)				
method(s) to determine statistically significant evidence of increased contamination	55	264.99(d)(1)				
within reasonable time period, determine if statistically significant evidence of increased contamination at each monitoring well at compliance point	55	264.99(d)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determine flow rate and direction	IV A	264.99(e)				
Regional Administrator specification of sample and test frequencies; four samples per well semi-annually	IV A, 40,55	264.99(f)				
annual analysis at each well's com- pliance point for all 264, Appendix IX constituents; procedures regarding new constituents not in permit	IV A,55	264.99(g)				
11 actions when constituents exceeded 264.94 limits	IV A,55	264.99(h)				
		264.99(h)(1)				
		264.99(h)(2)				
		264.99(h)(2)(i)				
		264.99(h)(2)(ii)				
	IV A	264.99(h)(2)(ii)				
12 demonstration that increase due to other sources; what must be done	IV A,55	264.99(i)				
		264.99(i)(1)				
		264.99(i)(2)				
		264.99(i)(3)				
	IV A	264.99(i)(4)				
13 permit modification when compliance monitoring no longer satisfies 264.99	IV A,55	264.99(j)				
13 removed	IV A,55	264.99(k)				
removed	IV A,55	264.99(l)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
CORRECTIVE ACTION PROGRAM						
owner or operator responsibilities	*	264.100				
take corrective action to assure compliance with 264.92 standard; standards set in permit	IV A	264.100(a)				
list of hazardous constituents	IV A	264.100(a)(1)				
concentration limits	IV A	264.100(a)(2)				
compliance point	IV A	264.100(a)(3)				
compliance period	IV A	264.100(a)(4)				
implement corrective action program to prevent hazardous constituents from exceeding limits; specific measures set in permit	IV A	264.100(b)				
permit States time to begin corrective action; requirements in lieu of 264.99(h)(2)	IV A	264.100(c)				
ground-water monitoring program to demonstrate effectiveness of corrective action	IV A	264.100(d)				
corrective action to remove or treat in place hazardous constituents exceeding 264.94 limits	IV A, 44 B	264.100(e)				
compliance point, downgradient property boundary	44 B	264.100(e)(1)				
release beyond facility boundaries	44 B	264.100(e)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
14 corrective action measure must be completed within reasonable period	IV A, 44 B	264.100(e)(3)				
14 when corrective action can be terminated	IV A, 44 B	264.100(e)(4)				
period of corrective action	IV A	264.100(f)				
report in writing on effectiveness of corrective action; submit semiannually	IV A	264.100(g)				
permit modification if corrective action program no longer satisfies 264.100	IV A	264.100(h)				

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

if seeking permit, institute corrective action to protect health and environment from hazardous waste releases	17 L	264.101(a)				
corrective action specified in permit; schedule of compliance and financial responsibility	17 L	264.101(b)				
corrective action beyond facility boundaries	44 B	264.101(c)				

SUBPART G - CLOSURE AND POST-CLOSURE

APPLICABILITY

except as 264.1 provides otherwise:	*	264.110				
264.111 through 264.115 apply to all owners and operators of all hazardous waste management facilities	IV A, 24	264.110(a)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
264.116 through 264.120 apply to all owners and operators of:	IV A,24	264.110(b)				
all hazardous waste disposal facilities	IV A,24	264.110(b)(1)				
waste piles and surface impoundments from which wastes are removed at closure	IV A,24	264.110(b)(2)				
tank systems required under 264.197 to meet landfill requirements	28	264.110(b)(3)				

CLOSURE PERFORMANCE STANDARD

manner of closing	*	264.111				
minimizes further maintenance	IV A,24	264.111(a)				
controls, minimizes, or eliminates post-closure escape	IV A,24	264.111(b)				
complies with require- ments of Subpart G plus specific sections of 264	24,45	264.111(c)				

CLOSURE PLAN; AMENDMENT OF PLAN

written plan required; contingent closure plans; submitted with permit; condition of permit	IV A, †24	264.112(a)(1)				
what the approved closure plan must be consistent with; furnished on request	IV A, †24,45	264.112(a)(2)				
removed	IV A, †24	264.112(a)(3)				
removed	IV A, †24	264.112(a)(4)				
content of plan	IV A,24	264.112(b)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
how each HW management unit will be closed	24	264.112(b)(1)				
final closure/ maximum extent of facility not closed during active life	24	264.112(b)(2)				
maximum inventory of hazardous waste ever on site over active life	24	264.112(b)(3)				
description of steps needed to remove or decontaminate all residues/equipment	24	264.112(b)(4)				
other activities to assure closure	24	264.112(b)(5)				
schedule for closure for each unit; what schedule must include	24	264.112(b)(6)				
estimate year of final closure for facilities using trust funds for financial assurance	†24	264.112(b)(7)				
amendment of plan	IV A, 24,†54	264.112(c)				
written request prior to notification of partial or final closure	24,†54	264.112(c)(1)				
required written request when:	24,†54	264.112(c)(2)				
changes affect closure plan	24	264.112(c)(2)(i)				
change in expected year of closure	24	264.112(c)(2)(ii)				
unexpected events	24	264.112(c)(2)(iii)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
submit written request 60 days prior to change; 30 days after unexpected event; surface impoundment and waste piles special requirements	24	264.112(c)(3)				
Regional Administrator may request modification; procedures	24	264.112(c)(4)				

†
15 Notification of Partial and Final Closure

16 procedures and requirements for notification of partial and final closure	24	264.112(d)(1)				
		264.112(d)(2)				
	24,†64	264.112(d)(2)(i)				
	†64	264.112(d)(2)(ii)				
	24	264.112(d)(3)				

remove wastes; decontaminate and dismantle equipment	†24	264.112(e)				
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CLOSURE; TIME ALLOWED FOR CLOSURE

treat, remove, or dispose of all hazardous wastes within 90 days of receipt of final volume of hazardous waste, or final volume of non- hazardous waste	IV A, 24,†64	264.113(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
modification and demonstration requirements for extending period	IV A,24	264.113(a)(1)(I)				
	IV A,24, †64	264.113(a)(1)(II)(A)				
	IV A, 24	264.113(a)(1)(II)(B)				
		264.113(a)(1)(II)(C)				
		264.113(a)(2)				
complete partial or final closure within 180 days of receipt final volume	IV A, 24,†64	264.113(b)				
modification and demonstration requirements for extending closure period	IV A,24	264.113(b)(1)(I)				
	IV A,24, †64	264.113(b)(1)(II)(A)				
	IV A, 24	264.113(b)(1)(II)(B)				
		264.113(b)(1)(II)(C)				
		264.113(b)(2)				
how 264.113(a)(1) & (b)(1) demonstrations must be made	24,†64	264.113(c)				
		264.113(c)(1)				
		264.113(c)(2)				

†
15 **NONHAZARDOUS WASTE RECEIPT CONDITIONS**

receive only non-hazardous wastes after the final receipt of hazardous wastes at specified units	64	264.113(d)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
permit modification requirements	64	264.113(d)(1)				
		264.113(d)(1)(i)				
		264.113(d)(1)(ii)				
		264.113(d)(1)(iii)				
		264.113(d)(1)(iv)				
		264.113(d)(1)(v)				
		264.113(d)(2)				
		264.113(d)(3)				
		264.113(d)(4)				

†
15 **ADDITIONAL REQUIREMENTS FOR SURFACE IMPOUNDMENTS**

special requirements for surface impound- ments not in compliance with liner and leachate collec- tion system requirements	64	264.113(e)				
plans which must be submitted with request to modify permit	64	264.113(e)(1)				
		264.113(e)(1)(i)				
		264.113(e)(1)(ii)				
remove all hazardous wastes	64	264.113(e)(2)				
removal within 90 days; extension	64	264.113(e)(3)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
actions to be taken if a release is detected	64	264.113(e)(4)				
		264.113(e)(4)(i)				
		264.113(e)(4)(ii)				
		264.113(e)(4)(iii)				
semi-annual reports	64	264.113(e)(5)				
conditions under which Regional Administrator may require closure	64	264.113(e)(6)				
actions to be taken if owner or operator fails to implement corrective measures or If no substantial progress pursuant to 264.113(e)(6) has been made	64	264.113(e)(7)				
		264.113(e)(7)(i)				
		264.113(e)(7)(ii)				
		264.113(e)(7)(iii)				
		264.113(e)(7)(iv)				
		264.113(e)(7)(v)				

DISPOSAL OR DECONTAMINATION OF EQUIPMENT, STRUCTURES AND SOILS

disposal and decon- tamination require- ments during closure; 262 generator requirements	IV A, 24,45, 52	264.114				
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CERTIFICATION OF CLOSURE

certification require- ments at closure; required signatures; documentation upon request	IV A,24	264.115				
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SURVEY PLAT

survey plat requirements	24	264.116				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

POST-CLOSURE CARE AND USE OF PROPERTY

continue care 30 years	IV A,24	264.117(a)(1)				
monitoring and reporting requirements	IV A, 24,45	264.117(a)(1)(i)				
maintenance and monitoring for waste containment systems	IV A, 24,45	264.117(a)(1)(ii)				
reduction or extension of time period for post-closure care by Regional Administrator	IV A,24	264.117(a)(2)				
		264.117(a)(2)(i)				
		264.117(a)(2)(ii)				
conditions for continuation of security requirements of 265.14	IV A,24	264.117(b)				
		264.117(b)(1)				
		264.117(b)(2)				
limits on post-closure use of property; exceptions	IV A,24	264.117(c)				
		264.117(c)(1)				
		264.117(c)(2)				
post-closure activities in accordance with plan as specified in 264.118	IV A,24	264.117(d)				

POST-CLOSURE PLAN; AMENDMENT OF PLAN

17 written post-closure plan; contingent plans; condition of RCRA permit	IV A,24	264.118(a)				
17 activities specified in post-closure plan and their frequency	IV A,24	264.118(b)				
17 monitoring activities and their frequency	IV A, 24,45	264.118(b)(1)				
17 maintenance activities and their frequency	IV A,24	264.118(b)(2)				

307

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
17 integrity of cap and final cover	IV A, 24,45	264.118(b)(2)(i)				
17 function of monitor- ing equipment	IV A, 24,45	264.118(b)(2)(ii)				
17 person or office to contact	IV A,24	264.118(b)(3)				
18 availability and retention of plan	IV A,24	264.118(c)				
19 written notification of or request for modification of plan	IV A, 24,+54	264.118(d)				
notification or request may be made at any time	24,+54	264.118(d)(1)				
must submit written request whenever:	24,+54	264.118(d)(2)				
changes that affect plan	24	264.118(d)(2)(i)				
change in expected closure year	24	264.118(d)(2)(ii)				
events affecting plan	24	264.118(d)(2)(iii)				
timing of modification request; submittal of post-closure plan	24	264.118(d)(3)				
Regional Administrator's request for modifications	24	264.118(d)(4)				
POST-CLOSURE NOTICES						
20 record of type, location and quantity of HW	IV A,24	264.119(a)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT		CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
					EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
21 requirement to enter note on deed; survey plat; submit certification	IV A,24	264.119(b)					
		264.119(b)(1)					
		264.119(b)(1)(i)					
		264.119(b)(1)(ii)					
		264.119(b)(1)(iii)					
		264.119(b)(2)					
22 modification to remove hazardous wastes; criteria of 264.117(c); removal of notation; addition of notation	IV A,24	264.119(c)					
		264.119(c)(1)					
		264.119(c)(2)					
CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE							
23 completion of post-closure period	IV A,24	264.120					
21,22 removed	IV A,24	264.120(a)					
		264.120(a)(1)-(3)					
		264.120(b)					

SUBPART H - FINANCIAL REQUIREMENTS

APPLICABILITY

264.142, 264.143, 264.147-264.151 requirements; exceptions	IV A	264.140(a)				
264.144 and 264.145 requirements apply to	IV A	264.140(b)				
disposal facilities	IV A	264.140(b)(1)				
waste piles and surface impoundments	IV A	264.140(b)(2)				
tank systems	28	264.140(b)(3)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
State and Federal government exemptions	IV A	264.140(c)				

DEFINITIONS OF TERMS AS USED IN THIS SUBPART

"closure plan"	IV A	264.141(a)				
"current closure cost estimate"	IV A	264.141(b)				
"current post-closure cost estimate"	IV A	264.141(c)				
"parent corporation"	IV A	264.141(d)				
"post-closure plan"	IV A	264.141(e)				
terms used in financial tests	IV A	264.141(f)(intro)				
"assets"	IV A	264.141(f)				
"current assets"	IV A	264.141(f)				
"current liabilities"	IV A	264.141(f)				
"current plugging and abandonment cost estimate"	24	264.141(f)				
"independently audited"	IV A	264.141(f)				
"liabilities"	IV A	264.141(f)				
"net working capital"	IV A	264.141(f)				
"net worth"	IV A	264.141(f)				
"tangible net worth"	IV A	264.141(f)				
"bodily injury" and "property damage"	IV A	264.141(g)				
"accidental occurrence"	IV A	264.141(g)				
"legal defense costs"	IV A	264.141(g)				
"nonsudden accidental occurrence"	IV A	264.141(g)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
"sudden accidental occurrence"	IV A	264.141(g)				

COST ESTIMATE FOR CLOSURE

owner or operator must have written cost estimate	IV A, 24,45	264.142(a)				
24 equal to cost of final closure	24	264.142(a)(1)				
based on costs of hiring third party	24	264.142(a)(2)				
no incorporation of salvage value	24,†64	264.142(a)(3)				
no incorporation of zero cost	24,†64	264.142(a)(4)				
adjust closure cost estimate for inflation	IV A,24	264.142(b)				
first adjustment	IV A	264.142(b)(1)				
subsequent adjustments	IV A	264.142(b)(2)				
revised closure cost estimate	IV A,24	264.142(c)				
cost estimates to be kept at facility	IV A	264.142(d)				

FINANCIAL ASSURANCE FOR CLOSURE

options to establish financial assurance	*	264.143				
closure trust fund; requirements; trustee must have authority	IV A	264.143(a)(1)				
wording identical to 264.151(a)(1); Schedule A update	IV A	264.143(a)(2)				
annual payments; "pay-in period"	IV A	264.143(a)(3)				
first payment for new facility; subsequent payments	IV A	264.143(a)(3)(i)				
payments for permitted facility	IV A	264.143(a)(3)(ii)				
accelerated payments	IV A	264.143(a)(4)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
payments if previous use of alternate mechanisms	IV A	264.143(a)(5)				
compare new estimate to trust fund	IV A	264.143(a)(6)				
release of excess amount	IV A	264.143(a)(7)				
substitution of other financial assurance	IV A	264.143(a)(8)				
timing of release of funds	IV A	264.143(a)(9)				
reimbursement for closure activities	IV A,24	264.143(a)(10)				
termination of trust if alternate financial assurance or release from 264.143 requirements	IV A	264.143(a)(11)				
		264.143(a)(11)(i)				
		264.143(a)(11)(ii)				
surety bond guaranteeing payment into a closure trust fund; requirements; obtain from an acceptable surety company	IV A	264.143(b)(1)				
wording identical to 264.151(b)	IV A	264.143(b)(2)				
establish standby trust fund	IV A	264.143(b)(3)				
trust agreement submitted with surety bond	IV A	264.143(b)(3)(i)				
until standby trust fund is funded, fol- lowing not required:	IV A	264.143(b)(3)(ii)				
payments into trust fund	IV A	264.143(b)(3)(ii)(A)				
Schedule A update	IV A	264.143(b)(3)(ii)(B)				
annual valuations	IV A	264.143(b)(3)(ii)(C)				
notices of nonpayment	IV A	264.143(b)(3)(ii)(D)				

55x

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
surety bond guarantees:	IV A	264.143(b)(4)				
funding of standby trust fund	IV A	264.143(b)(4)(i)				
fund equal to penal sum within 15 days of administrative or judicial order	IV A,24	264.143(b)(4)(ii)				
alternate financial assurance following notice of cancellation	IV A	264.143(b)(4)(iii)				
when surety becomes liable	IV A	264.143(b)(5)				
penal sum equal to current cost estimate	IV A	264.143(b)(6)				
penal sum increase or decrease	IV A	264.143(b)(7)				
surety may cancel bond after 120 days	IV A	264.143(b)(8)				
owner or operator may cancel bond if written consent	IV A	264.143(b)(9)				
surety bond guaranteeing performance of closure; requirements; obtain from acceptable surety company	IV A	264.143(c)(1)				
identical wording as in 264.151(c)	IV A	264.143(c)(2)				
establish standby trust fund	IV A	264.143(c)(3)				
trust agreement submitted with surety bond	IV A	264.143(c)(3)(i)				
until standby trust fund is funded, the following not required:	IV A	264.143(c)(3)(ii)				
payments to trust fund	IV A	264.143(c)(3)(ii)(A)				
Schedule A update	IV A	264.143(c)(3)(ii)(B)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
annual valuations	IV A	264.143(c)(3)(ii)(C)				
notices of nonpayment	IV A	264.143(c)(3)(ii)(D)				
what the bond must guarantee	IV A	264.143(c)(4)				
		264.143(c)(4)(i)				
		264.143(c)(4)(ii)				
		264.143(c)(4)(ii)				
surety will become liable when owner/ operator fails to perform as bond guarantees; following final Administrative Order perform final closure or deposit penal sum in standby trust fund	IV A,24	264.143(c)(5)				
amount of penal sum	IV A	264.143(c)(6)				
if current closure cost estimate increases to an amount greater than penal sum, then increase penal sum within 60 days	IV A	264.143(c)(7)				
surety may cancel bond; procedures	IV A	264.143(c)(8)				
owner or operator may cancel bond if Regional Administra- tor consents in writing; conditions	IV A	264.143(c)(9)				
		264.143(c)(9)(i)				
		264.143(c)(9)(ii)				
surety not liable for deficiencies in closure performance after Regional Administrator releases owner or operator from requiring 264.143	IV A	264.143(c)(10)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
closure letter of credit; when letter must be submitted to Regional Administra- tor; conditions of letter and who can issue it	IV A	264.143(d)(1)				
identical to wording in 264.151(d)	IV A	264.143(d)(2)				
establish standby trust fund; meets require- ments of 264.143(a) except:	IV A	264.143(d)(3)				
originally signed duplicate to Regional Administrator with letter of credit	IV A	264.143(d)(3)(i)				
unless standby trust fund is funded, the following are not required:	IV A	264.143(d)(3)(ii)				
payments into trust fund	IV A	264.143(d)(3)(ii)(A)				
Schedule A update	IV A	264.143(d)(3)(ii)(B)				
annual valuations	IV A	264.143(d)(3)(ii)(C)				
notices of nonpayment letter of credit	IV A	264.143(d)(3)(ii)(D)				
accompanied by letter from owner/operator; information it must contain	IV A	264.143(d)(4)				
terms of letter of credit	IV A	264.143(d)(5)				
issued in amount equal to current closure cost estimate except as provided in 264.143(g)	IV A	264.143(d)(6)				

365

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
if current closure cost estimate increases to an amount greater than penal sum, then must increase penal sum within 60 days; actions when closure costs decrease	IV A	264.143(d)(7)				
after final RCRA 3008 determination, Regional Administrator may draw on letter of credit	IV A,24	264.143(d)(8)				
if no alternate financial assurance, Regional Administrator can draw on letter of credit; procedures for doing so	IV A	264.143(d)(9)				
conditions under which the Regional Administrator will return the letter of credit for termination	IV A	264.143(d)(10)				
		264.143(d)(10)(i)				
		264.143(d)(10)(ii)				
closure insurance must conform to 264.143(e) requirements; submit certificate to Regional Administrator; insurer requirements	IV A	264.143(e)(1)				
identical to 264.151(e) wording	IV A	264.143(e)(2)				
amount of insurance policy	IV A	264.143(e)(3)				
what the policy must guarantee	IV A	264.143(e)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
owner/operator may request reimbursements; conditions for; procedures of Regional Administrator if maximum closure cost is greater than face value of policy	IV A,24	264.143(e)(5)				
policy must be in full force until Regional Administrator consents to termination; violations	IV A	264.143(e)(6)				
assignment of policy to successor	IV A	264.143(e)(7)				
insurer cannot terminate except for failure to pay; renewal; procedures if failure to pay	IV A	264.143(e)(8)				
conditions that policy will remain in full force and effect in the event that the listed circumstances occur	IV A	264.143(e)(8)(i)				
		264.143(e)(8)(ii)				
		264.143(e)(8)(iii)				
		264.143(e)(8)(iv)				
		264.143(e)(8)(v)				
owner/operator responsibilities and procedures when current closure cost estimate increases/decreases to an amount greater/less than face amount of policy	IV A	264.143(e)(9)				
conditions under which Regional Administrator will allow termination of policy	IV A	264.143(e)(10)				
		264.143(e)(10)(i)				
		264.143(e)(10)(ii)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
financial test and corporate guarantee for closure; owner/operator must satisfy 264.143(f)(1)(i) or (ii) requirements to pass financial test	IV A	264.143(f)(1)				
what owner/operator must have:	IV A	264.143(f)(1)(i)				
two of three specified financial ratios	IV A	264.143(f)(1)(i)(A)				
net working capital and tangible net worth relative to closure/ post-closure estimates	IV A,24	264.143(f)(1)(i)(B)				
tangible net worth of at least \$10 million	IV A	264.143(f)(1)(i)(C)				
90% of assets in U.S.	IV A,24	264.143(f)(1)(i)(D)				
what owner/operator must have:	IV A	264.143(f)(1)(ii)				
bond rating	IV A	264.143(f)(1)(ii)(A)				
tangible net worth at six times sum of closure/post-closure cost estimates	IV A,24	264.143(f)(1)(ii)(B)				
tangible net worth at least \$10 million	IV A	264.143(f)(1)(ii)(C)				
90% of assets in U.S.	IV A,24	264.143(f)(1)(ii)(D)				
definitions of "current closure and post- closure cost estimates" and "current plugging and abandonment cost estimates"	IV A,24	264.143(f)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what the owner/ operator must submit to the Regional Administrator to demonstrate he meets the financial test	IV A	264.143(f)(3)				
		264.143(f)(3)(i)				
		264.143(f)(3)(ii)				
		264.143(f)(3)(iii)				
		264.143(f)(3)(iii)(A)				
		264.143(f)(3)(iii)(B)				
when 264.143(f)(3) items must be submitted	IV A	264.143(f)(4)				
updates at close of each fiscal year	IV A	264.143(f)(5)				
owner/operator responsibilities if no longer meets 264.143 (f)(1) requirements	IV A	264.143(f)(6)				
what Regional Admin- istrator may do if suspects owner/ operator no longer meets 264.143(f)(1)	IV A	264.143(f)(7)				
when Regional Admin- istrator may disallow test	IV A	264.143(f)(8)				
when 264.143(f)(3) items no longer need to be submitted	IV A	264.143(f)(9)				
		264.143(f)(9)(i)				
		264.143(f)(9)(ii)				
requirement may be met by corporate guarantee; conditions which guarantor and guarantee must meet	IV A	264.143(f)(10)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what the terms of the corporate guarantee must provide	IV A	264.143(f)(10)(i)				
		264.143(f)(10)(ii)				
		264.143(f)(10)(iii)				
use of multiple financial mechanisms; conditions which must be met	IV A	264.143(g)				
use of financial mechanism for multiple facilities; conditions which must be met	IV A	264.143(h)				
release of owner/operator from the requirements of 264.143	IV A,24	264.143(i)				

COST ESTIMATE FOR POST-CLOSURE CARE

detailed written estimate, in current dollars, of annual cost of post-closure monitoring and maintenance	IV A, 24,45	264.144(a)				
post-closure cost estimate based on hiring third party to conduct care	IV A,24	264.144(a)(1)				
calculation of estimate	IV A,24	264.144(a)(2)				
adjust for inflation; specifications on when this must be done; inflation factor	IV A,24	264.144(b)				
first adjustment	IV A	264.144(b)(1)				
subsequent adjustments	IV A	264.144(b)(2)				
revise post-closure care estimate when post-closure plan changes	IV A,24	264.144(c)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what must be kept at facility	IV A	264.144(d)				
FINANCIAL ASSURANCE FOR POST-CLOSURE CARE						
deadline for obtaining financial assurance; options from which owner may choose	*,24	264.145				
post-closure trust fund; requirements which trust and trustee must meet; submit to Regional Administrator	IV A	264.145(a)(1)				
trust must have identical wording to that specified in 264.151(a)(1); formal certification of acknowledgment; Schedule A	IV A	264.145(a)(2)				
annual payments; procedures and formulas for determining the value at which fund must be maintained	IV A	264.145(a)(3)				
		264.145(a)(3)(i)				
		264.145(a)(3)(ii)				
first payment of post-closure trust fund after another mechanism was used	IV A	264.145(a)(4)				
after pay-in period, what must be done if fund value is less than new estimate	IV A	264.145(a)(6)				
written request to Regional Administrator for release of excess in fund	IV A	264.145(a)(7)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
other financial pro- cedure if substitute assurance for all or part of fund	IV A	264.145(a)(8)				
within 60 days after request for fund re- lease, Regional Ad- ministrator will instruct trustee to do so	IV A	264.145(a)(9)				
fund release during post-closure	IV A	264.145(a)(10)				
reimbursement for post-closure care expenditures	IV A,24	264.145(a)(11)				
conditions under which a Regional Administra- tor will terminate a trust	IV A	264.145(a)(12)				
		264.145(a)(12)(i)				
		264.145(a)(12)(ii)				
surety bond guaranteeing payment into a post-closure fund; specific conditions which surety and company issuing surety must meet	IV A	264.145(b)(1)				
surety bond wording must be identical to that specified in 264.151(b)	IV A	264.145(b)(2)				
establish a stand-by trust; trust must meet 264.145(a) require- ments except:	IV A	264.145(b)(3)				
originally signed duplicate to Regional Administrator	IV A	264.145(b)(3)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
until standby trust is funded, specific requirements that are not required	IV A	264.145(b)(3)(ii)				
		264.145(b)(3)(ii)(A)				
		264.145(b)(3)(ii)(B)				
		264.145(b)(3)(ii)(C)				
		264.145(b)(3)(ii)(D)				
the bond must guarantee that the owner/operator will do the following:	IV A	264.145(b)(4)				
fund the standby trust equal to penal sum before begin final closure	IV A	264.145(b)(4)(i)				
fund standby trust fund equal to penal sum within 15 days of order to close	IV A,24	264.145(b)(4)(ii)				
provide alternate financial assurance	IV A	264.145(b)(4)(iii)				
when surety becomes liable	IV A	264.145(b)(5)				
what penal sum must be equal to	IV A	264.145(b)(6)				
adjustment to penal sum due to post-closure cost estimate increase/decrease	IV A	264.145(b)(7)				
conditions under which surety may cancel bond	IV A	264.145(b)(8)				
conditions under which owner or operator may cancel bond	IV A	264.145(b)(9)				
surety bond guaranteeing performance of post-closure care	IV A	264.145(c)				
conditions surety bond and surety company must meet	IV A	264.145(c)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identical wording to 264.151(c)	IV A	264.145(c)(2)				
establish standby trust fund; meet 264.145(a) requirements except:	IV A	264.145(c)(3)				
originals and duplicate of trust agreement to Regional Administrator	IV A	264.145(c)(3)(i)				
unless standby trust fund is funded according to section requirements, specific procedures that are not required	IV A	264.145(c)(3)(ii)				
		264.145(c)(3)(ii)(A)				
		264.145(c)(3)(ii)(B)				
		264.145(c)(3)(ii)(C)				
		264.145(c)(3)(ii)(D)				
what the bond must guarantee	IV A	264.145(c)(4)				
		264.145(c)(4)(i)				
		264.145(c)(4)(ii)				
when the surety becomes liable; keyed to final administrative 3008 determination	IV A,24	264.145(c)(5)				
what penal sum must be equal to	IV A	264.145(c)(6)				
adjustments to penal sum due to post- closure cost estimate increase/decrease	IV A	264.145(c)(7)				
approval of decrease in penal sum	IV A	264.145(c)(8)				
conditions under which surety may cancel bond	IV A	264.145(c)(9)				
conditions under which owner or operator may cancel bond	IV A	264.145(c)(10)				
		264.145(c)(10)(i)				
		264.145(c)(10)(ii)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what the surety is not liable for	IV A	264.145(c)(11)				
post-closure letter of credit	IV A	264.145(d)				
conditions the letter of credit and its issuing institution must meet	IV A	264.145(d)(1)				
identical wording to that specified in 264.151(d)	IV A	264.145(d)(2)				
establish standby trust fund; meet 264.145(a) conditions, except:	IV A	264.145(d)(3)				
originally signed duplicate of trust agreement to Regional Administrator	IV A	264.145(d)(3)(i)				
unless standby trust fund is funded, specific items not required	IV A	264.145(d)(3)(ii)				
		264.145(d)(3)(ii)(A)				
		264.145(d)(3)(ii)(B)				
		264.145(d)(3)(ii)(C)				
		264.145(d)(3)(ii)(D)				
letter of credit must be accompanied by letter; what letter must contain	IV A	264.145(d)(4)				
terms of letter of credit	IV A	264.145(d)(5)				
amount of letter of credit	IV A	264.145(d)(6)				
adjustments to amount of credit due to increase/decrease in post-closure cost estimate	IV A	264.145(d)(7)				
conditions under which amount of letter of credit can be de- creased	IV A,24	264.145(d)(8)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
after final 3008 admin- istrative determination, Regional Administrator may draw on credit	IV A,24	264.145(d)(9)				
when the Regional Administrator can draw on letter of credit	IV A	264.145(d)(10)				
		264.145(d)(11)				
		264.145(d)(11)(i)				
termination of letter of credit	IV A	264.145(d)(11)(ii)				
post-closure insurance; conditions the insurance and the insurer must meet	IV A	264.145(e)(1)				
wording identical to wording specified in 264.151(e)	IV A	264.145(e)(2)				
"face amount" policy must be issued for	IV A	264.145(e)(3)				
what policy must guarantee	IV A	264.145(e)(4)				
request for reimburse- ment; procedures for reimbursement	IV A,24	264.145(e)(5)				
maintain policy in full force until Regional Administrator consents to terminate; failure to pay	IV A	264.145(e)(6)				
assignment of policy to successor	IV A	264.145(e)(7)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
excepting failure to pay, policy must provide that insurer may not cancel, terminate or fail to renew; conditions under which policy remains in full force following date of expiration	IV A	264.145(e)(8)				
		264.145(e)(8)(i)				
		264.145(e)(8)(ii)				
		264.145(e)(8)(iii)				
		264.145(e)(8)(iv)				
		264.145(e)(8)(v)				
adjustments to face amount due to increase/decrease in post-closure cost estimates	IV A	264.145(e)(9)				
annual increase of face amount	IV A	264.145(e)(10)				
conditions under which insurance policy may be terminated	IV A	264.145(e)(11)				
		264.145(e)(11)(i)				
		264.145(e)(11)(ii)				
financial test and corporate guarantee for post-closure care; pass financial test; criteria for passing test	IV A	264.145(f)(1)				
specific criteria	IV A	264.145(f)(1)(i)				
have two of the three specified ratios	IV A	264.145(f)(1)(i)(A)				
net working capital and tangible net worth at six times sum of current closure and post-closure cost estimates and plugging and abandonment cost estimates	IV A,24	264.145(f)(1)(i)(B)				
tangible net worth at least \$10 million	IV A	264.145(f)(1)(i)(C)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
90% of assets in U.S. or six times sum of current closure/post- closure cost estimate and current plugging and abandonment costs	IV A, 24	264.145(f)(1)(i)(D)				
owner or operator must have:	IV A	264.145(f)(1)(ii)				
a specified bond rating	IV A	264.145(f)(1)(ii)(A)				
tangible net worth six times sum of cur- rent closure/post- closure cost estimates and plugging/abandon- ment cost estimates	IV A,24	264.145(f)(1)(ii)(B)				
tangible net worth of at least \$10 million	IV A	264.145(f)(1)(ii)(C)				
90% of assets in U.S. or six times sum of current closure/post- closure cost estimate and current plugging and abandonment costs	IV A,24	264.145(f)(1)(ii)(D)				
definition of "current closure and post- closure cost estimates" and "current plugging and abandonment cost estimates"	IV A,24	264.145(f)(2)				
to demonstrate meets 264.145(f)(1) test, items which must be submitted to Regional Administrator	IV A	264.145(f)(3)				
		264.145(f)(3)(i)				
		264.145(f)(3)(ii)				
		264.145(f)(3)(iii)				
		264.145(f)(3)(iii)(A)				
		264.145(f)(3)(iii)(B)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when items must be submitted	IV A	264.145(f)(4)				
when updated information must be submitted	IV A	264.145(f)(5)				
responsibilities when 264.145(f)(1) requirements are no longer met	IV A	264.145(f)(6)				
Regional Administrator's actions when suspects owner/operator no longer meets 264.145(f)(1)	IV A	264.145(f)(7)				
when Regional Administrator may disallow use of test	IV A	264.145(f)(8)				
when Regional Administrator may approve decrease in current post-closure cost estimates	IV A	264.145(f)(9)				
specific conditions under which 264.145(f)(3) items no longer need to be submitted	IV A	264.145(f)(10)				
		264.145(f)(10)(i)				
		264.145(f)(10)(ii)				
corporate guarantee may meet requirement 264.145; conditions guarantee must meet	IV A	264.145(f)(11)				
		264.145(f)(11)(i)				
		264.145(f)(11)(ii)				
		264.145(f)(11)(iii)				
use of multiple financial mechanisms	IV A	264.145(g)				
use of a financial mechanism for multiple facilities	IV A	264.145(h)				
release of the owner or operator from the requirements of 264.145	IV A,24	264.145(i)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

USE OF A MECHANISM FOR FINANCIAL ASSURANCE OF BOTH CLOSURE AND POST-CLOSURE CARE

financial assurance requirements for both closure and post-closure can be met by specific types of mechanisms which meet 264.143 and 264.145 specifications; amount of funds which must be available	IV A	264.146				
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LIABILITY REQUIREMENTS

▽ coverage for sudden accidental occurrences; ways liability insurance may be demonstrated	IV A	264.147(a)				
liability insurance meeting the following:	IV A	264.147(a)(1)				
attachment of Hazardous Waste Facility Liability Endorsement or Certificate of Liability Insurance; required wording; submittal of signed duplicate original	IV A	264.147(a)(1)(i)				
minimum requirements insurer must meet	IV A	264.147(a)(1)(ii)				
▽ meet financial test or use corporate guarantee for liability coverage as specified in 264.147(g)	IV A, †27	264.147(a)(2)				
▽ ways owner/operator may demonstrate required liability coverage; minimum coverage amount	IV A, †27	264.147(a)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
▽ coverage for nonsudden accidental occurrences; ways coverage may be demonstrated	IV A, 45	264.147(b)				
demonstrate by having liability insurance with the following requirements:	IV A	264.147(b)(1)				
attachment of Hazardous Waste Facility Liability Endorsement or Certificate of Liability Insurance; required wording; submittal of signed duplicate original	IV A	264.147(b)(1)(i)				
minimum requirements for insurer	IV A	264.147(b)(1)(ii)				
▽ pass financial test or use corporate guarantee for liability coverage as specified in 264.147(f)&(g)	IV A, †27	264.147(b)(2)				
▽ other ways may demonstrate liability coverage; minimum coverage amount	IV A, †27	264.147(b)(3)				
		264.147(b)(4)				
		264.147(b)(4)(i)				
		264.147(b)(4)(ii)				
▽ deadlines for demonstrating liability coverage	IV A	264.147(b)(4)(iii)				
requests for variance from 264.147(a) or (b) requirements; form of variance requirements	IV A	264.147(c)				
adjustments to required financial responsibility levels by Regional Administrator; criteria which must be used	IV A	264.147(d)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when liability coverage may be terminated	IV A,24	264.147(e)				
financial test for liability coverage; criteria of 265.147(f)(1)(i) or (ii) must be met	IV A	264.147(f)(1)				
what the owner or operator must have "amount of liability coverage"	IV A	264.147(f)(1)(i)				
		264.147(f)(1)(i)(A)				
		264.147(f)(1)(i)(B)				
		264.147(f)(1)(i)(C)				
		264.147(f)(1)(ii)				
		264.147(f)(1)(ii)(A)				
		264.147(f)(1)(ii)(B)				
		264.147(f)(1)(ii)(C)				
		264.147(f)(1)(ii)(D)				
	IV A	264.147(f)(2)				
three items the owner or operator must submit	IV A	264.147(f)(3)				
		264.147(f)(3)(i)				
		264.147(f)(3)(ii)				
		264.147(f)(3)(iii)				
		264.147(f)(3)(iii)(A)				
		264.147(f)(3)(iii)(B)				
deadline for submittal	IV A	264.147(f)(4)				
updated information	IV A	264.147(f)(5)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
evidence of insurance if 264.147(f)(1) requirements not met	IV A	264.147(f)(6)				
Regional Administrator may disallow test; cause for disallowance	IV A	264.147(f)(7)				

15	Guarantee for Liability Coverage					
▽	corporate guarantee for liability coverage; guarantor is parent corporation	27	264.147(g)(1)			
	payment by guarantor if owner or operator fails to satisfy a judgment	27	264.147(g)(1)(i)			
▽	cancellation/use of alternate coverage	27	264.147(g)(1)(ii)			
▽	corporations incorporated in U.S.	27,†43	264.147(g)(2)(i)			
▽	corporations incorporated outside U.S.	27,†43	264.147(g)(2)(ii)			
25	until 10/16/82, use of endorsement or insurance without certification of insurer	*,†27	264.147(h)			

INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

incapacity through bankruptcy of owner or operator or guarantor	IV A	264.148(a)				
incapacity of financial institution by bankruptcy or authority suspension	IV A	264.148(b)				

WORDING OF THE INSTRUMENTS

required wording for a trust agreement	IV A	264.151(a)(1)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
certification of acknowledgement	IV A	264.151(a)(2)				
▽ required wording for a financial guarantee bond	IV A,24	264.151(b)				
required wording for a performance bond	IV A	264.151(c)				
required wording for an irrevocable standby letter of credit	IV A	264.151(d)				
required wording for a certificate of insurance for closure or post-closure care	IV A	264.151(e)				
required wording for letter from chief financial officer (financial assurance)	IV A,24	264.151(f)				
▽ required wording for letter from chief financial officer (liability coverage)	IV A, 24,†27	264.151(g)				
required wording for corporate guarantee for closure or post-closure care	IV A,27	264.151(h)(1)				
▽ required wording for corporate guarantee for liability coverage	†27,†43	264.151(h)(2)				
▽ required wording for hazardous waste facility liability endorsement	IV A	264.151(i)				
▽ required wording for hazardous waste facility certificate of liability insurance	IV A	264.151(j)				

SUBPART I - USE AND MANAGEMENT OF CONTAINERS

APPLICABILITY

storage of hazardous waste in containers	IV A	264.170				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
CONDITION OF CONTAINERS						
requirements when container is not in good condition	IV A	264.171				
COMPATIBILITY OF WASTE WITH CONTAINERS						
container must be compatible with hazardous waste	IV A	264.172				
MANAGEMENT OF CONTAINERS						
closed container during storage	IV A	264.173(a)				
care in handling	IV A	264.173(b)				
INSPECTIONS						
weekly inspections	IV A	264.174				
CONTAINMENT						
requirement for a containment system	IV A	264.175(a)				
containment system design and operation requirements containers without free liquids don't require a containment system; exceptions	IV A	264.175(b)				
		264.175(b)(1)				
		264.175(b)(2)				
		264.175(b)(3)				
		264.175(b)(4)				
		264.175(b)(5)				
	sloped storage area to drain precipitation	IV A,14	264.175(c)			
elevated containers	IV A	264.175(c)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
containment system requirements for storage of F020- F023, F026, F027	14	264.175(d)				
		264.175(d)(1)				
reserved	14	264.175(d)(2)				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

required distance from property line	IV A	264.176				
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SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

not to be placed in same container	IV A	264.177(a)				
not to be placed in unwashed, previously used container	IV A	264.177(b)				
separation or pro- tection requirements	IV A	264.177(c)				

CLOSURE

decontamination or removal at closure	IV A	264.178				
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SUBPART J - TANK SYSTEMS

APPLICABILITY

26 tank systems used for storing or treating hazardous wastes; exceptions	28	264.190				
27 no free liquids; inside building with imperme- able floor; EPA Method 9095	IV A, †28, †52	264.190(a)				
27 tanks in secondary containment systems exempt	IV A, †28, †52	264.190(b)				

28 ASSESSMENT OF EXISTING TANK SYSTEM'S INTEGRITY

written assessment of tank system's integrity	28	264.191(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
adequate design; sufficient structural strength; compatibility with waste(s)	28	264.191(b)				
minimum assessment considerations	28	264.191(b)(1)				
		264.191(b)(2)				
		264.191(b)(3)				
		264.191(b)(4)				
		264.191(b)(5)				
		264.191(b)(5)(i)				
		264.191(b)(5)(ii)				
12 mos. deadline if materials become hazardous wastes after 7/14/86	28	264.191(c)				
tank systems found to be leaking or unfit for use, compliance with 264.196	28	264.191(d)				

28 DESIGN AND INSTALLATION OF NEW TANK SYSTEMS OR COMPONENTS

information to be included in written assessments for new tank systems or components	28	264.192(a)				
design standards	28	264.192(a)(1)				
hazardous characteristics	28	264.192(a)(2)				
contact with soil or water; required determinations	28	264.192(a)(3)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
factors affecting poten- tial for corrosion	28	264.192(a)(3)(i)				
		264.192(a)(3)(i)(A)				
		264.192(a)(3)(i)(B)				
		264.192(a)(3)(i)(C)				
		264.192(a)(3)(i)(D)				
		264.192(a)(3)(i)(E)				
		264.192(a)(3)(i)(F)				
		264.192(a)(3)(i)(G)				
type and degree of external corrosion protection needed	28	264.192(a)(3)(i)(H)				
		264.192(a)(3)(ii)				
		264.192(a)(3)(ii)(A)				
		264.192(a)(3)(ii)(B)				
protection from traffic for underground components	28	264.192(a)(3)(ii)(C)				
design considerations to ensure protection from environment	28	264.192(a)(4)				
		264.192(a)(5)				
		264.192(a)(5)(i)				
		264.192(a)(5)(ii)				
		264.192(a)(5)(iii)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
new tank installation procedures; inspection requirements	28	264.192(b)				
		264.192(b)(1)				
		264.192(b)(2)				
		264.192(b)(3)				
		264.192(b)(4)				
		264.192(b)(5)				
		264.192(b)(6)				
backfilling requirements for new underground tank systems	28	264.192(c)				
tightness requirement	28	264.192(d)				
protection of ancillary equipment	28	264.192(e)				
corrosion protection requirements	28	264.192(f)				
written statements and certification statements	28	264.192(g)				

28 CONTAINMENT AND DETECTION OF RELEASES

schedule for providing secondary contain- ment for tank systems	28	264.193(a)				
		264.193(a)(1)				
		264.193(a)(2)				
		264.193(a)(3)				
		264.193(a)(4)				
		264.193(a)(5)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements for secondary contain- ment systems	28	264.193(b)				
		264.193(b)(1)				
		264.193(b)(2)				
minimum specifications of secondary contain- ment systems	28	264.193(c)				
		264.193(c)(1)				
		264.193(c)(2)				
		264.193(c)(3)				
		264.193(c)(4)				
devices that satisfy the secondary containment require- ments	28	264.193(d)				
		264.193(d)(1)				
		264.193(d)(2)				
		264.193(d)(3)				
		264.193(d)(4)				
additional require- ments for secondary containment systems	28	264.193(e)				
additional requirements for external liner systems	28	264.193(e)(1)				
		264.193(e)(1)(i)				
		264.193(e)(1)(ii)				
		264.193(e)(1)(iii)				
		264.193(e)(1)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
additional requirements for vault systems	28	264.193(e)(2)				
		264.193(e)(2)(i)				
		264.193(e)(2)(ii)				
		264.193(e)(2)(iii)				
		264.193(e)(2)(iv)				
		264.193(e)(2)(v)				
		264.193(e)(2)(v)(A)				
		264.193(e)(2)(v)(B)				
		264.193(e)(2)(vi)				
additional requirements for double-walled tanks	28	264.193(e)(3)				
		264.193(e)(3)(i)				
		264.193(e)(3)(ii)				
		264.193(e)(3)(iii)				
secondary containment requirements for ancillary equipment; exceptions	28	264.193(f)				
aboveground piping	28	264.193(f)(1)				
welded parts and connections	28	264.193(f)(2)				
sealless or magnetic coupling pumps and sealless valves	28,52	264.193(f)(3)				
pressurized above- ground piping systems with automatic shut-off devices	28	264.193(f)(4)				



**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

†
15 Variance From Section Requirements

general require- ments for variance	28	264.193(g)				
considerations in granting variance based on demonstra- tion of equivalent ground-water and sur- face water protection factors to be considered in granting a variance	28	264.193(g)(1)				
		264.193(g)(1)(i)				
		264.193(g)(1)(ii)				
		264.193(g)(1)(iii)				
		264.193(g)(1)(iv)				
	28	264.193(g)(2)				
factors regarding the potential adverse effects on ground water, surface water and land quality	28	264.193(g)(2)(i)				
		264.193(g)(2)(i)(A)				
		264.193(g)(2)(i)(B)				
		264.193(g)(2)(i)(C)				
		264.193(g)(2)(i)(D)				
	264.193(g)(2)(i)(E)					
factors regarding the potential adverse effects of a release on ground-water quality	28	264.193(g)(2)(ii)				
		264.193(g)(2)(ii)(A)				
		264.193(g)(2)(ii)(B)				
		264.193(g)(2)(ii)(C)				
		264.193(g)(2)(ii)(D)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
factors regarding the potential adverse effects of a release on surface water quality	28	264.193(g)(2)(iii)				
		264.193(g)(2)(iii)(A)				
		264.193(g)(2)(iii)(B)				
		264.193(g)(2)(iii)(C)				
		264.193(g)(2)(iii)(D)				
		264.193(g)(2)(iii)(E)				
factors regarding the potential adverse effects of a release on the land	28	264.193(g)(2)(iv)				
		264.193(g)(2)(iv)(A)				
		264.193(g)(2)(iv)(B)				
requirements if release occurs from primary tank system but no migration beyond zone of engineering control	28	264.193(g)(3)				
		264.193(g)(3)(i)				
		264.193(g)(3)(ii)				
		264.193(g)(3)(ii)(A)				
		264.193(g)(3)(ii)(B)				
		264.193(g)(3)(iii)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements if release occurs and migrates beyond zone of engineering control	28	264.193(g)(4)				
		264.193(g)(4)(i)				
		264.193(g)(4)(ii)				
		264.193(g)(4)(iii)				

†
15 Variance Procedures

procedures for requesting a variance	28	264.193(h)				
		264.193(h)(1)				
		264.193(h)(1)(i)				
		264.193(h)(1)(ii)				
		264.193(h)(2)				
		264.193(h)(3)				
		264.193(h)(4)				

requirements for all tank systems until such time as secondary containment is provided	28	264.193(i)				
		264.193(i)(1)				
		264.193(i)(2)				
		264.193(i)(3)				
		264.193(i)(4)				
		264.193(i)(5)				

28 GENERAL OPERATING REQUIREMENTS

when hazardous waste or treatment reagents must not be placed in tank systems	28	264.194(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
minimum controls and practices to prevent spills and overflows 264.196 requirements if a leak or spill occurs in the system	28	264.194(b)				
		264.194(b)(1)				
		264.194(b)(2)				
		264.194(b)(3)				
	14,28	264.194(c)				

28 INSPECTIONS

schedule and procedure for inspecting overfill controls	28	264.195(a)				
daily inspection requirements	28	264.195(b)				
		264.195(b)(1)				
		264.195(b)(2)				
		264.195(b)(3)				
minimum inspection frequency for cathodic protection systems	28	264.195(c)				
		264.195(c)(1)				
		264.195(c)(2)				
document in operating record	28	264.195(d)				

28 RESPONSE TO LEAKS OR SPILLS AND DISPOSITION OF LEAKING OR UNFIT-FOR-USE TANK SYSTEMS

immediate removal from service of leaking or unfit-for-use tank or secondary containment system	28,52	264.196				
cessation of use; prevent flow or addition of wastes	28	264.196(a)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
schedule for removal of waste from tank system or secondary contain- ment system	28	264.196(b)(1)				
		264.196(b)(2)				
containment of visible releases to the environment	28	264.196(c)				
		264.196(c)(1)				
		264.196(c)(2)				
required notifications and reports following any release to the environment	28	264.196(d)(1)				
		264.196(d)(2)				
		264.196(d)(2)(i)				
		264.196(d)(2)(ii)				
		264.196(d)(3)				
		264.196(d)(3)(i)				
		264.196(d)(3)(ii)				
		264.196(d)(3)(iii)				
		264.196(d)(3)(iv)				
		264.196(d)(3)(v)				
provision of secondary contain- ment, repair, or closure	28	264.196(e)(1)				
		264.196(e)(2)				
		264.196(e)(3)				
		264.196(e)(4)				
certification of major repairs	28	264.196(f)				

28 CLOSURE AND POST-CLOSURE CARE

general closure requirements	28	264.197(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
specific requirements when contaminated soils cannot practically be removed or decontaminated; closure as a landfill	28	264.197(b)				
closure plans and financial responsibility requirements for tank systems without secondary contain- ment that fall under 264.193(b)-(f) and are not exempt from secondary containment requirements	28	264.197(c)				
		264.197(c)(1)				
		264.197(c)(2)				
		264.197(c)(3)				
		264.197(c)(4)				
		264.197(c)(5)				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

no ignitable or reactive waste in tank systems unless:	IV A, 28	264.198(a)				
waste is treated, rendered or mixed	IV A, 28	264.198(a)(1)				
		264.198(a)(1)(i)				
		264.198(a)(1)(ii)				
waste is protected	IV A, 28	264.198(a)(2)				
system used solely for emergencies	IV A, 28	264.198(a)(3)				
maintenance of pro- tective distances	IV A, 28	264.198(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

no placement of in- compatible wastes in tank system unless compliance with 264.17(b)	IV A, 28	264.199(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no placement in con- taminated tank system unless compliance with 264.17(b)	IV A, 28	264.199(b)				
removed	14,28	264.200				

SUBPART K - SURFACE IMPOUNDMENTS

APPLICABILITY

surface impoundments used to treat, store, or dispose of hazardous waste	IV A	264.220				
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DESIGN AND OPERATING REQUIREMENTS

liner design, construc- tion and installation	IV A, 17 H	264.221(a)				
requirements for liner materials	IV A	264.221(a)(1)				
foundation or base requirements	IV A	264.221(a)(2)				
area to be covered	IV A	264.221(a)(3)				
considerations for exempting from 264.221(a)	IV A	264.221(b)				
		264.221(b)(1)				
		264.221(b)(2)				
		264.221(b)(3)				
		264.221(b)(4)				
two or more liners; leachate collection system	17 H,77	264.221(c)				
exemption from 264.221(c); alternative design and operating practices	†17 H	264.221(d)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

†
15 Waiver From Double Liner Requirements

conditions under which 264.221(c) requirements may be waived for a monofill	17 H	264.221(e)				
		264.221(e)(1)				
		264.221(e)(2)(i)(A)				
		264.221(e)(2)(i)(B)				
		264.221(e)(2)(i)(C)				
		264.221(e)(2)(ii)				

29 prevention of overtopping and malfunctions	IV A, 17 H	264.221(f)				
29 structural integrity of dikes	IV A, 17 H	264.221(g)				
29 specifications in the permit	IV A, 17 H	264.221(h)				
removed	IV A, 17 I	264.222				

MONITORING AND INSPECTION

inspection of liners and cover systems during construction and installation	IV A	264.226(a)				
		264.226(a)(1)				
		264.226(a)(2)				
inspection requirements during operation	IV A	264.226(b)				
inspect overtopping control systems	IV A	264.226(b)(1)				
sudden drops in level of contents	IV A	264.226(b)(2)				
30 erosion or deterioration in containment devices	IV A, 17 I	264.226(b)(3)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
certification of dike's structural integrity	IV A	264.226(c)				
		264.226(c)(1)				
		264.226(c)(2)				
EMERGENCY REPAIRS; CONTINGENCY PLANS						
conditions for removal from service	IV A	264.227(a)				
		264.227(a)(1)				
		264.227(a)(2)				
immediate action on removal from service compliance procedure for 264.227(b) in con- tingency plan	IV A	264.227(b)				
		264.227(b)(1)				
		264.227(b)(2)				
		264.227(b)(3)				
		264.227(b)(4)				
		264.227(b)(5)				
		264.227(b)(6)				
conditions for restoration of service closure of inactive surface impoundments	IV A	264.227(c)				
		264.227(d)				
		264.227(d)(1)				
		264.227(d)(2)				
		264.227(d)(2)(i)				
	IV A	264.227(d)(2)(ii)				
	IV A	264.227(e)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

CLOSURE AND POST-CLOSURE CARE

closure requirements	IV A	264.228(a)				
		264.228(a)(1)				
		264.228(a)(2)(i)				
		264.228(a)(2)(ii)				
		264.228(a)(2)(iii)				
		264.228(a)(2)(iii)(A)				
		264.228(a)(2)(iii)(B)				
		264.228(a)(2)(iii)(C)				
		264.228(a)(2)(iii)(D)				
		264.228(a)(2)(iii)(E)				
31 post-closure requirements	IV A, 17 I	264.228(b)				
		264.228(b)(1)				
		264.228(b)(2)				
		264.228(b)(3)				
plans needed whenever liner requirements are not met	IV A	264.228(c)(1)				
		264.228(c)(1)(i)				
		264.228(c)(1)(ii)				
cost estimate inclusions	IV A	264.228(c)(2)				
removed	IV A, 17 I	264.228(d)				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

conditions for placement of ignitable or reactive waste	*,78	264.229				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste treatment to specific criteria prior to placement	IV A	264.229(a)				
		264.229(a)(1)				
		264.229(a)(2)				
waste management to prevent reaction or ignition	IV A	264.229(b)				
emergency placement	IV A	264.229(c)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

prohibited co-disposal of incompatible wastes or materials unless compliance with 264.17(b)	IV A	264.230				
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SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027

requirements for F020-F023, F026 and F027 regarding place- ment in surface impoundments; special management plan; factors to be considered	14	264.231(a)				
		264.231(a)(1)				
		264.231(a)(2)				
		264.231(a)(3)				
		264.231(a)(4)				
additional requirements as determined by the Regional Administrator	14	264.231(b)				

SUBPART L - WASTE PILES

APPLICABILITY

storage or treatment facilities using waste piles	IV A	264.250(a)				
closed piles with waste in place subject to Subpart N of 264	IV A	264.250(b)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste piles under a structure	IV A	264.250(c)				
piles inside or under a structure; provisions for exclusion from regulation under 264.251 or Subpart F of Part 264	IV A	264.250(c)(1)				
		264.250(c)(2)				
		264.250(c)(3)				
		264.250(c)(4)				
DESIGN AND OPERATING REQUIREMENTS						
what a waste pile must have	IV A	264.251(a)				
		264.251(a)(1)				
		264.251(a)(1)(i)				
		264.251(a)(1)(ii)				
		264.251(a)(1)(iii)				
liner design standards	IV A	264.251(a)(2)				
leachate collection and removal system standards	IV A	264.251(a)(2)(i)				
		264.251(a)(2)(i)(A)				
		264.251(a)(2)(i)(B)				
		264.251(a)(2)(ii)				
		264.251(b)				
exemption from 264.51(a)	IV A	264.251(b)(1)				
		264.251(b)(2)				
		264.251(b)(3)				
		264.251(b)(4)				
exemption criteria	IV A	264.251(c)				
run-on control system standards	IV A					

2006

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
run-off management system standards	IV A	264.251(d)				
collection and holding facility standards	IV A	264.251(e)				
wind dispersal control	IV A	264.251(f)				
design and operating requirements specified in permit	IV A	264.251(g)				
regulations removed; section reserved	IV A, 17 I	264.252				
regulations removed; section reserved	IV A, 17 I	264.253				

MONITORING AND INSPECTION

inspections during construction or install- ation; inspections immediately after con- struction or installation	IV A	264.254(a)				
		264.254(a)(1)				
		264.254(a)(2)				
weekly inspections during operation and inspections after storms to detect:	IV A	264.254(b)				
run-on and run-off system problems	IV A	264.254(b)(1)				
32 proper functioning of wind dispersal controls	IV A, 17 I	264.254(b)(2)				
32 leachate in and proper functioning of leachate systems	IV A, 17 I	264.254(b)(3)				
reserved		264.225				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

conditions for placement of ignitable or reactive wastes in waste piles	*,78	264.256				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
treatment requirements waste management; protection from ignition or reaction	IV A	264.256(a)				
		264.256(a)(1)				
		264.256(a)(2)				
	IV A	264.256(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

placement in same pile prohibited unless 264.17(b) is complied with	IV A	264.257(a)				
waste separation or protection	IV A	264.257(b)				
base decontamination	IV A	264.257(c)				

CLOSURE AND POST-CLOSURE CARE

closure requirements	IV A	264.258(a)				
post-closure care if not all contaminated subsoils can be practically removed	IV A	264.258(b)				
plans needed whenever liner requirements are not met	IV A	264.258(c)(1)				
		264.258(c)(1)(i)				
		264.258(c)(1)(ii)				
cost estimates	IV A	264.258(c)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, and F027

requirements for F020-F023, F026 and F027 regarding placement in surface impoundments; special management plan; factors to be considered	14	264.259(a)				
		264.259(a)(1)				
		264.259(a)(2)				
		264.259(a)(3)				
		264.259(a)(4)				
additional requirements as determined by the Regional Administrator	14	264.259(b)				

SUBPART M - LAND TREATMENT

APPLICABILITY

facilities that treat or dispose of hazardous waste in land treat- ment units	IV A	264.270				
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TREATMENT PROGRAM

treatment program	IV A	264.271(a)				
elements of the program specified by Regional Administrator in permit	IV A	264.271(a)(1)				
		264.271(a)(2)				
			264.271(a)(3)			
hazardous constituents specified in the permit that must be degraded, transformed or immobilized	IV A	264.271(b)				
treatment zone dimen- sions specified	IV A	264.271(c)				
		264.271(c)(1)				
		264.271(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

TREATMENT DEMONSTRATION

treatment demonstra- tion required for each waste applied to treatment zone	IV A	264.272(a)				
acceptable evidence to make demonstration; specified in permit	IV A	264.272(b)				
field/laboratory test requirements	IV A	264.272(c)				
		264.272(c)(1)				
		264.272(c)(1)(i)				
		264.272(c)(1)(ii)				
		264.272(c)(1)(iii)				
		264.272(c)(1)(iv)				
		264.272(c)(1)(v)				
		264.272(c)(2)				
		264.272(c)(3)				
		264.272(c)(3)(i)				
		264.272(c)(3)(ii)				
		264.272(c)(3)(iii)				
		264.272(c)(3)(iv)				
		264.272(c)(3)(v)				

DESIGN AND OPERATING REQUIREMENTS

Regional Administrator will specify these re- quirements in permit	*	264.273				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
construction, design and operation to max- imize degradation, transformation, and immobilization of HW; minimum requirements specified in the permit	IV A	264.273(a)				
		264.273(a)(1)				
		264.273(a)(2)				
		264.273(a)(3)				
		264.273(a)(4)				
run-off control	IV A	264.273(b)				
run-on control	IV A	264.273(c)				
stormwater run-off management system	IV A	264.273(d)				
collection and holding facilities	IV A	264.273(e)				
wind dispersal control	IV A	264.273(f)				
inspections	IV A	264.273(g)				
		264.273(g)(1)				
		264.273(g)(2)				
reserved		264.274-264.275				
FOOD-CHAIN CROPS						
conditions for crops in or on treatment zone	*	264.276				
demonstration of no health risk	IV A	264.276(a)(1)				
		264.276(a)(1)(i)				
		264.276(a)(1)(ii)				
		264.276(a)(1)(ii)				
demonstration timing	IV A	264.276(a)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
required evidence for acceptable demonstration	IV A	264.276(a)(3)				
		264.276(a)(3)(i)				
		264.276(a)(3)(ii)				
permit for conducting demonstration activities	IV A	264.276(a)(4)				
requirements if waste contains cadmium	IV A	264.276(b)				
		264.276(b)(1)(i)				
		264.276(b)(1)(ii)				
		264.276(b)(1)(iii)				
		264.276(b)(1)(iv)				
		264.276(b)(2)(i)				
		264.276(b)(2)(ii)				
		264.276(b)(2)(iii)				
		264.276(b)(2)(iv)				
reserved		264.277				

UNSATURATED ZONE MONITORING

owner/operator responsibilities	*	264.278				
monitor soil and soil pore liquid for specific constituents	IV A	264.278(a)				
		264.278(a)(1)				
		264.278(a)(2)				
unsaturated zone monitoring system standards	IV A	264.278(b)				
		264.278(b)(1)				
		264.278(b)(2)				

2005

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
background value needed for each hazardous constituent test placement, frequency and timing; how results must be expressed	IV A	264.278(c)				
		264.278(c)(1)				
		264.278(c)(2)				
		264.278(c)(3)				
		264.278(c)(4)				
sampling and analysis procedures; minimum requirements	IV A	264.278(d)				
		264.278(e)				
		264.278(e)(1)				
		264.278(e)(2)				
		264.278(e)(3)				
comparison with back- ground values to determine statistically significant change	IV A	264.278(e)(4)				
		264.278(f)				
		264.278(f)(1)				
		264.278(f)(2)				
		264.278(f)(3)				
		264.278(f)(3)(i)				
actions if significant increase occurs	IV A	264.278(f)(3)(ii)				
		264.278(g)				
		264.278(g)(1)				
		264.278(g)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements for dem- onstration that units at facility not respon- sible for increase	IV A	264.278(h)				
		264.278(h)(1)				
		264.278(h)(2)				
		264.278(h)(3)				
		264.278(h)(4)				
RECORDKEEPING						
operating record to include waste appli- cation dates and rates	IV A	264.279				
CLOSURE AND POST-CLOSURE CARE						
owner/operator responsibilities during closure care	IV A	264.280(a)				
		264.280(a)(1)				
		264.280(a)(2)				
		264.280(a)(3)				
		264.280(a)(4)				
		264.280(a)(5)				
		264.280(a)(6)				
		264.280(a)(7)				
		264.280(a)(8)				
closure certification	IV A	264.280(b)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
owner/operator responsibilities during post-closure care	IV A	264.280(c)				
		264.280(c)(1)				
		264.280(c)(2)				
		264.280(c)(3)				
		264.280(c)(4)				
		264.280(c)(5)				
		264.280(c)(6)				
		264.280(c)(7)				
exemption from 264.280(a)(8) & (c)	IV A	264.280(d)				
		264.280(d)(1)				
		264.280(d)(1)(i)				
		264.280(d)(1)(ii)				
		264.280(d)(2)				
		264.280(d)(3)				
		264.280(d)(3)(i)				
		264.280(d)(3)(ii)				
Subpart F exemption	IV A	264.280(e)				
SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE						
conditions for applying ignitable or reactive wastes to treatment zone	*,78	264.281				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
immediate incorporation of waste into soil	IV A	264.281(a)				
		264.281(a)(1)				
		264.281(a)(2)				
protective manage- ment so no reaction or ignition	IV A	264.281(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

conditions for disposal of incompatible wastes or materials	IV A	264.282				
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SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026 AND F027

requirements for land treatment of F020, F021, F022, F023, F026 and F027	14	264.283(a)				
		264.283(a)(1)				
		264.283(a)(2)				
		264.283(a)(3)				
		264.283(a)(4)				
additional requirements determined by Regional Administrator	14	264.283(b)				

SUBPART N - LANDFILLS

APPLICABILITY

apply to hazardous waste disposal facilities using landfills	IV A	264.300				
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DESIGN AND OPERATING REQUIREMENTS

landfill not covered by 265.301(a) must have liner system	*,17 H	264.301(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
liner standards	IV A	264.301(a)(1)				
		264.301(a)(1)(i)				
		264.301(a)(1)(ii)				
		264.301(a)(1)(iii)				
leachate collection and removal system standards	IV A	264.301(a)(2)				
		264.301(a)(2)(i)				
		264.301(a)(2)(i)(A)				
		264.301(a)(2)(i)(B)				
		264.301(a)(2)(ii)				
exemption; factors Regional Administrator will consider	IV A	264.301(b)				
		264.301(b)(1)				
		264.301(b)(2)				
		264.301(b)(3)				
		264.301(b)(4)				
standards for new landfills; two or more liners and leachate collection system	17 H,77	264.301(c)				
alternative design	†17 H	264.301(d)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
33 monofills--criteria for waiving double liner requirements	IV A, 17 H	264.301(e)				
	IV A, 17 H,74	264.301(e)(1)				
	IV A, 17 H	264.301(e)(2)(i)(A)				
		264.301(e)(2)(i)(B)				
		264.301(e)(2)(i)(C)				
		264.301(e)(2)(ii)				
34 run-on control system	IV A, 17 H	264.301(f)				
34 run-off management system	IV A, 17 H	264.301(g)				
34 collection and holding facilities management	IV A, 17 H	264.301(h)				
34 wind dispersal control	IV A, 17 H	264.301(i)				
34 permit specification of design and operating practices	IV A, 17 H	264.301(j)				
liner and leachate re- quirements for landfills in Alabama	17 H	264.301(k)				
removed; section reserved	IV A, 17 I	264.302				

MONITORING AND INSPECTION

inspection during and immediately after construction or installation	IV A	264.303(a)				
		264.303(a)(1)				
		264.303(a)(2)				
inspections during operation to determine:	IV A	264.303(b)				
run-on and run-off control problems	IV A, 17 I	264.303(b)(1)				
35 proper functioning of wind dispersal control system	IV A, 17 I	264.303(b)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
35 presence of leachate in and proper functioning of leachate collection and removal systems	IV A, 17 I	264.303(b)(3)				
reserved		264.304-264.308				

SURVEYING AND RECORDKEEPING

items which must be in operating record	*	264.309				
location and dimensions of landfill to be shown on maps	IV A	264.309(a)				
contents of each cell and location of each hazardous waste type in each cell	IV A	264.309(b)				

CLOSURE AND POST-CLOSURE CARE

36	cover requirements at final closure	IV A	264.310(a)			
			264.310(a)(1)			
			264.310(a)(2)			
			264.310(a)(3)			
			264.310(a)(4)			
			264.310(a)(5)			
	post-closure requirements	IV A	264.310(b)			
	final cover requirements	IV A	264.310(b)(1)			
	leachate system requirements	IV A, 17 I	264.310(b)(2)			
	ground-water monitoring system requirements	IV A, 17 I	264.310(b)(3)			
	run-on and run-off control requirements	IV A, 17 I	264.310(b)(4)			
	protect and maintain surveyed benchmarks	IV A, 17 I	264.310(b)(5)			

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
removed	IV A, 17 I	264.310(c)				
reserved		264.311				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

placement prohibited unless waste and landfill meet Part 268 requirements and waste is no longer ignitable or reactive and 264.17(b) is complied with	IV A, 78	264.312(a)				
		264.312(a)(1)				
	IV A	264.312(a)(2)				
containerized wastes	IV A, 78	264.312(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

conditions for disposal in landfill	IV A	264.313				
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SPECIAL REQUIREMENTS FOR BULK AND CONTAINERIZED LIQUIDS

37 bulk liquid disposal prior to May 8, 1985 only if: liner and leachate system requirements liquids must be stabilized May 8, 1985 free liquids ban	IV A, 17 F	264.314(a)				
	IV A	264.314(a)(1)				
	IV A	264.314(a)(2)				
	IV A, 17 F	264.314(b)				
	16	264.314(c)				
37 paint filter test	IV A, 17 F	264.314(d)				
		264.314(d)(1)				
		264.314(d)(2)				
		264.314(d)(3)				
		264.314(d)(4)				
conditions for placement of containers holding free liquids in a landfill	IV A, 17 F					

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
nonhazardous liquids ban effective Novem- ber 8, 1985; what must be demonstrated to Regional Administrator for exemption	17 F	264.314(e)				
only reasonable avail- able alternative	†17 F	264.314(e)(1)				
not a risk of contaminating underground source of drinking water	†17 F	264.314(e)(2)				

SPECIAL REQUIREMENTS FOR CONTAINERS

requirements if containers not very small	*	264.315				
at least 90% full	IV A	264.315(a)				
crushed, shredded or reduced in volume before burial	IV A	264.315(b)				

DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS (LAB PACKS)

conditions for placement of overpacked drums in landfills	*	264.316				
inside container re- quirements including DOT requirements	IV A	264.316(a)				
overpacking--DOT requirements; outer container	IV A	264.316(b)				
absorbent material	IV A	264.316(c)				
incompatible wastes	IV A	264.316(d)				
reactive wastes	IV A	264.316(e)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
†, disposal in compliance with Part 268; fiber drums allowed for incineration of lab packs	78	264.316(f)				

SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, and F027

requirements for placement of F020, F021, F022, F023, F026 and F027 in a landfill	14	264.317(a)				
		264.317(a)(1)				
		264.317(a)(2)				
		264.317(a)(3)				
		264.317(a)(4)				
additional requirements that Regional Administrator may require	14	264.317(b)				

SUBPART O - INCINERATORS

APPLICABILITY

applies to incineration facilities	IV A,13	264.340(a)				
HW incinerators	13	264.340(a)(1)				
boilers and industrial furnaces	13,19	264.340(a)(2)				
exemptions	IV A	264.340(b)				
		264.340(b)(1)				
		264.340(b)(1)(i)				
		264.340(b)(1)(ii)				
		264.340(b)(1)(iii)				
		264.340(b)(1)(iv)				
		264.340(b)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
exemption for insignifi- cant concentrations	IV A	264.340(c)				
trial burns	*	264.340(d)				

WASTE ANALYSIS

in trial burn plan to provide required information	IV A	264.341(a)				
waste analysis during normal operation	IV A	264.341(b)				

PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (POHCs)

must be treated to 264.343 performance requirements	IV A	264.342(a)				
basis for selection in permit	IV A	264.342(b)(1)				
trial POHCs designated in trial burns	IV A	264.342(b)(2)				

PERFORMANCE STANDARDS

standards to be met for incinerators	*	264.343				
D.R.E. for hazardous waste	IV A,14	264.343(a)(1)				
D.R.E. for dioxins	14	264.343(a)(2)				
HCl emission control	IV A	264.343(b)				
particulate emission control	IV A	264.343(c)				
permit enforcement	*	264.343(d)				

HAZARDOUS WASTE INCINERATOR PERMITS

exceptions to burning only those wastes and using only those conditions specified in permit	IV A	264.344(a)				
		264.344(a)(1)				
		264.344(a)(2)				
permit modifications	IV A	264.344(b)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
permits for new incinerators	IV A	264.344(c)				
		264.344(c)(1)				
		264.344(c)(2)				
		264.344(c)(3)				
		264.344(c)(4)				

OPERATING REQUIREMENTS

operating conditions specified in the permit; specified on a case-by-case basis	IV A	264.345(a)				
operating requirements specify composition of waste feed; conditions specified start-up and shut-down conditions	IV A	264.345(b)				
		264.345(b)(1)				
		264.345(b)(2)				
		264.345(b)(3)				
		264.345(b)(4)				
		264.345(b)(5)				
	IV A	264.345(b)(6)				
fugitive emission control automatic cut-off of waste feed when operations must stop	IV A	264.345(c)				
	IV A	264.345(d)				
		264.345(d)(1)				
		264.345(d)(2)				
		264.345(d)(3)				
automatic cut-off of waste feed when operations must stop	IV A	264.345(e)				
	IV A	264.345(f)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
reserved		264.346				

MONITORING AND INSPECTIONS

required monitoring while incinerating hazardous waste	IV A	264.347(a)				
		264.347(a)(1)				
		264.347(a)(2)				
		264.347(a)(3)				
daily inspections of incinerator and associated equipment	IV A	264.347(b)				
weekly inspections of emergency waste feed cutoff system and associated alarms	IV A	264.347(c)				
monitoring and inspection data in 264.73 operating log	IV A	264.347(d)				
reserved		264.348-264.350				

CLOSURE

remove all hazardous wastes and residues	IV A	264.351				
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SUBPART X - MISCELLANEOUS UNITS

APPLICABILITY

to whom requirements apply	45	264.600				
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ENVIRONMENTAL PERFORMANCE STANDARDS

introductory paragraph regarding human health and the environment	45	264.601				
prevention of release to ground water	45	264.601(a)				
characteristics of waste	45	264.601(a)(1)				

2022

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
characteristics of unit	45	264.601(a)(2)				
quality of existing ground water	45	264.601(a)(3)				
ground-water flow	45	264.601(a)(4)				
ground-water users	45	264.601(a)(5)				
patterns of use	45	264.601(a)(6)				
deposition or migration of wastes	45	264.601(a)(7)				
potential for health risks	45	264.601(a)(8)				
potential for damage from exposure	45	264.601(a)(9)				
prevention of release to surface waters and soil	45	264.601(b)				
characteristics of waste	45	264.601(b)(1)				
migration prevention systems and structures	45	264.601(b)(2)				
hydrologic characteristics	45	264.601(b)(3)				
precipitation patterns	45	264.601(b)(4)				
ground-water flow	45	264.601(b)(5)				
proximity to surface waters	45	264.601(b)(6)				
current and potential uses	45	264.601(b)(7)				
existing quality of surface waters and soils	45	264.601(b)(8)				
patterns of land use	45	264.601(b)(9)				
potential for health risks	45	264.601(b)(10)				
potential for damage caused by exposure	45	264.601(b)(11)				
prevention of releases to the air	45	264.601(c)				
characteristics of waste	45	264.601(c)(1)				

2020

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
emission prevention systems and structures	45	264.601(c)(2)				
operating characteristics	45	264.601(c)(3)				
characteristics of unit and area	45	264.601(c)(4)				
existing quality of air	45	264.601(c)(5)				
potential for health risks	45	264.601(c)(6)				
potential for damage from exposure	45	264.601(c)(7)				

MONITORING, ANALYSIS, INSPECTION, RESPONSE, REPORTING, AND CORRECTIVE ACTION

compliance requirements	45	264.602				
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POST-CLOSURE CARE

post-closure requirements	45	264.603				
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SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS

APPLICABILITY

regulations in this subpart apply to owners and operators of facilities that treat, store or dispose of hazardous waste except as provided in 264.1	79	264.1030(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
except for 264.1034(d) and 264.1035(e), Subpart AA applies to process vents associated with operations managing hazar- dous wastes with at least 10-ppmw organic concentrations if conducted in specific units	79	264.1030(b)				
units subject to the permitting requirements of Part 270	79	264.1030(b)(1)				
hazardous waste recycling units located on hazardous waste management facili- ties otherwise subject to Part 270 permitting requirements	79	264.1030(b)(2)				
incorporation of 264.1032 through 264.1036 require- ments for permits received under Section 3005 of RCRA prior to December 21, 1990, when permit is reissued under 124.15 or reviewed under 270.50; note included	79	264.1030(c)				
DEFINITIONS						
introductory paragraph	79	264.1031				

5025

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"air stripping operation"	79	264.1031				
"bottoms receiver"	79	264.1031				
"closed-vent system"	79	264.1031				
"condenser"	79	264.1031				
"connector"	79	264.1031				
"continuous recorder"	79	264.1031				
"control device"	79	264.1031				
"control device shutdown"	79	264.1031				
"distillate receiver"	79	264.1031				
"distillation operation"	79	264.1031				
"double block and bleed system"	79	264.1031				
"equipment"	79	264.1031				
"flame zone"	79	264.1031				
"flow indicator"	79	264.1031				
"first attempt at repair"	79	264.1031				
"fractionation operation"	79	264.1031				
"hazardous waste management unit shutdown"	79	264.1031				
"hot well"	79	264.1031				
"in gas/vapor service"	79	264.1031				
"in heavy liquid service"	79	264.1031				
"in light liquid service"	79	264.1031				
"in situ sampling systems"	79	264.1031				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"in vacuum service"	79	264.1031				
"malfunction"	79	264.1031				
"open-ended valve or line"	79	264.1031				
"pressure release"	79	264.1031				
"process heater"	79	264.1031				
"process vent"	79	264.1031				
"repaired"	79	264.1031				
"sensor"	79	264.1031				
"separator tank"	79	264.1031				
"solvent extraction operation"	79	264.1031				
"startup"	79	264.1031				
"steam stripping operation"	79	264.1031				
"surge control tank"	79	264.1031				
"thin-film evaporation operation"	79	264.1031				
"vapor incinerator"	79	264.1031				
"vented"	79	264.1031				

STANDARDS: PROCESS VENTS

owner or operator of facility with process vents meeting certain conditions shall either:	79	264.1032(a)				
reduce total organic emissions below 1.4 kg/h and 2.8 Mg/yr	79	264.1032(a)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
using control device, reduce total organic emissions by 95 weight percent	79	264.1032(a)(2)				
264.1033 requirements must be met if owner or operator installs closed-vent system and control device to comply with 264.1032(a) provisions	79	264.1032(b)				
use of engineering calculations or performance tests (conforming to 264.1034(c) requirements) may be used for determining 1) vent emissions and emission reductions or 2) total organic compound concentrations achieved by add-on control devices	79	264.1032(c)				
use of 264.1034(c) procedures to resolve disagreements between owner or operator and Regional Administrator on vent determinations	79	264.1032(d)				

1028

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

compliance with provisions of 264.1033 by owners or operators of closed-vent systems and control devices used to comply with provisions of Part 264	79	264.1033(a)(1)				
preparation of an implementation schedule by owner or operator, of existing facility, who cannot install a closed-vent system and control device to comply with Subpart AA provisions by effective date; units that begin operation after December 21, 1990, must comply with the rules immediately	79	264.1033(a)(2)				
specification of efficiency standards for control device involving vapor recovery unless 264.1032(a)(1) emission limits can be attained	79	264.1033(b)				

5028

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
organic emission standards for enclosed combustion device; for boiler or process heater used as control device, vent stream introduced into flame zone	79	264.1033(c)				
specifications for the design and operation of a flare	79	264.1033(d)(1)				
	79	264.1033(d)(2)				
	79	264.1033(d)(3)				
	79	264.1033(d)(4)(i)				
	79	264.1033(d)(4)(ii)				
	79	264.1033(d)(4)(iii)				
	79	264.1033(d)(5)				
	79	264.1033(d)(6)				
determination of compliance of a flare with the visible emission provisions of Subpart AA using Reference Method 22 in 40 CFR Part 60	79	264.1033(e)(1)				
calculation of net heating value of gas being combusted in a flare using specified equation	79	264.1033(e)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination of actual exit velocity of a flare using flow rate as determined by Reference Methods 2, 2A, 2C or 2D in 40 CFR Part 60	79	264.1033(e)(3)				
determination of maximum allowed velocity for a flare complying with 264.1033(d)(4)(iii)	79	264.1033(e)(4)				
determination of maximum allowed velocity for an air-assisted flare	79	264.1033(e)(5)				
monitoring and inspection of control device by owner and operator to ensure compliance with 264.1033 by implementing specified requirements:	79	264.1033(f)				
installation, calibration, maintenance, and operation of a flow indicator; where sensor shall be installed	79	264.1033(f)(1)				
specifications for installation, calibration, maintenance, and operation of a device to continuously monitor control device operation:	79	264.1033(f)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
temperature monitoring device with a continuous recorder for a thermal vapor incinerator	79	264.1033(f)(2)(i)				
temperature monitoring device with a continuous recorder for a catalytic vapor incinerator	79	264.1033(f)(2)(ii)				
heat sensing monitoring device with a continuous recorder for a flare	79	264.1033(f)(2)(iii)				
temperature monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity less than 44 MW	79	264.1033(f)(2)(iv)				
monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity greater than or equal to 44 MW	79	264.1033(f)(2)(v)				
for a condenser, either:	79	264.1033(f)(2)(vi)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring device with a continuous recorder to measure concen- tration level of the organic compounds in the exhaust vent stream from the condenser temperature	79	264.1033(f)(2)(vi)(A)				
monitoring device with a continuous recorder; specifications	79	264.1033(f)(2)(vi)(B)				
for a carbon adsorption system, either:	79	264.1033(f)(2)(vii)				
monitoring device with a continuous recorder to measure concen- tration level of organic com- pounds in exhaust vent stream from carbon bed	79	264.1033(f)(2)(vii)(A)				
monitoring device with a continuous recorder to measure a para- meter that indicates the carbon bed is regenerated on a regular pre- determined time cycle	79	264.1033(f)(2)(vii)(B)				

2030

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
daily inspection of readings from monitoring device required by 264.1033(f)(1) and 264.1033(f)(2); implement corrective measures if necessary	79	264.1033(f)(3)				
replacement of existing carbon in control device by owner or operator using a fixed-bed carbon adsorber that meets the 264.1035(b)(4)(iii)(F) requirement	79	264.1033(g)				
replacement of carbon on a regular basis by owner or operator using a carbon canister	79	264.1033(h)				
monitor organic compounds daily or at interval no greater than 20 percent of time required to consume total carbon working capacity established at 264.1035(b)(4)(iii)(G), whichever is longer; replace existing carbon when carbon break-through occurs	79	264.1033(h)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
replacement of existing carbon at intervals less than design carbon replacement inter- val established as a requirement of 264.1035(b)(4) (iii)(G)	79	264.1033(h)(2)				
alternative oper- ational or process parameter may be monitored if specific demonstra- tion can be made	79	264.1033(i)				
documentation requirements for owner or operator seeking to comply with Part 264 provisions by using a control device other than a thermal vapor incinerator, cata- lytic vapor incinerator, flare, boiler, process heater condenser, or carbon adsorption system	79	264.1033(j)				
design and opera- tional requirements for closed-vent systems based on 264.1034(b) methods	79	264.1033(k)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring of closed-vent systems during initial leak detection monitoring, conducted by the date that the facility becomes subject to 264.1033 provisions, annually, and as requested by Regional Administrator	79	264.1033(k)(2)				
control of detectable emissions no later than 15 calendar days after emission is detected	79	264.1033(k)(3)				
first attempt at repair no later than 5 calendar days after emission is detected	79	264.1033(k)(4)				
closed vent systems and control devices used to comply with provisions of Subpart AA shall be operated at all times when emissions may be vented to them	79	264.1033(l)				

TEST METHODS AND PROCEDURES

compliance with 264.1034 test methods and procedures by owner or operator subject to provisions of Subpart AA	79	264.1034(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when testing a closed-vent system for compliance with 264.1033(k) requirements, comply with following test requirements:	79	264.1034(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	79	264.1034(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	79	264.1034(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	79	264.1034(b)(3)				
calibration gases shall be:	79	264.1034(b)(4)				
zero air	79	264.1034(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	79	264.1034(b)(4)(ii)				
background level determined as set forth in Reference Method 21	79	264.1034(b)(5)				
instrument probe traverse requirements as described in Reference Method 21	79	264.1034(b)(6)				
arithmetic difference compared with 500 ppm for compliance determination	79	264.1034(b)(7)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance test requirements to determine compliance with 264.1032(a) and 264.1033(c)	79	264.1034(c)				
reference methods and calculation procedures to use when determining total organic compound concentrations and mass flow rates	79	264.1034(c)(1)				
Method 2 in 40 CFR Part 60 for velocity and volumetric flow rate	79	264.1034(c)(1)(i)				
Method 18 in 40 CFR Part 60 for organic content	79	264.1034(c)(1)(ii)				
performance tests in three separate runs; conditions for conducting runs; averaging results on a time-weighted basis	79	264.1034(c)(1)(iii)				
equation for determining total organic mass flow rates	79	264.1034(c)(1)(iv)				
equation for determining annual total organic emission rate	79	264.1034(c)(1)(v)				
determination of total organic emissions from all process vents using 264.1034(c)(1)(iv) equation and 264.1034(c)(1)(v) equation	79	264.1034(c)(1)(vi)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
recording of process information necessary to determine performance test conditions; certain operational periods not applicable	79	264.1034(c)(2)				
performance testing facilities provided by owner or operator	79	264.1034(c)(3)				
sampling ports adequate for 264.1034(c)(1) test methods	79	264.1034(c)(3)(i)				
safe sampling platform(s)	79	264.1034(c)(3)(ii)				
safe access to sampling platform(s)	79	264.1034(c)(3)(iii)				
utilities for sampling and testing equipment	79	264.1034(c)(3)(iv)				
use of time-weighted average of three runs in making compliance determinations; Regional Administrator approval needed for average based on two runs if a sample is accidentally lost or certain conditions occur	79	264.1034(c)(4)				

1035

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
to demonstrate a process vent is not subject to Subpart AA requirements, use one of two methods to determine an annual average total organic concentration of less than 10 ppmw	79	264.1034(d)				
direct measurement using the following procedures:	79	264.1034(d)(1)				
minimum of four grab samples under specified process conditions	79	264.1034(d)(1)(i)				
for waste generated onsite, collect grab samples before exposure to the atmosphere; for waste generated offsite, collect grab samples at the inlet to the first waste management unit that receives the waste under specific conditions	79	264.1034(d)(1)(ii)				
sample analysis using Method 9060 or 8240 of SW-846	79	264.1034(d)(1)(iii)				
calculation of time-weighted, annual average total organic concentration of waste	79	264.1034(d)(1)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
using knowledge of the waste to determine its total organic concentration is less than 10 ppmw; documentation of the waste determination is required; examples of acceptable documentation	79	264.1034(d)(2)				
guidelines for the determination that hazardous wastes are managed with time-weighted, annual average total organic concentrations less than 10 ppmw	79	264.1034(e)				
	79	264.1034(e)(1)				
	79	264.1034(e)(2)				
	79	264.1034(e)(3)				
Method 8240 procedures used to resolve dispute in case of disagreement between owner or operator and Regional Administrator regarding the determination made in 264.1034(e)	79	264.1034(f)				

RECORDKEEPING REQUIREMENTS

compliance with recordkeeping requirements	79	264.1035(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one record-keeping system	79	264.1035(a)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information that must be recorded in the facility operating record	79	264.1035(b)				
for 264.1033(a)(2)-complying facilities, an implementation schedule that includes specified dates and rationale; inclusion in operating record by effective date the facility becomes subject to Subpart AA provisions	79	264.1035(b)(1)				
up-to-date documentation of 264.1032 standards	79	264.1035(b)(2)				
information and data identifying all affected process vents and specific information for each vent	79	264.1035(b)(2)(i)				
information and data supporting determinations of vent emissions and emission reductions; new determination required if any action taken increases total emissions	79	264.1035(b)(2)(ii)				
a performance test plan for owners or operators using test data for determination	79	264.1035(b)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
a description of the determination that a planned test will be conducted when unit is operating at the highest load or capacity level	79	264.1035(b)(3)(i)				
detailed engineer- ing description of closed-vent system and control device	79	264.1035(b)(3)(ii)				
	79	264.1035(b)(3)(ii)(A)				
	79	264.1035(b)(3)(ii)(B)				
	79	264.1035(b)(3)(ii)(C)				
	79	264.1035(b)(3)(ii)(D)				
	79	264.1035(b)(3)(ii)(E)				
detailed description of sampling and monitoring procedures	79	264.1035(b)(3)(iii)				
documentation of compliance with 264.1033	79	264.1035(b)(4)				
information refer- ences and sources	79	264.1035(b)(4)(i)				
records including the dates of each compliance test required by 264.1033(k)	79	264.1035(b)(4)(ii)				

2.042

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
if engineering calculations are used, a design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters	79	264.1035(b)(4)(iii)				
design analysis requirements for a thermal vapor incinerator	79	264.1035(b)(4)(iii)(A)				
design analysis requirements for a catalytic vapor incinerator	79	264.1035(b)(4)(iii)(B)				
design analysis requirements for a boiler or process heater	79	264.1035(b)(4)(iii)(C)				
design analysis requirements for a flare	79	264.1035(b)(4)(iii)(D)				
design analysis requirements for a condenser	79	264.1035(b)(4)(iii)(E)				
design analysis requirements for carbon adsorption system that regenerates the carbon bed directly onsite	79	264.1035(b)(4)(iii)(F)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis requirements for a carbon adsorption system that does not regenerate the carbon bed directly onsite	79	264.1035(b)(4)(iii)(G)				
certification statement signed and dated by owner or operator regarding operating parameters	79	264.1035(b)(4)(iv)				
certification statement signed and dated by owner or operator regarding control equipment meeting design specifications	79	264.1035(b)(4)(v)				
all test results when performance tests are used to demonstrate compliance	79	264.1035(b)(4)(vi)				
information to be recorded and kept up-to-date in the facility operating record for each closed-vent system and control device subject to the Part 264 regulations	79	264.1035(c)				
description and date of each modification	79	264.1035(c)(1)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identification of operating para- meter, description of monitoring device and location diagram for compliance with 264.1033(f)(1) and (f)(2)	79	264.1035(c)(2)				
information required by 264.1033(f)-(k)	79	264.1035(c)(3)				
date, time and duration of each period that occurs while control device is operating when any monitored para- meter exceeds the value established in the design analysis	79	264.1035(c)(4)				
when combustion temperature is below 760°C for a thermal vapor incinerator	79	264.1035(c)(4)(i)				
	79	264.1035(c)(4)(ii)				
when temperature of vent stream is more than 28°C below average temperature or when temperature difference across catalyst bed is less than 80 percent of the design average temperature difference for a catalytic vapor incinerator	79	264.1035(c)(4)(iii)				
	79	264.1035(c)(4)(iii)(A)				
	79	264.1035(c)(4)(iii)(B)				
boiler or process heater	79	264.1035(c)(4)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
flame zone temperature is more than 28°C below design average temperature	79	264.1035(c)(4)(iv)(A)				
position changes	79	264.1035(c)(4)(iv)(B)				
period when the pilot flame is not ignited for a flare	79	264.1035(c)(4)(v)				
period when organic compounds are more than 20 percent greater than the design level for a condenser	79	264.1035(c)(4)(vi)				
condenser that complies with 264.1033(f)(2) (vi)(B)	79	264.1035(c)(4)(vii)				
temperature of exhaust vent stream is more than 6°C above design average temper- ature	79	264.1035(c)(4)(vii)(A)				
temperature of exiting coolant fluid is more than 6°C above design average temper- ature	79	264.1035(c)(4)(vii)(B)				
period when organic compounds are more than 20 percent greater than the design level for a carbon adsorption system	79	264.1035(c)(4)(viii)				

2047

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
period when vent stream flow exceeds pre-determined regeneration time for a carbon adsorption system	79	264.1035(c)(4)(ix)				
explanation for each period under 264.1035(c)(4) of the cause for parameters being exceeded and measures implemented	79	264.1035(c)(5)				
date when existing carbon is replaced	79	264.1035(c)(6)				
log to record specific dates date of each control device startup and shutdown	79	264.1035(c)(7)				
	79	264.1035(c)(7)(i)				
	79	264.1035(c)(7)(ii)				
	79	264.1035(c)(7)(ii)				
records required by paragraphs 264.1035(c)(3)-(c)(8) need be kept only 3 years	79	264.1035(c)(8)				
specification of recordkeeping requirements for certain control devices by Regional Administrator	79	264.1035(d)				
logging of information used to determine if process vent is subject to 264.1032 and 264.1032(d)(2)	79	264.1035(e)				
	79	264.1035(f)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
REPORTING REQUIREMENTS						
semiannual report submitted by date specified by Regional Administrator; information the report must contain:	79	264.1036(a)				
EPA ID number, name and address of facility	79	264.1036(a)(1)				
dates when design specifications are exceeded, duration and cause, and corrective measures taken	79	264.1036(a)(2)				
exception to reporting requirements specified in 264.1036(a)	79	264.1036(b)				

SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

APPLICABILITY

owners and operators of facilities that treat, store or dispose of hazardous wastes except as provided in 264.1	79	264.1050(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
except as provided in 264.1064(k), applicability of Subpart BB to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in units or facilities subject to Part 270 permitting requirements	79	264.1050(b)				
	79	264.1050(b)(1)				
	79	264.1050(b)(2)				
for permits received under Section 3005 of RCRA prior to December 21, 1990, requirements of 264.1052-264.1065 must be incorporated when permit is reissued under 124.15 or reviewed under 270.50	79	264.1050(c)				
equipment subject to Subpart BB, Part 264 shall be marked	79	264.1050(d)				
equipment in vacuum service excluded from requirements of 264.1052 to 264.1060 if identified as required in 264.1064(g)(5)	79	264.1050(e)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
DEFINITIONS						
all terms have meaning given them in 264.1031, the Act, and Parts 260-266	79	264.1051				
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE						
monthly monitoring to detect leaks as specified by 264.1063(b) methods except as provided in 264.1052(d), (e) and (f)	79	264.1052(a)(1)				
visual inspection each calendar week	79	264.1052(a)(2)				
conditions indicating a leak is detected	79	264.1052(b)(1)				
	79	264.1052(b)(2)				
time frame for leak repair, except as provided in 264.1059	79	264.1052(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	264.1052(c)(2)				
pump equipped with dual mechanical seal system that includes a barrier fluid system is exempt from 264.1052(a) if specific requirements are met:	79	264.1052(d)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
operational and equipment requirements for a dual mechanical seal system	79	264.1052(d)(1)				
	79	264.1052(d)(1)(i)				
	79	264.1052(d)(1)(ii)				
	79	264.1052(d)(1)(iii)				
organic concentra- tion limitation for barrier fluid system	79	264.1052(d)(2)				
sensor requirement	79	264.1052(d)(3)				
weekly visual check of pump	79	264.1052(d)(4)				
daily check of barrier fluid system sensor or monthly check of audible alarm	79	264.1052(d)(5)(i)				
determination of criterion to indicate failure of systems	79	264.1052(d)(5)(ii)				
leak detection criteria	79	264.1052(d)(6)(i)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	79	264.1052(d)(6)(ii)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	264.1052(d)(6)(iii)				
conditions under which pump desig- nated for no detectable emis- sions is exempt from 264.1052(a), (c) and (d) requirements	79	264.1052(e)				
	79	264.1052(e)(1)				
	79	264.1052(e)(2)				
	79	264.1052(e)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
pump equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1052(a)-(e) requirements	79	264.1052(f)				

STANDARDS: COMPRESSORS

seal system requirement for compressor, except as provided in 264.1053(h) and (i)	79	264.1053(a)				
	79	264.1053(b)				
	79	264.1053(b)(1)				
	79	264.1053(b)(2)				
specifications for compressor seal system	79	264.1053(b)(3)				
organic concentration limitation for barrier fluid	79	264.1053(c)				
sensor requirement	79	264.1053(d)				
daily check of barrier fluid system sensor or monthly check of audible alarm; daily check if compressor located within boundary of unmanned site	79	264.1053(e)(1)				
determination of criterion to indicate failure of systems	79	264.1053(e)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
leak detection criteria	79	264.1053(f)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	79	264.1053(g)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	264.1053(g)(2)				
compressor equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1053(a) and (b) requirements, except as provided in 264.1053(i)	79	264.1053(h)				
conditions under which compressor designated for no detectable emissions is exempt from 264.1053(a) through (h) requirements	79	264.1053(i)				
	79	264.1053(i)(1)				
	79	264.1053(i)(2)				

STANDARDS: PRESSURE RELIEF DEVICES IN GAS/VAPOR SERVICE

except during pressure releases, no detectable emission standards for the operation of pressure relief device in gas/vapor service, as measured by 264.1063(c) method	79	264.1054(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
time requirement and criteria for return of pressure relief device to a condition of no detectable emissions, except as provided in 264.1059	79	264.1054(b)(1)				
monitoring of pressure relief device within 5 calendar days after pressure relief to confirm no detectable emissions, as measured by 264.1063(c) method	79	264.1054(b)(2)				
pressure relief device equipped with closed-vent system and control device in compliance with 264.1060 is exempt from 264.1054(a) and (b)	79	264.1054(c)				

STANDARDS: SAMPLING CONNECTING SYSTEMS

sampling connecting system equipped with closed purge or closed-vent system	79	264.1055(a)				
return, collect and recycle purged waste with no detectable emissions; control device in compliance with 264.1060	79	264.1055(b)				
	79	264.1055(b)(1)				
	79	264.1055(b)(2)				
	79	264.1055(b)(3)				

1055

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
in situ sampling systems exempt from 264.1055(a) and (b) requirements	79	264.1055(c)				
STANDARDS: OPEN-ENDED VALVES OR LINES						
each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve	79	264.1056(a)(1)				
requirement to seal open end at all times except during specified operations	79	264.1056(a)(2)				
operational requirements for open-ended valve or line equipped with a second valve	79	264.1056(b)				
requirements for bleed valve or line when a double block and bleed system is used; compliance with 264.1056(a)	79	264.1056(c)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

STANDARDS: VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE

monthly monitoring of each valve in gas/vapor or light liquid service using 264.1063(b) methods; compliance with 264.1057(b)-(e), except as provided in 264.1057(f), (g) and (h), 264.1061 and 264.1062	79	264.1057(a)				
instrument reading of 10,000 ppm or greater indicates leak	79	264.1057(b)				
monitoring requirements if leak not detected for two months	79	264.1057(c)(1)				
monthly monitoring requirement if leak detected	79	264.1057(c)(2)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	79	264.1057(d)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	264.1057(d)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
best practices to include in first attempt at repair valve designated for no detectable emissions under 264.1064(g)(2) is exempt from 264.1057(a) requirements if specified conditions are met conditions under which an unsafe-to-monitor valve as described in 264.1064(h)(1) is exempt from 264.1057(a) requirements conditions under which a difficult-to-monitor valve as described in 264.1064(h)(2) is exempt from 264.1057(a) requirements	79	264.1057(e)				
	79	264.1057(e)(1)				
	79	264.1057(e)(2)				
	79	264.1057(e)(3)				
	79	264.1057(e)(4)				
	79	264.1057(f)				
	79	264.1057(f)(1)				
	79	264.1057(f)(2)				
	79	264.1057(f)(3)				
	79	264.1057(g)				
	79	264.1057(g)(1)				
	79	264.1057(g)(2)				
	79	264.1057(h)				
	79	264.1057(h)(1)				
	79	264.1057(h)(2)				
	79	264.1057(h)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**STANDARDS: PUMPS AND VALVES IN HEAVY LIQUID SERVICE, PRESSURE
RELIEF DEVICES IN LIGHT LIQUID OR HEAVY LIQUID SERVICE, AND FLANGES
AND OTHER CONNECTORS**

monitoring of specified pumps and valves, pressure relief devices, flanges and other connectors within 5 days using 264.1063(b) methods in case of potential leaks	79	264.1058(a)				
reading of 10,000 ppm or greater indicates leak	79	264.1058(b)				
repair of leak not to exceed 15 calendar days, except as provided in 264.1059	79	264.1058(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	264.1058(c)(2)				
first attempt at repair includes best practices described under 264.1057(e)	79	264.1058(d)				

STANDARDS: DELAY OF REPAIR

requirements for the delay of repair of equip- ment for which leaks have been detected	79	264.1059(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
type of equipment for which delay of repair allowed	79	264.1059(b)				
conditions under which delay of repair of valves allowed	79	264.1059(c)				
	79	264.1059(c)(1)				
	79	264.1059(c)(2)				
	79	264.1059(d)				
conditions under which delay of repair of pumps allowed	79	264.1059(d)(1)				
	79	264.1059(d)(2)				
	79	264.1059(e)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

owners or operators of closed-vent systems and control devices shall comply with 264.1033 provisions	79	264.1060				
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**ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID
SERVICE: PERCENTAGE OF VALVES ALLOWED TO LEAK**

alternative stan- dard allowing no greater than 2 percent of valves to leak for an owner or operator subject to 264.1057 requirements	79	264.1061(a)				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
notification, performance test, and repair require- ments if an owner or operator decides to comply with alternative standard	79	264.1061(b)				
	79	264.1061(b)(1)				
	79	264.1061(b)(2)				
	79	264.1061(b)(3)				
monitoring standards, leak detection criterion and determination of leak percentage when conducting performance tests	79	264.1061(c)				
	79	264.1061(c)(1)				
	79	264.1061(c)(2)				
	79	264.1061(c)(3)				
written notification to Regional Administrator of intent to follow 264.1057(a)-(e) work practice standard if owner or operator decides to no longer comply with 264.1061	79	264.1061(d)				

**ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID
SERVICE: SKIP PERIOD LEAK DETECTION AND REPAIR**

election to comply with 264.1062 (b)(2) and (3) alternative work practices by owner or operator subject to 264.1057 requirements	79	264.1062(a)(1)				
notification of Regional Admini- strator before implementing alternative work practice	79	264.1062(a)(2)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with 264.1057 requirements, except as described in 264.1062(b)(2) and (b)(3)	79	264.1062(b)(1)				
conditions under which an owner or operator may begin to skip one of the quarterly leak detection periods for valves subject to 264.1057 requirements	79	264.1062(b)(2)				
conditions under which an owner or operator may begin to skip three of the quarterly leak detection periods for valves subject to 264.1057 requirements	79	264.1062(b)(3)				
compliance with 264.1057 monthly monitoring require- ments if percentage of valves leaking exceeds 2 percent; may elect to use 264.1062 require- ments again after meeting 264.1057(c)(1) requirements	79	264.1062(b)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
TEST METHODS AND PROCEDURES						
compliance with test methods and procedure require- ments by owner or operator subject to provisions of Subpart BB	79	264.1063(a)				
leak detection monitoring as required in 264.1052-264.1062 shall comply with specified requirements:	79	264.1063(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	79	264.1063(b)(1)				
detection instru- ment shall meet the performance criteria of Reference Method 21	79	264.1063(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	79	264.1063(b)(3)				
calibration gases shall be:	79	264.1063(b)(4)				
zero air	79	264.1063(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	79	264.1063(b)(4)(ii)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
instrument probe traverse requirements as described in Reference Method 21	79	264.1063(b)(5)				
test compliance requirements for equipment with no detectable emis- sions as required in 264.1052(e), 264.1053(i), 264.1054 and 264.1057(f)	79	264.1063(c)				
	79	264.1063(c)(1)				
	79	264.1063(c)(2)				
	79	264.1063(c)(3)				
	79	264.1063(c)(4)				
in accordance with 264.13(b), determination by owner or operator of whether equipment contains or contacts a hazardous waste with organic concentration equal to or greater than 10% by weight using the following:	79	264.1063(d)				
methods described in ASTM Methods D 2267-88, E 169-87, E 168-88 and E 260-85	79	264.1063(d)(1)				
Method 9060 or 8240 of SW-846	79	264.1063(d)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced; documentation required; examples of documentation	79	264.1063(d)(3)				
determination as specified in 264.1063(d) can be revised only after following 264.1063(d)(1) or (d)(2) procedures	79	264.1063(e)				
use of 264.1063(d)(1) or (d)(2) to resolve determination disputes between owner or operator and Regional Administrator	79	264.1063(f)				
samples used for determination representative of highest expected total organic content hazardous waste	79	264.1063(g)				
to determine if pumps or valves are in light liquid service, vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86	79	264.1063(h)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance tests for control device shall comply with 264.1034(c)(1) through (c)(4) procedures	79	264.1063(i)				
RECORDKEEPING REQUIREMENTS						
compliance with recordkeeping requirements	79	264.1064(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	79	264.1064(a)(2)				
specific information that owners and operators must record in the facility operating record for facilities that comply with the provisions of 264.1033(a)(2), an implementation schedule as specified in 264.1033(a)(2)	79	264.1064(b)				
	79	264.1064(b)(1)				
	79	264.1064(b)(1)(i)				
	79	264.1064(b)(1)(ii)				
	79	264.1064(b)(1)(iii)				
	79	264.1064(b)(1)(iv)				
	79	264.1064(b)(1)(v)				
	79	264.1064(b)(1)(vi)				
	79	264.1064(b)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
performance test plan as specified in 264.1035(b)(3) if test data are used for control device demonstration	79	264.1064(b)(3)				
documentation of compliance with 264.1060, including documentation or results specified in 264.1035(b)(4)	79	264.1064(b)(4)				
information requirements when each leak is detected as specified in 264.1052, 264.1053, 264.1057 and 264.1058	79	264.1064(c)				
	79	264.1064(c)(1)				
	79	264.1064(c)(2)				
	79	264.1064(c)(3)				
inspection log information requirements when each leak is detected as speci- fied in 264.1052, 264.1053, 264.1057 and 264.1058	79	264.1064(d)				
	79	264.1064(d)(1)				
	79	264.1064(d)(2)				
	79	264.1064(d)(3)				
	79	264.1064(d)(4)				
	79	264.1064(d)(5)				
	79	264.1064(d)(6)				
	79	264.1064(d)(7)				
	79	264.1064(d)(8)				
	79	264.1064(d)(9)				
	79	264.1064(d)(10)				

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
for each closed-vent system and control device subject to 264.1060, design documentation and monitoring, operating and inspection information recorded in facility operating record as specified in 264.1035(c)	79	264.1064(e)				
for a control device other than thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, Regional Administrator will specify appropriate recordkeeping requirements	79	264.1064(f)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information requirements for equipment subject to the requirements of 264.1052 through 264.1060 to be recorded in a log and kept in the facility operating record	79	264.1064(g)				
	79	264.1064(g)(1)				
	79	264.1064(g)(2)(i)				
	79	264.1064(g)(2)(ii)				
	79	264.1064(g)(3)				
	79	264.1064(g)(4)(i)				
	79	264.1064(g)(4)(ii)				
	79	264.1064(g)(4)(iii)				
	79	264.1064(g)(5)				
information requirements for valves subject to the requirements of 264.1057(g) and (h)	79	264.1064(h)				
	79	264.1064(h)(1)				
	79	264.1064(h)(2)				
information requirements for valves complying with 264.1062	79	264.1064(i)				
	79	264.1064(i)(1)				
	79	264.1064(i)(2)				
additional information requirements	79	264.1064(j)				
criteria required in 264.1052(d)(5)(ii) and 264.1053(e)(2) and an explanation of the design criteria	79	264.1064(j)(1)				
any changes to the criteria and the reasons for the changes	79	264.1064(j)(2)				

2065

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information requirements to be recorded in a log for determining exemptions as provided in the applicability section of Subpart BB and other specific Subparts	79	264.1064(k)				
	79	264.1064(k)(1)				
	79	264.1064(k)(2)				
	79	264.1064(k)(3)				
records of equipment leak and operating information need be kept for only three years	79	264.1064(l)				
the owner or operator of facility subject to Subpart BB and to regulations at 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V, may elect to determine compliance by documentation either pursuant to 264.1064 or provisions of 40 CFR Part 60 or Part 61, to the extent that the documentation duplicates the documentation required under Subpart BB	79	264.1064(m)				

SPA 9

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
REPORTING REQUIREMENTS						
a semiannual report submitted by owners or operators to Regional Administrator by specified dates	79	264.1065(a)				
specific information the semiannual report must contain	79	264.1065(a)(1)				
	79	264.1065(a)(2)				
	79	264.1065(a)(2)(i)				
	79	264.1065(a)(2)(ii)				
	79	264.1065(a)(2)(iii)				
	79	264.1065(a)(3)				
	79	264.1065(a)(4)				
	a report to Regional Administrator not required if, during the semi-annual reporting period, leaks from valves, pumps, and compressors are repaired per 264.1057(d), 264.1052(c) and (d)(6) and 264.1053(g) requirements and the control device does not exceed or operate outside 264.1064(e) specifications for more than 24 hours	79	264.1065(b)			

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX I TO PART 264

RECORDKEEPING INSTRUCTIONS

instructions for keeping portions of the operating record	*	Appendix I				
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APPENDIX IV TO PART 264

COCHRAN'S APPROXIMATION TO THE BEHRENS-FISHER STUDENTS' T-TEST

instructions for calculation of the t-test	*	Appendix IV				
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APPENDIX V TO PART 264

EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

list of wastes and potential conse- quences of mixing	*	Appendix V				
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APPENDIX VI TO PART 264

**POLITICAL JURISDICTIONS IN WHICH COMPLIANCE WITH §264.18(a) MUST
BE DEMONSTRATED**

political jurisdictions by state and city	*	Appendix VI				
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APPENDIX IX TO PART 264

GROUND-WATER MONITORING LIST

list of substances, suggested test methods, and prac- tical quantitation limits	40	Appendix IX				
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**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- ∇ Designates paragraphs/subparagraphs affected by Revision Checklist 51 (September 1, 1988; 53 FR 33938) which was withheld by EPA. See the note at the beginning of this checklist for an explanation.
- 1 Revision Checklist 54 removed the comment following 264.54(e).
 - 2 This requirement was moved from 264.75(h) to 264.75(j) by Revision Checklist 30.
 - 3 Checklist IV A shows this text as 264.77(c), but July 1, 1983 CFR shows it as 264.77(b).
 - 4 This paragraph was totally revised by Revision Checklist 17 I.
 - 5 In Checklist IV A, this text was included in 264.90(b)(2).
 - 6 Revision Checklist 55 moved text from 264.97(g)(3) to 264.97(a)(1)(i).
 - 7 Revision Checklist 55 moved this text from 264.98(g) to 264.98(f).
 - 8 Original 264.98(g) text from Checklist IV A was moved to 264.98(f) by Revision Checklist 55. The present 264.98(g) is a revised version of 264.98(h) as found in Checklist IV A. Revision Checklist 55 made this change. Subparagraph 264.98(g)(6) was added by this checklist as well.
 - 9 There is a typographical error in the Federal code for this subparagraph: "concentration or any" should be "concentration of any."
 - 10 In Checklist IV A this paragraph was designated 264.98(j); Revision Checklist 55 moved it to 264.98(h). The old 264.98(h) was a multipart paragraph originating with Checklist IV A. This paragraph was amended by Revision Checklist 40 and was removed and replaced by 264.98(j) in Revision Checklist 55.
 - 11 Revision Checklist 55 deleted the old 264.99(h) from Checklist IV A and redesignated 264.99(i) as 264.99(h).
 - 12 Revision Checklist 55 moved the old 264.99(j) of Checklist IV A to 264.99(i).
 - 13 Revision Checklist 55 moved the old 264.99(k) of Checklist IV A to 264.99(j).
 - 14 These paragraphs were originally 264.100(e)(1) and 264.100(e)(2), but Revision Checklist 44 B redesignated them as 264.100(e)(3) and 264.100(e)(4).
 - 15 Citations within the double lines are optional, but if a State chooses to modify its program to adopt requirements equivalent to these provisions, it must adopt such requirements as a unit rather than by individual provision. In other words, all or none of these provisions must be included in a State's code. Subsequent changes to these provisions may or may not be optional for States that have chosen to adopt the optional unit of provisions. An optional sign appears in

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
front of the subsequent revision checklist number(s) if such subsequent changes are less stringent than or reduce the scope of the unit's requirements.						
16	Revision Checklist 64 redesignated a portion of 264.112(d)(2), introduced into the code by Revision Checklist 24, as 264.112(d)(2)(i).					
17	Text from 264.118(a)(1)-(3) in Checklist IV A was moved to 264.118(b)(1)-(3) by Revision Checklist 24.					
18	Part of the current text in this paragraph was introduced by Revision Checklist 24 while the remainder reflects the content of portions of 264.118(b)(3) in the base program.					
19	Most of 264.118(d), including all subparagraphs, is code introduced by Revision Checklist 24. The introductory paragraph of 264.118(d), however, corresponds roughly to 264.118(c) in Checklist IV A.					
20	Revision Checklist 24 extensively revised 264.119 as per Checklist IV A, including a new section title. The original code contained no subparagraphs.					
21	Text from 264.120(a) in Checklist IV A was moved to 264.119(b)(1) and (b)(1)(i)-(iii) by Revision Checklist 24.					
22	Text from 264.120(b) in Checklist IV A was moved to 264.119(c) by Revision Checklist 24.					
23	The current text of 264.120 was introduced by Revision Checklist 24 whereas the original text of 264.120, as per Checklist IV A, was moved to 264.119(b) and (c) by Revision Checklist 24.					
24	In Checklist IV A, this text was included in 264.142(a).					
25	Although not included in Checklist IV A, the text of the current 264.147(h) was included in the base program as 264.147(g). This paragraph was moved by Revision Checklist 27.					
26	In the base program, the content of this 264.190 introductory paragraph was located at 264.190(a).					
27	Revision Checklist 28 completely revised this base program (Checklist IV A) paragraph.					
28	Revision Checklist 28 completely reorganized and revised the regulations pertaining to tank systems which originally appeared in Checklist IV A at 264.191 through 264.197. Also, Revision Checklist 28 deletes 264.200, a section previously originated by Revision Checklist 14.					
29	Paragraphs 264.221(f), (g), and (h) were redesignated as such by Revision Checklist 17 H. These paragraphs were originally designated as 264.221(c), (d), and (e), respectively, by Checklist IV A.					

2024

**CONSOLIDATED CHECKLIST C5: Standards for Owners and Operators of
Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE	
30	Revision Checklist 17 I affected this subparagraph by removing the original 264.226(b)(3) and redesignating the original 264.226(b)(4) as (b)(3).						
31	Revision Checklist 17 I affected this paragraph by removing the original 264.228(b)(2) and redesignating 264.228(b)(3) and (b)(4) as (b)(2) and (b)(3), respectively.						
32	The old 264.254(b)(2) was removed by Revision Checklist 17 I. 264.254(b)(3) and (4) were also redesignated as 264.254(b)(2) and (3) by this checklist.						
33	This variance was introduced by Revision Checklist 17 H. If a State chooses to adopt this optional provision at 264.301(e), it must adopt <u>all</u> of the requirements of 264.301(e)(1)-(4).						
34	These paragraphs were originally 264.301(c), (d), (e), (f) and (g) on Checklist IV A. Revision Checklist 17 H redesignated them as 264.301(f), (g), (h), (i) and (j).						
35	The old 264.303(b)(2) from Checklist IV B was removed by Revision Checklist 17 I. 264.303(b)(3) and (4) were then redesignated by this checklist as 264.303(b)(2) and (3).						
36	Revision Checklist 17 I removed the old 264.310(b)(2) of Checklist IV A and redesignated 264.310(b)(3), (4), (5), and (6) as 264.310(b)(2), (3), (4) and (5).						
37	Revision Checklist 17 F redesignated the old 264.314(b) of Checklist IV A as 264.314(d) and added a new 264.314(b). The redesignation is optional.						
38	This code is part of the optional requirements for the alternate treatment standards for lab packs under the Third Third Scheduled Waste Rule. If adopted, all of the requirements (i.e., 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268) related to these alternate treatment standards must be adopted.						

SPA 9

CONSOLIDATED CHECKLIST C6

Interim Status Standards for Owners and Operators of Hazardous Waste
Treatment, Storage, and Disposal Facilities
40 CFR Part 265 as of June 30, 1990

Note: Several sections of Part 265, Subpart H, were revised by the September 1, 1988 final rule (53 FR 33938, i.e., reserved Revision Checklist 51) entitled "Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Liability Coverage." Pursuant to the settlement agreement resulting from litigation surrounding this rule, EPA will be amending this rule in the future. States should not incorporate changes made by the September 1, 1988 rule until the amendments are promulgated, even though the changes were incorporated in the 1989 and the 1990 Code of Federal Regulations (CFR) when they were published by the Office of the Federal Register. Paragraphs that were changed, removed, or renumbered by the September 1, 1988 rule are marked with a "V" in this consolidated checklist. Because the September 1988 rule is the only rule since July 1, 1988 to affect these specific paragraphs, States may use the text of the July 1, 1988 CFR as guidance in modifying such paragraphs or in assessing their equivalency with Federal code. In addition to the changes to existing paragraphs, the September 1, 1988 rule inserted the following new paragraphs: 265.141(h), 265.147(a)(4)-(7), 265.147(b)(5)-(7), and 265.147(h)-(j). These paragraphs will not be added to Consolidated Checklist C5 until the amendments to the rule are published. The following paragraphs were revised by Revision Checklist 51: 265.147(a), 265.147(a)(2)&(3), 265.147(b), 265.147(b)(2)-(4), 265.147(g)&(g)(1) and 265.147(g)(2)(i)&(ii). Revision Checklist 51 removed and reserved 265.147(g)(1)(ii) and redesignated the old 264.147(h) as 264.147(k).

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE, AND APPLICABILITY

establish minimum national standards	*,10	265.1(a)				
applies to all owners and operators of TSDFs, with exceptions, who have met interim status requirements of RCRA 3005(e) or 270.10 or until fulfill applicable 265 closure/post closure requirements	IV B, 3,10	265.1(b)				
exceptions	IV B	265.1(c)				
ocean disposal	IV B	265.1(c)(1)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
reserved	IV B, 44 C	265.1(c)(2)				
POTWs	IV B	265.1(c)(3)				
1 covered by a program of an authorized State	IV B	265.1(c)(4)				
1 unless State's program omits underground injection	*	265.1(c)(4)(i)				
1 unless State's authori- zation not up to date for HSWA requirements	*	265.1(c)(4)(ii)				
waste excluded by 261.5	IV B	265.1(c)(5)				
recyclable materials described in 261.6(a)(2) and (3) in accordance with 262.34	IV B,13	265.1(c)(6)				
waste accumulated at site of generation in accordance with 262.34	IV B	265.1(c)(7)				
farmers complying with 262.70	IV B,48	265.1(c)(8)				
totally enclosed treatment facility	IV B	265.1(c)(9)				
elementary neutrali- zation unit or wastewater treatment unit	IV B	265.1(c)(10)				
treatment or contain- ment activities in response to an emergency, except as provided by 265.1(c)(11)(ii) requirements	IV B	265.1(c)(11)(i)				
		265.1(c)(11)(i)(A)				
		265.1(c)(11)(i)(B)				
		265.1(c)(11)(i)(C)				
		265.1(c)(11)(ii)				
		265.1(c)(11)(iii)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
transporters storing in containers meeting 262.30	IV B	265.1(c)(12)				
combination of waste and absorbent material	IV B	265.1(c)(13)				
hazardous wastes not to be managed at facilities regulated under 265	14	265.1(d)				
		265.1(d)(1)				
		265.1(d)(1)(i)				
		265.1(d)(1)(ii)				
		265.1(d)(1)(iii)				
		265.1(d)(1)(iv)				
		265.1(d)(1)(v)				
applicable to owners or operators of facilities which treat, store or dispose of wastes referred to in 268; 268 standards are considered material requirements of 265 standards	34,78	265.1(e)				
reserved		265.2-265.3				

IMMINENT HAZARD ACTION

enforcement actions under RCRA 7003	*	265.4				
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SUBPART B - GENERAL FACILITY STANDARDS**APPLICABILITY**

subpart applies to all hazardous waste facilities except as provided in 265.1	*	265.10				
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2070

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
IDENTIFICATION NUMBER						
EPA identification number required	IV B	265.11				
REQUIRED NOTICES						
hazardous waste from foreign source	IV B	265.12(a)				
requirements before ownership transfer	IV B	265.12(b)				
GENERAL WASTE ANALYSIS						
analysis required prior to handling any hazardous waste or 265.113(d) non- hazardous waste	IV B,34 †64	265.13(a)(1)				
inclusion of existing data	IV B,78	265.13(a)(2)				
when analysis must be repeated	IV B	265.13(a)(3)				
	IV B,†64	265.13(a)(3)(i)				
	IV B	265.13(a)(3)(ii)				
	IV B	265.13(a)(4)				
inspect each offsite shipment	IV B	265.13(a)(4)				
develop and follow written waste analysis plan:	IV B	265.13(b)				
parameters which will be analyzed	IV B,†64	265.13(b)(1)				
test methods	IV B	265.13(b)(2)				
sampling method		265.13(b)(3)				
		265.13(b)(3)(i)				
		265.13(b)(3)(ii)				
	frequency of reviewing or repeating analysis	IV B	265.13(b)(4)			
analyses from generators	IV B	265.13(b)(5)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
meeting of additional waste analysis requirements	IV B,16 28,34,79	265.13(b)(6)				
surface impoundments exempted from land disposal restrictions under 268.4(a); procedures and schedules for:	34	265.13(b)(7)				
sampling impound- ment contents	34	265.13(b)(7)(i)				
analysis procedures	34	265.13(b)(7)(ii)				
annual removal of residues:	34,39, 50	265.13(b)(7)(iii)				
wastes that do not meet 268, Subpart D, treatment standards	50	265.13(b)(7)(iii)(A)				
where no treatment standards established analysis plan for off-site facilities:	50	265.13(b)(7)(iii)(B)				
		265.13(b)(7)(iii)(B) (1)				
		265.13(b)(7)(iii)(B) (2)				
procedures for identifying each waste moved at facility	IV B	265.13(c)				
sampling method used to obtain a representative sample	IV B	265.13(c)(1)				
	IV B	265.13(c)(2)				

SECURITY

prevent unknowing entry and minimize unauthorized entry unless 265.14(a)(1) & (2) are true	IV B	265.14(a)				
		265.14(a)(1)				
		265.14(a)(2)				
unless exempt under 265.14(a)(1) & (2), a facility must have:	*	265.14(b)				
24-hour surveillance	IV B	265.14(b)(1)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
barrier around active portion and control of entry	IV B	265.14(b)(2)(i)				
		265.14(b)(2)(ii)				
sign	IV B	265.14(c)				

GENERAL INSPECTION REQUIREMENTS

inspect for malfunctions, deterioration, operator errors, and discharges	IV B	265.15(a)				
develop and follow written schedule	IV B	265.15(b)(1)				
keep schedule at facility	IV B	265.15(b)(2)				
identify items that are to be looked for	IV B	265.15(b)(3)				
frequency of inspection	IV B, 28,79	265.15(b)(4)				
remedy of problems inspection uncovers	IV B	265.15(c)				
recordkeeping	IV B	265.15(d)				

PERSONNEL TRAINING

personnel complete training to ensure compliance with 265	IV B	265.16(a)(1)				
director of training program	IV B	265.16(a)(2)				
must be designed to ensure effective response to emergencies	IV B	265.16(a)(3)				
		265.16(a)(3)(i)				
		265.16(a)(3)(ii)				
		265.16(a)(3)(iii)				
		265.16(a)(3)(iv)				
		265.16(a)(3)(v)				
		265.16(a)(3)(vi)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
timing of instruction	IV B	265.16(b)				
annual review of initial training required at 265.16(a)	IV B	265.16(c)				
		265.16(d)				
		265.16(d)(1)				
		265.16(d)(2)				
		265.16(d)(3)				
recordkeeping	IV B	265.16(d)(4)				
retention of training records	IV B	265.16(e)				

GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

precautions to prevent waste ignition or reaction	IV B	265.17(a)				
		265.17(b)				
		265.17(b)(1)				
		265.17(b)(2)				
		265.17(b)(3)				
precautions to prevent specified reactions	IV B	265.17(b)(4)				
		265.17(b)(5)				

LOCATION STANDARDS

prohibition of waste placement in salt domes, salt bed formations, underground mines, and caves	17 E	265.18				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - PREPAREDNESS AND PREVENTION

APPLICABILITY

all HW facilities,
except as 265.1
provides

*

265.30

MAINTENANCE AND OPERATION OF FACILITY

requirements to
minimize threats to
health and
environment

IV B

265.31

REQUIRED EQUIPMENT

what all facilities must
be equipped with:

*

265.32

internal communica-
tions or alarm

IV B

265.32(a)

telephone or
equivalent

IV B

265.32(b)

fire extinguisher,
fire control equipment,
spill control equip-
ment, and decon-
tamination equipment

IV B

265.32(c)

water of adequate
volume and pressure

IV B

265.32(d)

TESTING AND MAINTENANCE OF EQUIPMENT

maintenance and
testing requirements

IV B

265.33

ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

immediate access by
personnel handling
hazardous waste

IV B

265.34(a)

immediate access
when only one
employee is on
premises; what equip-
ment must be
immediately available

IV B

265.34(b)

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

REQUIRED AISLE SPACE

aisle space required to allow unobstructed movement	IV B	265.35				
reserved		265.36				

ARRANGEMENTS WITH LOCAL AUTHORITIES

specific arrangements which must be made	IV B	265.37(a)				
		265.37(a)(1)				
		265.37(a)(2)				
		265.37(a)(3)				
		265.37(a)(4)				
document in operating record any refusals to enter into arrangement	IV B	265.37(b)				

SUBPART D - CONTINGENCY PLAN AND EMERGENCY PROCEDURES**APPLICABILITY**

applies to all HW facilities, except as 265.1 provides	*	265.50				
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PURPOSE AND IMPLEMENTATION OF CONTINGENCY PLAN

contingency plan required; purpose	*	265.51(a)				
when to implement plan	*	265.51(b)				

CONTENT OF CONTINGENCY PLAN

describes actions to take in compliance with 265.51 and 265.56	IV B	265.52(a)				
relationship to SPCC or other plans	IV B	265.52(b)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
arrangements with local police, fire department, etc.	IV B	265.52(c)				
list names and addresses of emergency coordinator(s); keep up to date; listed in order to assume responsibility as alternates	IV B	265.52(d)				
list of emergency equipment at facility	IV B	265.52(e)				
evacuation plan	IV B	265.52(f)				

COPIES OF CONTINGENCY PLAN

disposition of copies of plan and all revisions:	*	265.53				
maintained at facility	IV B	265.53(a)				
submitted to local police, fire department, hospitals, etc.	IV B	265.53(b)				

AMENDMENT OF CONTINGENCY PLAN

when plan must be reviewed and, if necessary, amended:	*	265.54				
applicable regula- tions are revised	IV B	265.54(a)				
plan fails in an emergency	IV B	265.54(b)				
facility change	IV B	265.54(c)				
list of emergency coordinators changes	IV B	265.54(d)				
2 list of equipment changes	IV B, †54	265.54(e)				

EMERGENCY COORDINATOR

duties	IV B	265.55				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
EMERGENCY PROCEDURES						
procedures for imminent or actual emergency release, fire, explosion	IV B	265.56(a)				
		265.56(a)(1)				
		265.56(a)(2)				
hazard assessment	IV B	265.56(b)				
report of emergency coordinator's findings	IV B	265.56(c)				
notify local authorities	IV B	265.56(d)				
report to on-scene coordinator or Nation- al Response Center; what the report must include	IV B	265.56(d)(1)				
		265.56(d)(2)				
		265.56(d)(2)(i)				
		265.56(d)(2)(ii)				
		265.56(d)(2)(iii)				
		265.56(d)(2)(iv)				
		265.56(d)(2)(v)				
measures during emergency	IV B	265.56(d)(2)(vi)				
procedures if facility stops operation	IV B	265.56(e)				
treatment, storage, or disposal of material resulting from emergency	IV B	265.56(f)				
procedures after emergency	IV B	265.56(g)				
		265.56(h)				
		265.56(h)(1)				
	IV B	265.56(h)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
notifications prior to resuming operations	IV B	265.56(i)				
operating record information; written report to Regional Administrator	IV B	265.56(j)				
what the report to Regional Administrator must include	IV B	265.56(j)(1)				
		265.56(j)(2)				
		265.56(j)(3)				
		265.56(j)(4)				
		265.56(j)(5)				
		265.56(j)(6)				
		265.56(j)(7)				

SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

APPLICABILITY

subpart applies to both on- and off-site facilities; exceptions	IV B	265.70				
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USE OF MANIFEST SYSTEM

duties of owner or operator when receiving waste accompanied by manifest	IV B	265.71(a)				
		265.71(a)(1)				
		265.71(a)(2)				
		265.71(a)(3)				
		265.71(a)(4)				
		265.71(a)(5)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
duties of owner or operator when receiving waste accompanied by shipping paper facility that initiates shipment must comply with 262	IV B	265.71(b)				
		265.71(b)(1)				
		265.71(b)(2)				
		265.71(b)(3)				
		265.71(b)(4)				
		265.71(b)(5)				
	*	265.71(c)				

MANIFEST DISCREPANCIES

definition of manifest discrepancies	IV B	265.72(a)				
		265.72(a)(1)				
		265.72(a)(2)				
actions on discovering a discrepancy	IV B	265.72(b)				

OPERATING RECORD

written operating record at facility	IV B	265.73(a)				
information which must be recorded:	IV B	265.73(b)				
description and quantity of waste; dates of treatment, storage, and disposal	IV B	265.73(b)(1)				
location of waste and quantity at each location	IV B	265.73(b)(2)				
records and results of waste analyses	IV B, 16,28, 34,79	265.73(b)(3)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
reports of incidents which require implementing contingency plan	IV B	265.73(b)(4)				
records and results of inspections	IV B	265.73(b)(5)				
groundwater monitor- ing, testing, or analytical data	IV B,28, 79	265.73(b)(6)				
closure and post- closure cost estimates	IV B	265.73(b)(7)				
quantity records for each shipment	34,50	265.73(b)(8)				
off-site treatment facility requirements	34,50	265.73(b)(9)				
on-site treatment facility requirements	34,50	265.73(b)(10)				
off-site land disposal facility requirements	34,50	265.73(b)(11)				
on-site land disposal facility requirements	34,50	265.73(b)(12)				
off-site storage facilities requirements	50	265.73(b)(13)				
on-site storage facility requirements	50	265.73(b)(14)				

AVAILABILITY, RETENTION, AND DISPOSITION OF RECORDS

all records available for inspection	IV B	265.74(a)				
retention period extension under unresolved enforce- ment action	IV B	265.74(b)				
copy of records to Regional Administrator and local authority at closure	IV B	265.74(c)				

BIENNIAL REPORT

when to submit, what form, and what must be reported:	*,†1	265.75				
EPA identification number	IV B	265.75(a)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
calendar year covered by report	IV B	265.75(b)				
EPA identification numbers of generators; name and address for foreign generators	IV B	265.75(c)				
description and quantity of wastes received	IV B	265.75(d)				
methods of handling	IV B	265.75(e)				
monitoring data, where required	IV B	265.75(f)				
closure cost estimate; post-closure cost estimate	IV B	265.75(g)				
volume and toxicity reduction efforts	30	265.75(h)				
volume and toxicity reduction achieved	30	265.75(i)				
3 signed certification	IV B,30	265.75(j)				
UNMANIFESTED WASTE REPORT						
when an unmanifested report is required; form which must be used; information it must include	*,1	265.76				
EPA identification number	IV B	265.76(a)				
date waste received	IV B	265.76(b)				
generator and transporter EPA identification numbers; address and name	IV B	265.76(c)				
description and quantity of unmanifested waste	IV B	265.76(d)				
handling method	IV B	265.76(e)				
signed certification	IV B	265.76(f)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
explanation of why unmanifested	IV B	265.76(g)				

ADDITIONAL REPORTS

what else must be reported to Regional Administrator	*,†1	265.77				
releases, fires, explosions	IV B	265.77(a)				
ground-water contami- nation and monitor- ing data	IV B	265.77(b)				
facility closure	IV B	265.77(c)				
as otherwise required by Subparts AA and BB	79	265.77(d)				

SUBPART F - GROUND-WATER MONITORING**APPLICABILITY**

facilities that must implement a ground- water monitoring program	IV B	265.90(a)				
meet requirements of 265.91 and comply with 265.92 through 265.94; duration of ground-water monitoring program	IV B	265.90(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
demonstration required to waive requirements	IV B	265.90(c)				
		265.90(c)(1)				
		265.90(c)(1)(i)				
		265.90(c)(1)(ii)				
		265.90(c)(2)				
		265.90(c)(2)(i)				
		265.90(c)(2)(ii)				
requirements to implement an alternate ground-water monitoring program	IV B	265.90(d)				
		265.90(d)(1)				
		265.90(d)(2)				
		265.90(d)(3)				
		265.90(d)(4)				
		265.90(d)(5)				
waiver of surface impoundment ground- water monitoring requirements	IV B	265.90(e)				

GROUND-WATER MONITORING SYSTEM

monitoring system capabilities	IV B	265.91(a)				
		265.91(a)(1)				
		265.91(a)(1)(i)				
		265.91(a)(1)(ii)				
		265.91(a)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
separate sampling systems not required if waste management area properly monitored; definition of waste management area	IV B	265.91(b)				
		265.91(b)(1)				
		265.91(b)(2)				
wells must be cased	IV B	265.91(c)				

SAMPLING AND ANALYSIS

obtain and analyze samples from ground-water monitoring system; must have a sampling and analysis plan and keep it at the facility	IV B	265.92(a)				
procedures to be described in plan	IV B	265.92(a)(1)				
		265.92(a)(2)				
		265.92(a)(3)				
		265.92(a)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
		265.92(b)				
		265.92(b)(1)				
		265.92(b)(2)				
		265.92(b)(2)(i)				
		265.92(b)(2)(ii)				
		265.92(b)(2)(iii)				
		265.92(b)(2)(iv)				
		265.92(b)(2)(v)				
		265.92(b)(2)(vi)				
		265.92(b)(3)				
		265.92(b)(3)(i)				
		265.92(b)(3)(ii)				
		265.92(b)(3)(iii)				
parameters to be measured	IV B	265.92(b)(3)(iv)				
establish initial background concen- tration for 265.92(b) parameters quarterly for one year	IV B	265.92(c)(1)				
establishing 265.95(b)(3) indicator parameters	IV B	265.92(c)(2)				
		265.92(d)				
		265.92(d)(1)				
frequency of sampling	IV B	265.92(d)(2)				
ground-water surface elevation	IV B	265.92(e)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
PREPARATION, EVALUATION, AND RESPONSE						
outline of ground- water quality assessment program; what program must be capable of determining	IV B	265.93(a)				
		265.93(a)(1)				
		265.93(a)(2)				
		265.93(a)(3)				
compare parameters	IV B	265.93(b)				
significant increase in comparisons for upgradient wells	IV B	265.93(c)(1)				
significant increase in comparisons for downgradient wells	IV B	265.93(c)(2)				
written notice to Regional Administrator if downgradient well increase is significant	IV B	265.93(d)(1)				
submit a ground-water quality assessment plan to Regional Administrator; plan contents	IV B	265.93(d)(2)				
		265.93(d)(3)				
		265.93(d)(3)(i)				
		265.93(d)(3)(ii)				
		265.93(d)(3)(iii)				
		265.93(d)(3)(iv)				
implement plan and determine extent of problem	IV B	265.93(d)(4)				
		265.93(d)(4)(i)				
		265.93(d)(4)(ii)				
timing and report of ground-water quality assessment	IV B	265.93(d)(5)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
indicator evaluation program if waste has not entered ground-water	IV B	265.93(d)(6)				
action if waste or constituent has entered ground-water	IV B	265.93(d)(7)				
		265.93(d)(7)(i)				
		265.93(d)(7)(ii)				
		265.93(d)(7)(iii)				
assessment completion	IV B	265.93(e)				
evaluation of data on ground-water surface elevations	IV B	265.93(f)				

RECORDKEEPING AND REPORTING

requirements if ground-water is not monitored	IV B	265.94(a)				
keep records	IV B	265.94(a)(1)				
submit reports	IV B	265.94(a)(2)				
		265.94(a)(2)(i)				
		265.94(a)(2)(ii)				
		265.94(a)(2)(iii)				
	IV B,†1	265.94(a)(2)(iii)				
requirements if ground-water is monitored	IV B	265.94(b)				
keep records	IV B	265.94(b)(1)				
submit reports	IV B,†1	265.94(b)(2)				

SUBPART G - CLOSURE AND POST-CLOSURE

APPLICABILITY

except as 265.1 provides otherwise:	*	265.110				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
265.111 through 265.115 apply to all owners and operators of all hazardous waste management facilities	IV B,24	265.110(a)				
265.116 through 265.120 apply to all owners and operators of:	IV B,24	265.110(b)				
all hazardous waste disposal facilities	IV B,24	265.110(b)(1)				
4 waste piles and surface impoundments from which wastes are removed at closure	24,28, 52	265.110(b)(2)				
4 tank systems required under 265.197 to meet landfill requirements	28	265.110(b)(3)				
CLOSURE PERFORMANCE STANDARD						
manner of closing	*,24	265.111				
minimizes further maintenance	IV B,24	265.111(a)				
controls, minimizes, or eliminates post-closure escape	IV B,24	265.111(b)				
complies with require- ments of Subpart G plus specific sections of 265	24	265.111(c)				
5 CLOSURE PLAN; AMENDMENT OF PLAN						
written closure plan; furnish upon request	IV B,†24	265.112(a)				

2037

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
6 content of closure plan	IV B,24	265.112(b)				
		265.112(b)(1)				
	IV B,24	265.112(b)(2)				
		265.112(b)(3)				
		265.112(b)(4)				
	24	265.112(b)(5)				
	IV B,24	265.112(b)(6)				
	†24	265.112(b)(7)				
7 requirements for amendments of closure plan	IV B,24	265.112(c)				
		265.112(c)(1)				
		265.112(c)(1)(i)				
		265.112(c)(1)(ii)				
	24	265.112(c)(1)(iii)				
	IV B,24	265.112(c)(2)				
	24,†54	265.112(c)(3)				
		265.112(c)(4)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

8 NOTIFICATION OF PARTIAL CLOSURE AND FINAL CLOSURE

when notification must occur; public comment and hearing	IV B,†24	265.112(d)(1)				
	IV B,†24 †64	265.112(d)(2)				
		265.112(d)(2)(i)				
	†64	265.112(d)(2)(ii)				
	IV B,†24	265.112(d)(3)				
		265.112(d)(3)(i)				
		265.112(d)(3)(ii)				
		265.112(d)(4)				
remove wastes; decontaminate or dismantle equipment	†24	265.112(e)				

CLOSURE; TIME ALLOWED FOR CLOSURE

treat, remove, or dispose of all hazardous wastes within 90 days of receipt of final volume of hazardous waste, or final volume of non- hazardous waste	IV B, 24,†64	265.113(a)				
modification and demonstration requirements for extending period	IV B,24	265.113(a)(1)(i)				
	IV B,24, †64	265.113(a)(1)(ii)(A)				
	IV B, 24	265.113(a)(1)(ii)(B)				
		265.113(a)(1)(ii)(C)				
		265.113(a)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
complete partial or final closure within 180 days of receipt of final volume	IV B, 24,†64	265.113(b)				
modification and demonstration requirements for extending closure period	IV B,24	265.113(b)(1)(i)				
	IV B,24, †64	265.113(b)(1)(ii)(A)				
	IV B, 24	265.113(b)(1)(ii)(B)				
		265.113(b)(1)(ii)(C)				
		265.113(b)(2)				
how 265.113(a)(1) & (b)(1) demonstrations must be made	†64	265.113(c)				
		265.113(c)(1)				
		265.113(c)(2)				

†,9 **NONHAZARDOUS WASTE RECEIPT CONDITIONS**

receive nonhazardous wastes after the final receipt of hazardous wastes at specified units	64	265.113(d)				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
submittal of amended Part B application or Part B application and required demonstrations	64	265.113(d)(1)				
		265.113(d)(1)(i)				
		265.113(d)(1)(ii)				
		265.113(d)(1)(iii)				
		265.113(d)(1)(iv)				
		265.113(d)(1)(v)				
		265.113(d)(2)				
		265.113(d)(3)				
		265.113(d)(4)				

†.9 ADDITIONAL REQUIREMENTS FOR SURFACE IMPOUNDMENTS

special requirements for surface impound- ments not in compliance with liner and leachate collection system requirements	64	265.113(e)				
plans which must be submitted with the Part B application	64	265.113(e)(1)				
		265.113(e)(1)(i)				
		265.113(e)(1)(ii)				
		265.113(e)(1)(iii)				
remove all hazardous wastes	64	265.113(e)(2)				
remove within 90 days; extension	64	265.113(e)(3)				
actions to be taken if a release is detected	64	265.113(e)(4)				
		265.113(e)(4)(i)				
		265.113(e)(4)(ii)				
		265.113(e)(4)(iii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
semi-annual reports	64	265.113(e)(5)				
conditions under which Regional Administrator may require closure	64	265.113(e)(6)				
actions to be taken if owner or operator fails to implement corrective measures or if substantial progress pursuant to 264.113(e)(6) has not been made	64	265.113(e)(7)				
		265.113(e)(7)(i)				
		265.113(e)(7)(ii)				
		265.113(e)(7)(iii)				
		265.113(e)(7)(iv)				
		265.113(e)(7)(v)				

DISPOSAL OR DECONTAMINATION OF EQUIPMENT, STRUCTURES AND SOILS

disposal and decontamination requirements during closure; 262 generator requirements	IV B, 24,52	265.114				
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CERTIFICATION OF CLOSURE

certification requirements at closure; required signatures; documentation upon request	IV B,24	265.115				
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SURVEY PLAT

survey plat requirements	24	265.116				
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POST-CLOSURE CARE AND USE OF PROPERTY

continue care for 30 years	IV B,24	265.117(a)(1)				
monitoring and reporting requirements	IV B,24	265.117(a)(1)(i)				

1202

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
maintenance and monitoring for waste containment systems	IV B,24	265.117(a)(1)(ii)				
reduction or extension of time period for post-closure care by Regional Administrator	IV B,24	265.117(a)(2)				
		265.117(a)(2)(i)				
		265.117(a)(2)(ii)				
conditions for continuation of security requirements of 265.14	IV B,24	265.117(b)				
		265.117(b)(1)				
		265.117(b)(2)				
limits on post-closure use of property; exceptions	IV B,24	265.117(c)				
		265.117(c)(1)				
		265.117(c)(2)				
post-closure activities in accordance with plan as specified in 265.118	IV B,24	265.117(d)				
POST-CLOSURE PLAN; AMENDMENT OF PLAN						
10 written post-closure plan; submission deadline for surface impoundments closing as landfills	IV B,24	265.118(a)				
11 availability of plan to Regional Administrator or representative; retention during post- closure	IV B,24	265.118(b)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
10,12 items that must be included in post-closure plan	IV B,24	265.118(c)				
		265.118(c)(1)				
		265.118(c)(2)				
		265.118(c)(2)(i)				
		265.118(c)(2)(ii)				
		265.118(c)(3)				
11,13 obtaining authorization to change plan	IV B,24	265.118(d)				
11 conditions requiring change to plan	IV B,24	265.118(d)(1)				
		265.118(d)(1)(i)				
		265.118(d)(1)(ii)				
11 schedule for amending plan	IV B,24	265.118(d)(2)				
when modified plan must be submitted to Regional Administrator; requirements for surface impoundments or waste piles closing as landfills	IV B, 24,†54	265.118(d)(3)				
schedule for amending plan at Regional Administrator's request	IV B, 24,†54	265.118(d)(4)				
11,12 schedule for submitting plan to Regional Administrator	IV B,24	265.118(e)				
		265.118(e)(1)				
		265.118(e)(2)				
13,14 Regional Administrator's schedule for review and decision on plan	IV B,24	265.118(f)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
14 circumstances for modifying post- closure plan and length of post- closure care period	IV B,24	265.118(g)				
		265.118(g)(1)				
		265.118(g)(1)(I)				
		265.118(g)(1)(I)(A)				
		265.118(g)(1)(I)(B)				
		265.118(g)(1)(II)				
		265.118(g)(1)(III)				
		265.118(g)(2)				
		265.118(g)(2)(I)				
		265.118(g)(2)(II)				
POST-CLOSURE NOTICES						
15 record of type, location and quantity of HW	IV B,24	265.119(a)				
requirement to enter note on deed; survey plat; submit certification	24	265.119(b)				
		265.119(b)(1)				
		265.119(b)(1)(I)				
		265.119(b)(1)(II)				
		265.119(b)(1)(III)				
		265.119(b)(2)				
modification to remove hazardous wastes; criteria of 265.117(c); removal of notation; addition of notation	24	265.119(c)				
		265.119(c)(1)				
		265.119(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

16 description of certification procedure	IV B,24	265.120				
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SUBPART H - FINANCIAL REQUIREMENTS**APPLICABILITY**

265.142, 265.143, 265.147-265.150 requirements; exceptions	IV B,24	265.140(a)				
265.144 and 265.145 requirements apply to:	IV B,28	265.140(b)				
State and Federal government exemptions	IV B	265.140(c)				

DEFINITIONS OF TERMS AS USED IN THIS SUBPART

"closure plan"	IV B	265.141(a)				
"current closure cost estimate"	IV B	265.141(b)				
"current post-closure cost estimate"	IV B	265.141(c)				
"parent corporation"	IV B	265.141(d)				
"post-closure plan"	IV B	265.141(e)				
terms used in financial tests	IV B	265.141(f)(intro)				
"assets"	IV B	265.141(f)				
"current assets"	IV B	265.141(f)				
"current liabilities"	IV B	265.141(f)				
"current plugging and abandonment cost estimate"	24	265.141(f)				
"independently audited"	IV B	265.141(f)				
"liabilities"	IV B	265.141(f)				

3.106

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"net working capital"	IV B	265.141(f)				
"net worth"	IV B	265.141(f)				
"tangible net worth"	IV B	265.141(f)				
"bodily injury" and "property damage"	IV B	265.141(g)				
"accidental occurrence"	IV B	265.141(g)				
"legal defense costs"	IV B	265.141(g)				
"nonsudden accidental occurrence"	IV B	265.141(g)				
"sudden accidental occurrence"	IV B	265.141(g)				

COST ESTIMATE FOR CLOSURE

17	owner or operator must have written cost estimate	IV B,24	265.142(a)			
	equal to cost of final closure	24	265.142(a)(1)			
	based on costs of hiring third party	24	265.142(a)(2)			
	no incorporation of salvage value	24,†64	265.142(a)(3)			
	no incorporation of zero cost	24,†64	265.142(a)(4)			
	adjust closure cost estimate for inflation	IV B,24	265.142(b)			
	first adjustment	IV B	265.142(b)(1)			
	subsequent adjustments	IV B	265.142(b)(2)			
	revised closure cost estimate	IV B,24	265.142(c)			
	cost estimates to be kept at facility	IV B	265.142(d)			

FINANCIAL ASSURANCE FOR CLOSURE

options to establish financial assurance	*	265.143				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
closure trust fund requirements; trustee must have authority	IV B	265.143(a)(1)				
wording identical to 265.151(a)(1);						
Schedule A update	IV B	265.143(a)(2)				
annual payments;						
"pay-in period"	IV B	265.143(a)(3)				
first payment for new facility	IV B	265.143(a)(3)(i)				
subsequent payments for facility	IV B	265.143(a)(3)(ii)				
accelerated payments	IV B	265.143(a)(4)				
payments if previous use of alternate mechanisms	IV B	265.143(a)(5)				
compare new estimate to trust fund	IV B	265.143(a)(6)				
release of excess amount	IV B	265.143(a)(7)				
substitution of other financial assurance	IV B	265.143(a)(8)				
timing of release of funds	IV B	265.143(a)(9)				
reimbursement for closure activities	IV B,24	265.143(a)(10)				
termination of trust if alternate financial assurance or release from 265.143 requirements	IV B	265.143(a)(11)				
		265.143(a)(11)(i)				
		265.143(a)(11)(ii)				
surety bond guaranteeing payment into a closure trust fund; requirements; obtain from an acceptable surety company	IV B	265.143(b)(1)				
wording identical to 264.151(b)	IV B	265.143(b)(2)				
establish standby trust fund	IV B	265.143(b)(3)				

3.105

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
trust agreement submitted with surety bond	IV B	265.143(b)(3)(i)				
until standby trust fund is funded, fol- lowing not required:	IV B	265.143(b)(3)(ii)				
payments into trust fund	IV B	265.143(b)(3)(ii)(A)				
Schedule A update	IV B	265.143(b)(3)(ii)(B)				
annual valuations	IV B	265.143(b)(3)(ii)(C)				
notices of nonpayment	IV B	265.143(b)(3)(ii)(D)				
surety bond guarantees:	IV B	265.143(b)(4)				
funding of standby trust fund	IV B	265.143(b)(4)(i)				
fund equal to penal sum within 15 days of administrative or judicial order	IV B,24	265.143(b)(4)(ii)				
alternate financial assurance following notice of cancellation	IV B	265.143(b)(4)(iii)				
when surety becomes liable	IV B	265.143(b)(5)				
penal sum equal to current closure cost estimate	IV B	265.143(b)(6)				
penal sum increase or decrease	IV B	265.143(b)(7)				
surety may cancel bond after 120 days	IV B	265.143(b)(8)				
owner or operator may cancel bond if written consent	IV B	265.143(b)(9)				
closure letter of credit; letter must be submitted to Regional Administra- tor; conditions of letter and who can issue it	IV B	265.143(c)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identical to wording in 264.151(d)	IV B	265.143(c)(2)				
establish standby trust fund; meets require- ments of 265.143(a) except:	IV B	265.143(c)(3)				
originally signed duplicate to Regional Administrator with letter of credit	IV B	265.143(c)(3)(i)				
unless standby trust fund is funded, the following are not required:	IV B	265.143(c)(3)(ii)				
payments into trust fund	IV B	265.143(c)(3)(ii)(A)				
Schedule A update	IV B	265.143(c)(3)(ii)(B)				
annual valuations	IV B	265.143(c)(3)(ii)(C)				
notices of nonpayment	IV B	265.143(c)(3)(ii)(D)				
letter of credit accompanied by letter from owner/operator; information it must contain	IV B	265.143(c)(4)				
terms of letter of credit	IV B	265.143(c)(5)				
issued in amount equal to current closure cost estimate except as provided in 265.143(f)	IV B	265.143(c)(6)				
if current closure cost estimate increases to an amount greater than penal sum, then must increase penal sum within 60 days; actions when closure cost decreases	IV B	265.143(c)(7)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
after final RCRA 3008 determination, Regional Administrator may draw on letter of credit	IV B,24	265.143(c)(8)				
if no alternate financial assurance, Regional Administrator can draw on letter of credit; procedures for doing so	IV B	265.143(c)(9)				
conditions under which the Regional Administrator will return the letter of credit for termination	IV B	265.143(c)(10)				
		265.143(c)(10)(i)				
		265.143(c)(10)(ii)				
closure insurance must conform to 265.143(d) requirements; submit certificate to Regional Administrator; insurer requirements	IV B	265.143(d)(1)				
identical to 264.151(e) wording	IV B	265.143(d)(2)				
amount of insurance policy	IV B	265.143(d)(3)				
what policy must guarantee	IV B	265.143(d)(4)				
owner/operator may request reimbursements; conditions for request; procedures of Regional Administrator if maximum closure cost is greater than face value of policy	IV B,24	265.143(d)(5)				
policy must be in full force until Regional Administrator consents to termination; violations	IV B	265.143(d)(6)				
assignment of policy to successor	IV B	265.143(d)(7)				

1211

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
insurer cannot terminate except for failure to pay; re-newal; procedures if failure to pay	IV B	265.143(d)(8)				
conditions that policy will remain in full force and effect in event that listed circumstances occur	IV B	265.143(d)(8)(i)				
		265.143(d)(8)(ii)				
		265.143(d)(8)(iii)				
		265.143(d)(8)(iv)				
		265.143(d)(8)(v)				
owner/operator responsibilities and procedures when current closure cost estimate increases/de-creases to an amount greater/less than face amount of policy	IV B	265.143(d)(9)				
conditions under which Regional Administrator will allow termination of policy	IV B	265.143(d)(10)				
		265.143(d)(10)(i)				
		265.143(d)(10)(ii)				
financial test and corporate guarantee for closure; owner/operator must satisfy 265.143(e)(1)(i) or (ii) requirements to pass financial test	IV B	265.143(e)(1)				
what owner/operator must have:	IV B	265.143(e)(1)(i)				
two of three specified financial ratios	IV B	265.143(e)(1)(i)(A)				
net working capital and tangible net worth relative to closure/post-closure estimates	IV B,24	265.143(e)(1)(i)(B)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
tangible net worth of at least \$10 million	IV B	265.143(e)(1)(i)(C)				
90% of assets in U.S.	IV B,24	265.143(e)(1)(i)(D)				
what owner/operator must have:	IV B	265.143(e)(1)(ii)				
bond rating	IV B	265.143(e)(1)(ii)(A)				
tangible net worth at six times sum of closure/post-closure cost estimates	IV B,24	265.143(e)(1)(ii)(B)				
tangible net worth at least \$10 million	IV B	265.143(e)(1)(ii)(C)				
90% of assets in U.S.	IV B,24	265.143(e)(1)(ii)(D)				
definitions of "current closure and post- closure cost estimates" and "current plugging and abandonment cost estimates"	IV B,24	265.143(e)(2)				
what owner/operator must submit to Regional Administrator to demonstrate he meets financial test	IV B	265.143(e)(3)				
		265.143(e)(3)(i)				
		265.143(e)(3)(ii)				
		265.143(e)(3)(iii)				
		265.143(e)(3)(iii)(A)				
		265.143(e)(3)(iii)(B)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
extension of test deadline if owner or operator is under- going an audit; what submitted letter must do	IV B	265.143(e)(4)				
		265.143(e)(4)(i)				
		265.143(e)(4)(ii)				
		265.143(e)(4)(iii)				
		265.143(e)(4)(iv)				
		265.143(e)(4)(v)				
		265.143(e)(4)(vi)				
updates at close of each fiscal year	IV B	265.143(e)(5)				
owner/operator responsibilities if no longer meets 265.143 (e)(1) requirements	IV B	265.143(e)(6)				
what Regional Admin- istrator may do if believes owner/ operator no longer meets 265.143(e)(1)	IV B	265.143(e)(7)				
when Regional Admin- istrator may disallow test	IV B	265.143(e)(8)				
when 265.143(e)(3) items no longer need to be submitted	IV B	265.143(e)(9)				
		265.143(e)(9)(i)				
		265.143(e)(9)(ii)				
requirement may be met by corporate guarantee; conditions which guarantor and guarantee must meet	IV B	265.143(e)(10)				
what terms of corporate guarantee must provide	IV B	265.143(e)(10)(i)				
		265.143(e)(10)(ii)				
		265.143(e)(10)(iii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
use of multiple financial mechanisms; conditions which must be met	IV B	265.143(f)				
use of financial mechanism for multiple facilities; conditions which must be met	IV B	265.143(g)				
release of owner/operator from requirements of 265.143	IV B,24	265.143(h)				

COST ESTIMATE FOR POST-CLOSURE CARE

detailed written estimate, in current dollars, of annual cost of post-closure monitoring and maintenance	IV B,24	265.144(a)				
post-closure cost estimate based on hiring third party to conduct care	IV B,24	265.144(a)(1)				
calculation of estimate	IV B,24	265.144(a)(2)				
adjust for inflation; specifications on when this must be done; inflation factor	IV B,24	265.144(b)				
first adjustment	IV B	265.144(b)(1)				
subsequent adjustments	IV B	265.144(b)(2)				
revise post-closure care estimate when post-closure plan changes	IV B,24	265.144(c)				
what must be kept at facility	IV B	265.144(d)				

FINANCIAL ASSURANCE FOR POST-CLOSURE CARE

deadline for obtaining financial assurance	*,24	265.145				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
post-closure trust fund; requirements which trust and trustee must meet; submit to Regional Administrator	IV B	265.145(a)(1)				
wording identical to that specified in 264.151(a)(1); formal certifica- tion of acknowledg- ment; Schedule A	IV B	265.145(a)(2)				
annual payments; procedures and formulas for determining	IV B	265.145(a)(3)				
		265.145(a)(3)(i)				
		265.145(a)(3)(ii)				
value at which fund must be main- tained	IV B	265.145(a)(4)				
first payment of post- closure trust fund after another mechanism was used	IV B	265.145(a)(5)				
after pay-in period, what must be done if fund value is less than new estimate	IV B	265.145(a)(6)				
written request to Regional Administrator for release of excess in fund	IV B	265.145(a)(7)				
other financial pro- cedure if substitute assurance for all or part of fund	IV B	265.145(a)(8)				
within 60 days after request for fund re- lease, Regional Ad- ministrator will instruct trustee to do so	IV B	265.145(a)(9)				
fund release during post-closure	IV B	265.145(a)(10)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
reimbursement for post-closure care expenditures	IV B,24	265.145(a)(11)				
conditions under which Regional Administra- tor will terminate trust	IV B	265.145(a)(12)				
		265.145(a)(12)(i)				
		265.145(a)(12)(ii)				
surety bond guaranteeing payment into a post-closure fund; specific conditions which surety and company issuing surety must meet	IV B	265.145(b)(1)				
wording identical to that specified in 264.151(b)	IV B	265.145(b)(2)				
establish a standby trust; trust must meet 265.145(a) require- ments except:	IV B	265.145(b)(3)				
originally signed dupli- cate to Regional Administrator	IV B	265.145(b)(3)(i)				
until standby trust is funded, specific requirements that are not required	IV B	265.145(b)(3)(ii)				
		265.145(b)(3)(ii)(A)				
		265.145(b)(3)(ii)(B)				
		265.145(b)(3)(ii)(C)				
		265.145(b)(3)(ii)(D)				
bond must guarantee that owner/operator will do the following:	IV B	265.145(b)(4)				
fund standby trust equal to penal sum before begin final closure	IV B	265.145(b)(4)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
fund standby trust fund equal to penal sum within 15 days of order to close	IV B,24	265.145(b)(4)(ii)				
provide alternate finan- cial assurance	IV B	265.145(b)(4)(iii)				
when surety becomes liable	IV B	265.145(b)(5)				
what penal sum must be equal to	IV B	265.145(b)(6)				
adjustment to penal sum due to post- closure cost estimate increase/decrease	IV B	265.145(b)(7)				
conditions under which surety may cancel bond	IV B	265.145(b)(8)				
conditions under which owner or operator may cancel bond	IV B	265.145(b)(9)				
post-closure letter of credit; conditions the letter of credit and its issuing institution must meet	IV B	265.145(c)(1)				
identical wording to that specified in 264.151(d)	IV B	265.145(c)(2)				
establish standby trust fund; meet 265.145(a) conditions, except:	IV B	265.145(c)(3)				
originally signed duplicate of trust agreement to Regional Administrator	IV B	265.145(c)(3)(i)				
		265.145(c)(3)(ii)				
		265.145(c)(3)(ii)(A)				
		265.145(c)(3)(ii)(B)				
		265.145(c)(3)(ii)(C)				
unless standby trust fund is funded, specific items not required	IV B	265.145(c)(3)(ii)(D)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
letter of credit must be accompanied by letter; what letter must contain	IV B	265.145(c)(4)				
terms of letter of credit	IV B	265.145(c)(5)				
amount of letter of credit	IV B	265.145(c)(6)				
adjustments to amount of credit due to increase/decrease in post-closure cost estimate	IV B	265.145(c)(7)				
conditions under which amount of letter of credit can be decreased	IV B	265.145(c)(8)				
after final 3008 administrative determination, Regional Administrator may draw on credit	IV B,24	265.145(c)(9)				
when the Regional Administrator can draw on letter of credit	IV B	265.145(c)(10)				
termination of letter of credit	IV B	265.145(c)(11)				
		265.145(c)(11)(i)				
		265.145(c)(11)(ii)				
post-closure insurance; conditions insurance and insurer must meet	IV B	265.145(d)(1)				
wording identical to that specified in 264.151(e)	IV B	265.145(d)(2)				
"face amount" policy must be issued for	IV B	265.145(d)(3)				
what policy must guarantee	IV B	265.145(d)(4)				
request for reimbursement; procedures for reimbursement	IV B,24	265.145(d)(5)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
maintain policy in full force until Regional Administrator consents to terminate; failure to pay	IV B	265.145(d)(6)				
assignment of policy to successor	IV B	265.145(d)(7)				
excepting failure to pay, policy must provide that insurer may not cancel, terminate or fail to renew; conditions under which policy remains in full force following date of expiration	IV B	265.145(d)(8)				
		265.145(d)(8)(i)				
		265.145(d)(8)(ii)				
		265.145(d)(8)(iii)				
		265.145(d)(8)(iv)				
	IV B	265.145(d)(8)(v)				
adjustments to face amount due to increase/decrease in post-closure cost estimates	IV B	265.145(d)(9)				
annual increase of face amount	IV B	265.145(d)(10)				
conditions under which insurance policy may be terminated	IV B	265.145(d)(11)				
		265.145(d)(11)(i)				
		265.145(d)(11)(ii)				
financial test and corporate guarantee for post-closure care; pass financial test; criteria for passing test	IV B	265.145(e)(1)				
specific criteria	IV B	265.145(e)(1)(i)				
have two of three specified ratios	IV B	265.145(e)(1)(i)(A)				

3120

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
net working capital and tangible net worth at six times sum of current closure and post-closure cost estimates and plugging and abandonment cost estimates	IV B,24	265.145(e)(1)(i)(B)				
tangible net worth at least \$10 million	IV B	265.145(e)(1)(i)(C)				
90% of assets in U.S. or six times sum of current closure/post-closure cost estimates and current plugging and abandonment costs	IV B,24	265.145(e)(1)(i)(D)				
owner or operator must have:	IV B	265.145(e)(1)(ii)				
a specified bond rating	IV B	265.145(e)(1)(ii)(A)				
tangible net worth six times sum of current closure/post-closure cost estimates and plugging/abandonment cost estimates	IV B,24	265.145(e)(1)(ii)(B)				
tangible net worth of at least \$10 million	IV B	265.145(e)(1)(ii)(C)				
90% of assets in U.S. or six times sum of current closure post-closure cost estimates and current plugging and abandonment costs	IV B,24	265.145(e)(1)(ii)(D)				
definition of "current closure and post-closure cost estimates" and "current plugging and abandonment cost estimates"	IV B,24	265.145(e)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
to demonstrate meets 265.145(e)(1) test, items which must be submitted to Regional Administrator	IV B	265.145(e)(3)				
		265.145(e)(3)(i)				
		265.145(e)(3)(ii)				
		265.145(e)(3)(iii)				
		265.145(e)(3)(iii)(A)				
		265.145(e)(3)(iii)(B)				
extension of test deadline if owner/ operator is undergoing an audit; letter to Administration and what it must contain	IV B	265.145(e)(4)				
		265.145(e)(4)(i)				
		265.145(e)(4)(ii)				
		265.145(e)(4)(iii)				
		265.145(e)(4)(iv)				
		265.145(e)(4)(v)				
when updated information must be submitted	IV B	265.145(e)(4)(vi)				
responsibilities when 265.145(e)(1) requirements are no longer met	IV B	265.145(e)(5)				
Regional Administra- tor's actions when believes owner/ operator no longer meets 265.145(e)(1)	IV B	265.145(e)(6)				
when Regional Admin- istrator may disallow use of test	IV B	265.145(e)(7)				
	IV B	265.145(e)(8)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
when Regional Administrator may approve decrease in current post-closure cost estimates	IV B	265.145(e)(9)				
specific conditions under which 265.145(e)(3) items no longer need to be submitted	IV B	265.145(e)(10)				
		265.145(e)(10)(i)				
		265.145(e)(10)(ii)				
corporate guarantee may meet requirements of 265.145; conditions guarantee must meet	IV B	265.145(e)(11)				
		265.145(e)(11)(i)				
		265.145(e)(11)(ii)				
		265.145(e)(11)(iii)				
use of multiple financial mechanisms	IV B	265.145(f)				
use of a financial mechanism for multiple facilities	IV B	265.145(g)				
release of owner or operator from requirements of 265.145	IV B,24	265.145(h)				

USE OF A MECHANISM FOR FINANCIAL ASSURANCE OF BOTH CLOSURE AND POST-CLOSURE CARE

financial assurance requirements for both closure and post-closure can be met by specific types of mechanisms which meet 265.143 and 265.145 specifications; amount of funds which must be available	IV B	265.146				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
LIABILITY REQUIREMENTS						
▽ coverage for sudden accidental occurrences; ways liability insurance may be demonstrated	IV B	265.147(a)				
18 liability insurance meeting the following:	IV B	265.147(a)(1)				
18 attachment of Hazardous Waste Facility Liability Endorsement or Certificate of Liability Insurance; required wording; submittal of signed duplicate original	IV B	265.147(a)(1)(i)				
18 minimum requirements insurer must meet	IV B	265.147(a)(1)(ii)				
▽ meet financial test or use corporate guarantee for liability coverage as specified in 265.147(g)	IV B, †27	265.147(a)(2)				
▽ ways owner/operator may demonstrate required liability coverage; minimum coverage amount	IV B, †27	265.147(a)(3)				
▽ coverage for nonsudden accidental occurrences; ways coverage may be demonstrated	IV B	265.147(b)				
18 demonstrate by having liability insurance with the following requirements:	IV B	265.147(b)(1)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
18 attachment of Hazardous Waste Facility Liability Endorsement or Certificate of Liability Insurance; required wording; submittal of signed duplicate original	IV B	265.147(b)(1)(i)				
18 minimum requirements for insurer	IV B	265.147(b)(1)(ii)				
∇ pass financial test or use corporate guarantee for liability coverage as specified in 265.147(f) and (g)	IV B, †27	265.147(b)(2)				
∇ ways owner/operator may demonstrate required liability coverage; minimum coverage amount	IV B, †27	265.147(b)(3)				
∇ deadlines for demonstrating liability coverage	IV B	265.147(b)(4)				
		265.147(b)(4)(i)				
		265.147(b)(4)(ii)				
		265.147(b)(4)(iii)				
		265.147(b)(5)				
circumstances requiring letter to Regional Administrator	IV B	265.147(b)(5)				
requests for variance from 265.147(a) or (b) requirements; form of variance requirements	IV B	265.147(c)				
adjustments to required financial responsibility levels by Regional Administrator; criteria which must be used	IV B	265.147(d)				
when liability coverage may be terminated	IV B,24	265.147(e)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
financial test for liability coverage; criteria of 265.147(f)(1) (i) or (ii) must be met	IV B	265.147(f)(1)				
what owner or operator must have "amount of liability coverage"	IV B	265.147(f)(1)(i)				
		265.147(f)(1)(i)(A)				
		265.147(f)(1)(i)(B)				
		265.147(f)(1)(i)(C)				
		265.147(f)(1)(ii)				
		265.147(f)(1)(ii)(A)				
		265.147(f)(1)(ii)(B)				
		265.147(f)(1)(ii)(C)				
		265.147(f)(1)(ii)(D)				
	IV B	265.147(f)(2)				
three items owner or operator must submit	IV B	265.147(f)(3)				
		265.147(f)(3)(i)				
		265.147(f)(3)(ii)				
		265.147(f)(3)(iii)				
		265.147(f)(3)(iii)(A)				
		265.147(f)(3)(iii)(B)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
extension of test deadline if owner or operator is undergoing an audit; what sub- mitted letter must do	IV B	265.147(f)(4)				
		265.147(f)(4)(i)				
		265.147(f)(4)(ii)				
		265.147(f)(4)(iii)				
		265.147(f)(4)(iv)				
		265.147(f)(4)(v)				
		265.147(f)(4)(vi)				
updated information	IV B	265.147(f)(5)				
evidence of insurance if 265.147(f)(1) require- ments not met	IV B	265.147(f)(6)				
Regional Administrator may disallow test; cause for disallowance	IV B	265.147(f)(7)				

†, ∇,

9 Guarantee for Liability Coverage

∇ corporate guarantee for liability coverage; guarantor is parent corporation	27	265.147(g)(1)				
payment by guarantor if owner or operator fails to satisfy a judgment	27	265.147(g)(1)(i)				
∇ cancellation/use of alternate coverage	27	265.147(g)(1)(ii)				
∇ corporations incor- porated in U.S.	27, †43	265.147(g)(2)(i)				
∇ corporations incor- porated outside U.S.	43	265.147(g)(2)(ii)				
19 until 10/16/82, use of ∇ endorsement or insurance without certification of insurer	*, †27	265.147(h)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

incapacity through bankruptcy of owner or operator or guarantor	IV B	265.148(a)				
incapacity of financial institution by bank- ruptcy or authority suspension	IV B	265.148(b)				

SUBPART I - USE AND MANAGEMENT OF CONTAINERS

APPLICABILITY

storage of hazardous waste in containers	IV B	265.170				
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CONDITION OF CONTAINERS

requirements when container is not in good condition	IV B	265.171				
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COMPATIBILITY OF WASTE WITH CONTAINERS

container must be compatible with hazardous waste	IV B	265.172				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

MANAGEMENT OF CONTAINERS

closed container during storage	IV B	265.173(a)				
care in handling	IV B	265.173(b)				

INSPECTIONS

weekly inspections	IV B	265.174				
reserved		265.175				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

required distance from property line	IV B	265.176				
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SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

not to be placed in same container	IV B	265.177(a)				
not to be placed in unwashed, previously used container	IV B	265.177(b)				
separation or pro- tection requirements	IV B	265.177(c)				

SUBPART J - TANK SYSTEMS**20 APPLICABILITY**

tank systems used for storing or treating hazardous wastes; exceptions	IV B, 28	265.190				
no free liquids; inside building with imperme- able floor; EPA Method 9095	†28, †52	265.190(a)				
tanks in secondary containment systems exempt	†28, †52	265.190(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

21 ASSESSMENT OF EXISTING TANK SYSTEM'S INTEGRITY

written assessment of tank system's integrity	28	265.191(a)				
adequate design; sufficient structural strength; compatibility with waste(s)	28	265.191(b)				
minimum assessment considerations	28	265.191(b)(1)				
		265.191(b)(2)				
		265.191(b)(3)				
		265.191(b)(4)				
		265.191(b)(5)				
		265.191(b)(5)(i)				
		265.191(b)(5)(ii)				
12 mos. deadline if materials become hazardous wastes after 7/14/86	28	265.191(c)				
tank systems found to be leaking or unfit for use, compliance with 265.196	28	265.191(d)				

21 DESIGN AND INSTALLATION OF NEW TANK SYSTEMS OR COMPONENTS

information to be included in written assessments for new tank systems or components	28	265.192(a)				
design standards	28	265.192(a)(1)				
hazardous characteristics	28	265.192(a)(2)				
contact with soil or water; required determinations	28	265.192(a)(3)				

File

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
factors affecting poten- tial for corrosion	28	265.192(a)(3)(i)				
		265.192(a)(3)(i)(A)				
		265.192(a)(3)(i)(B)				
		265.192(a)(3)(i)(C)				
		265.192(a)(3)(i)(D)				
		265.192(a)(3)(i)(E)				
		265.192(a)(3)(i)(F)				
		265.192(a)(3)(i)(G)				
		265.192(a)(3)(i)(H)				
type and degree of external corrosion protection needed	28	265.192(a)(3)(ii)				
		265.192(a)(3)(ii)(A)				
		265.192(a)(3)(ii)(B)				
		265.192(a)(3)(ii)(C)				
protection from traffic for underground components	28	265.192(a)(4)				
design considerations to ensure protection from environment	28	265.192(a)(5)				
		265.192(a)(5)(i)				
		265.192(a)(5)(ii)				
		265.192(a)(5)(iii)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
new tank installation procedures; inspection requirements	28	265.192(b)				
		265.192(b)(1)				
		265.192(b)(2)				
		265.192(b)(3)				
		265.192(b)(4)				
		265.192(b)(5)				
		265.192(b)(6)				
backfilling requirements for new underground tank systems	28	265.192(c)				
tightness requirement	28	265.192(d)				
protection of ancillary equipment	28	265.192(e)				
corrosion protection requirements	28	265.192(f)				
written statements and certification statements	28	265.192(g)				

21 CONTAINMENT AND DETECTION OF RELEASES

schedule for providing secondary contain- ment for tank systems	28	265.193(a)				
		265.193(a)(1)				
		265.193(a)(2)				
		265.193(a)(3)				
		265.193(a)(4)				
		265.193(a)(5)				

2.1.3a

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements for secondary contain- ment systems	28	265.193(b)				
		265.193(b)(1)				
		265.193(b)(2)				
minimum specifications of secondary contain- ment systems	28	265.193(c)				
		265.193(c)(1)				
		265.193(c)(2)				
		265.193(c)(3)				
		265.193(c)(4)				
devices that satisfy secondary containment require- ments	28	265.193(d)				
		265.193(d)(1)				
		265.193(d)(2)				
		265.193(d)(3)				
		265.193(d)(4)				
additional requirements for secondary contain- ment systems	28	265.193(e)				
additional requirements for external liner systems	28	265.193(e)(1)				
		265.193(e)(1)(i)				
		265.193(e)(1)(ii)				
		265.193(e)(1)(iii)				
		265.193(e)(1)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
additional requirements for vault systems	28	265.193(e)(2)				
		265.193(e)(2)(i)				
		265.193(e)(2)(ii)				
		265.193(e)(2)(iii)				
		265.193(e)(2)(iv)				
		265.193(e)(2)(v)				
		265.193(e)(2)(v)(A)				
		265.193(e)(2)(v)(B)				
additional requirements for double-walled tanks secondary containment requirements for ancillary equipment; exceptions	28	265.193(e)(2)(vi)				
		265.193(e)(3)				
		265.193(e)(3)(i)				
		265.193(e)(3)(ii)				
aboveground piping welded parts and connections	28	265.193(e)(3)(iii)				
		265.193(f)				
sealless or magnetic coupling pumps and sealless valves	28	265.193(f)(1)				
pressurized above- ground piping systems with automatic shut-off devices	28	265.193(f)(2)				
	28,52	265.193(f)(3)				
	28	265.193(f)(4)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

†,9 Variance From 265.193 Requirements

general require- ments for variance	28	265.193(g)				
considerations in granting variance based on demonstra- tion of equivalent ground-water and sur- face water protection factors to be considered in granting a variance	28	265.193(g)(1)				
		265.193(g)(1)(i)				
		265.193(g)(1)(ii)				
		265.193(g)(1)(iii)				
		265.193(g)(1)(iv)				
factors regarding potential adverse effects on ground- water, surface water and land quality	28	265.193(g)(2)				
	28	265.193(g)(2)(i)				
		265.193(g)(2)(i)(A)				
		265.193(g)(2)(i)(B)				
		265.193(g)(2)(i)(C)				
		265.193(g)(2)(i)(D)				
factors regarding potential adverse effects of a release on ground-water quality	28	265.193(g)(2)(i)(E)				
		265.193(g)(2)(ii)				
		265.193(g)(2)(ii)(A)				
		265.193(g)(2)(ii)(B)				
		265.193(g)(2)(ii)(C)				
		265.193(g)(2)(ii)(D)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
factors regarding potential adverse effects of a release on surface water quality	28	265.193(g)(2)(iii)				
		265.193(g)(2)(iii)(A)				
		265.193(g)(2)(iii)(B)				
		265.193(g)(2)(iii)(C)				
		265.193(g)(2)(iii)(D)				
		265.193(g)(2)(iii)(E)				
factors regarding potential adverse effects of a release on the land surround- ing the tank system	28	265.193(g)(2)(iv)				
		265.193(g)(2)(iv)(A)				
		265.193(g)(2)(iv)(B)				
for tanks granted a variance, require- ments if release occurs from primary tank system but no migration beyond zone of engineering control	28	265.193(g)(3)				
		265.193(g)(3)(i)				
		265.193(g)(3)(ii)				
		265.193(g)(3)(ii)(A)				
		265.193(g)(3)(ii)(B)				
	28,†52	265.193(g)(3)(iii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
for tanks granted a variance, require- ments if release occurs and migrates beyond zone of engineering control	28	265.193(g)(4)				
		265.193(g)(4)(i)				
		265.193(g)(4)(ii)				
		265.193(g)(4)(iii)				

†,9 Secondary Containment Variance Procedures

procedures for requesting a variance	28	265.193(h)				
		265.193(h)(1)				
		265.193(h)(1)(i)				
		265.193(h)(1)(ii)				
		265.193(h)(2)				
		265.193(h)(3)				
		265.193(h)(4)				
		265.193(h)(5)				

requirements for all tank systems until such time as secondary contain- ment is provided	28	265.193(i)				
		265.193(i)(1)				
		265.193(i)(2)				
		265.193(i)(3)				
		265.193(i)(4)				

21 GENERAL OPERATING REQUIREMENTS

when hazardous waste or treatment reagents must not be placed in tank systems	28	265.194(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
minimum controls and practices to prevent spills and overflows 265.196 requirements if a leak or spill occurs in the system	28	265.194(b)				
		265.194(b)(1)				
		265.194(b)(2)				
		265.194(b)(3)				
	28	265.194(c)				

INSPECTIONS

daily inspection requirements	28	265.195(a)				
		265.195(a)(1)				
		265.195(a)(2)				
		265.195(a)(3)				
		265.195(a)(4)				
minimum inspection frequency for cathodic protection systems	28	265.195(b)				
		265.195(b)(1)				
		265.195(b)(2)				
document in operating record	28	265.195(c)				

RESPONSE TO LEAKS OR SPILLS AND DISPOSITION OF LEAKING OR UNFIT-FOR-USE TANK SYSTEMS

immediate removal from service of leaking or unfit-for- use tank or secondary containment system	28,52	265.196				
cessation of use; pre- vent flow or addition of wastes	28	265.196(a)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
schedule for removal of waste from tank system or secondary contain- ment system	28	265.196(b)(1)				
		265.196(b)(2)				
containment of visible releases to the enviro- nment	28	265.196(c)				
		265.196(c)(1)				
		265.196(c)(2)				
required notifications and reports following any release to the environment	28	265.196(d)(1)				
		265.196(d)(2)				
		265.196(d)(2)(i)				
		265.196(d)(2)(ii)				
		265.196(d)(3)				
		265.196(d)(3)(i)				
		265.196(d)(3)(ii)				
		265.196(d)(3)(iii)				
		265.196(d)(3)(iv)				
		265.196(d)(3)(v)				
provision of secondary contain- ment, repair, or closure	28	265.196(e)(1)				
		265.196(e)(2)				
		265.196(e)(3)				
		265.196(e)(4)				
certification of major repairs	28	265.196(f)				

21 CLOSURE AND POST-CLOSURE CARE

general closure requirements	28	265.197(a)				
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SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
specific requirements when contaminated soils cannot practically be removed or decontaminated; closure as a landfill	28	265.197(b)				
closure plans and financial responsibility requirements for tank systems without secondary contain- ment that fall under 265.193(b)-(f) and are not exempt from secondary containment requirements	28	265.197(c)				
		265.197(c)(1)				
		265.197(c)(2)				
		265.197(c)(3)				
		265.197(c)(4)				
		265.197(c)(5)				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

no ignitable or reactive waste in tank systems unless:	IV B, 28	265.198(a)				
waste is treated, rendered or mixed	IV B, 28	265.198(a)(1)				
		265.198(a)(1)(i)				
		265.198(a)(1)(ii)				
		265.198(a)(1)(iii)				
waste is protected	IV B, 28	265.198(a)(2)				
system used solely for emergencies	IV B, 28	265.198(a)(3)				
maintenance of pro- tective distances	IV B, 28	265.198(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

no placement of in- compatible wastes in tank system unless compliance with 265.17(b)	IV B, 28	265.199(a)				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no placement in con- taminated tank system unless compliance with 265.17(b)	IV B, 28	265.199(b)				

WASTE ANALYSIS AND TRIAL TESTS

requirements when waste or process is new	28	265.200				
waste analysis and treatment or storage tests	28	265.200(a)				
obtain written, documented informa- tion on similar waste/ operating conditions	28	265.200(b)				

**SPECIAL REQUIREMENTS FOR GENERATORS OF BETWEEN 100 AND 1,000 KG/MO THAT
ACCUMULATE HAZARDOUS WASTE IN TANKS**

general applicability requirements	28	265.201(a)				
general operating requirements	28	265.201(b)				
		265.201(b)(1)				
		265.201(b)(2)				
		265.201(b)(3)				
		265.201(b)(4)				
inspection requirements	28	265.201(c)				
discharge controls	28	265.201(c)(1)				
monitoring data	28	265.201(c)(2)				
level of waste in tank	28,52	265.201(c)(3)				
tank construction materials	28	265.201(c)(4)				
discharge confine- ment structures	28	265.201(c)(5)				
closure requirements	28	265.201(d)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
special requirements for ignitable or reactive wastes	28	265.201(e)				
		265.201(e)(1)				
		265.201(e)(1)(i)				
		265.201(e)(1)(ii)				
		265.201(e)(1)(iii)				
		265.201(e)(2)				
special requirements for incompatible wastes	28	265.201(f)				
		265.201(f)(1)				
		265.201(f)(2)				

SUBPART K - SURFACE IMPOUNDMENTS

APPLICABILITY

surface impoundments used to treat, store, or dispose of hazardous waste	*	265.220				
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DESIGN REQUIREMENTS

install two or more liners and leachate collection in accordance with 264.221(c)	17 H	265.221(a)				
notify Regional Administrator; Part B application	17 H	265.221(b)				
exception to 265.221(a) based on alternative design and operating practices	†17 H	265.221(c)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
†,9 Waiver From Double Liner Requirements						
conditions for waiving 265.221(a)	17 H	265.221(d)				
	17 H,74	265.221(d)(1)				
		265.221(d)(2)(i)(A)				
		265.221(d)(2)(i)(B)				
		265.221(d)(2)(i)(C)				
	17 H	265.221(d)(2)(ii)				
first permit must honor liner system installed pursuant to 265.221(a), except if leaking	†17 H	265.221(e)				
GENERAL OPERATING REQUIREMENTS						
60 cm of freeboard required	IV B, †15	265.222(a)				
condition for variance from 60 cm of freeboard	†15	265.222(b)				
CONTAINMENT SYSTEM						
protective cover required for earthen dikes	IV B	265.223				
reserved		265.224				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

WASTE ANALYSIS AND TRIAL TESTS

waste analyses in addition to 265.13 and the circumstances requiring them	IV B	265.225(a)				
		265.225(a)(1)				
		265.225(a)(2)				
		265.225(a)(2)(i)				
		265.225(a)(2)(ii)				

INSPECTIONS

daily and weekly inspection requirements	IV B	265.226(a)				
		265.226(a)(1)				
		265.226(a)(2)				
reserved		265.227				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
CLOSURE AND POST-CLOSURE CARE						
closure requirements	IV B,36	265.228(a)				
		265.228(a)(1)				
		262.228(a)(2)				
		265.228(a)(2)(i)				
		265.228(a)(2)(ii)				
		265.228(a)(2)(iii)				
		265.228(a)(2)(iii)(A)				
		265.228(a)(2)(iii)(B)				
		265.228(a)(2)(iii)(C)				
		265.228(a)(2)(iii)(D)				
		265.228(a)(2)(iii)(E)				
post-closure requirements	IV B,36	265.228(b)				
		265.228(b)(1)				
		265.228(b)(2)				
		265.228(b)(3)				
removed	IV B,36	265.228(c)				
SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE						
conditions for place- ment in a surface impoundment	*,†15, 78	265.229				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
waste treatment to specific criteria prior to placement	IV B, †15	265.229(a)				
		265.229(a)(1)				
		265.229(a)(2)				
waste management to prevent reaction or ignition	IV B, †15	265.229(b)(1)				
		265.229(b)(2)				
		265.229(b)(3)				
emergency placement	IV B, †15	265.229(c)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

prohibited co-disposal of incompatible wastes or materials unless compliance with 265.17(b)	IV B	265.230				
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SUBPART L - WASTE PILES

APPLICABILITY

storage or treatment facilities using waste piles; alternative management under 265, Subpart N	IV B	265.250				
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PROTECTION FROM WIND

wind dispersal control	IV B	265.251				
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WASTE ANALYSIS

additional analyses	IV B	265.252				
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CONTAINMENT

to control leachate or run-off	IV B	265.253				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
place pile on impermeable base with run-on and run-off management	IV B	265.253(a)(1)				
		265.253(a)(2)				
		265.253(a)(3)				
		265.253(a)(4)				
protect pile from precipitation and liquids	IV B	265.253(b)(1)				
		265.253(b)(2)				

DESIGN REQUIREMENTS

new, replacement, and expansion units subject to 264.251	17 H	265.254				
reserved		265.225				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

conditions for placement of ignitable or reactive waste in waste piles	IV B, 78	265.256(a)				
	IV B	265.256(a)(1)				
		265.256(a)(2)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

placement in same pile prohibited unless 265.17(b) is complied with	IV B	265.257(a)				
waste separation or protection	IV B	265.257(b)				
base decontamination	IV B	265.257(c)				

CLOSURE AND POST-CLOSURE CARE

closure requirements	IV B	265.258(a)				
post-closure care if not all contaminated subsoils can be practically removed	IV B	265.258(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART M - LAND TREATMENT

APPLICABILITY

facilities that treat or dispose of hazardous waste in land treatment units	*	265.270				
reserved		265.271				

GENERAL OPERATING REQUIREMENTS

conditions for land treatment	IV B, †15	265.272(a)				
run-on control	IV B	265.272(b)				
run-off control	IV B	265.272(c)				
maintenance of collection capacity	IV B	265.272(d)				
wind dispersal control	IV B	265.272(e)				

WASTE ANALYSIS

additional analyses	*	265.273				
Toxicity Characteristic	IV B,74	265.273(a)				
listed wastes	IV B	265.273(b)				
heavy metals	IV B	265.273(c)				
reserved		265.274-265.275				

FOOD CHAIN CROPS

notification if grow food chain crops	IV B	265.276(a)				
prohibition against food chain crops, unless demonstration for 265.273(b) waste constituents	IV B	265.276(b)(1)				
		265.276(b)(1)(i)				
		265.276(b)(1)(ii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
demonstration information must be kept at facility; what it must be based on; what it must include	IV B	265.276(b)(2)				
		265.276(b)(2)(i)				
		265.276(b)(2)(ii)				
additional require- ments for land treat- ment facility receiving waste with cadmium	IV B	265.276(c)				
requirements if crops are in human food chain	IV B	265.276(c)(1)(i)				
		265.276(c)(1)(ii)				
		265.276(c)(1)(iii)				
		265.276(c)(1)(iii)(A)				
		265.276(c)(1)(iii)(B)				
requirements if crops will be used as animal feed	IV B	265.276(c)(2)(i)				
		265.276(c)(2)(ii)				
		265.276(c)(2)(iii)				
		265.276(c)(2)(iv)				
reserved		265.277				

UNSATURATED ZONE (ZONE OF AERATION) MONITORING

written unsaturated zone monitoring plan required and imple- mented; what plan must be designed to do	IV B	265.278(a)				
		265.278(a)(1)				
		265.278(a)(2)				
what plan must include	IV B	265.278(b)				
		265.278(b)(1)				
		265.278(b)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
demonstration required to comply with 265.278(a)(1) retention of plan; rationale soil and soil-pore water analysis	IV B	265.278(c)				
		265.278(c)(1)				
		265.278(c)(2)				
		265.278(c)(2)(i)				
		265.278(c)(2)(ii)				
		265.278(c)(3)				
	IV B	265.278(d)				
	IV B	265.278(e)				
RECORDKEEPING operating record to include waste appli- cation dates and rates	IV B	265.279				
CLOSURE AND POST-CLOSURE						
objectives which must be addressed in closure and post- closure plans	IV B	265.280(a)				
		265.280(a)(1)				
		265.280(a)(2)				
		265.280(a)(3)				
		265.280(a)(4)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
factors needed to meet the closure and post-closure care objectives of 265.280(a)	IV B	265.280(b)				
		265.280(b)(1)				
		265.280(b)(2)				
		265.280(b)(3)				
		265.280(b)(4)				
		265.280(b)(5)				
		265.280(b)(6)				
		265.280(b)(7)				
methods to address closure/post-closure plan objectives	IV B	265.280(c)				
		265.280(c)(1)				
		265.280(c)(2)				
		265.280(c)(2)(i)				
		265.280(c)(2)(ii)				
		265.280(c)(3)				
closure requirements in addition to Sub- part G requirements	IV B	265.280(d)				
		265.280(d)(1)				
		265.280(d)(2)				
		265.280(d)(3)				
		265.280(d)(4)				
certification that facility has been closed in accordance with specifications of approved plan	IV B	265.280(e)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements in addition to 265.117 requirements	IV B	265.280(f)				
		265.280(f)(1)				
		265.280(f)(2)				
		265.280(f)(3)				
		265.280(f)(4)				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

conditions for applying ignitable or reactive wastes to treatment zone	*,78	265.281				
immediate incorporation of waste into soil protective manage- ment so no reaction or ignition	IV B	265.281(a)				
		265.281(a)(1)				
		265.281(a)(2)				
	IV B	265.281(b)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

conditions for disposal of incompatible wastes or materials	IV B	265.282				
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SUBPART N - LANDFILLS

APPLICABILITY

apply to hazardous waste disposal facilities using landfills	IV B	265.300				
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DESIGN REQUIREMENTS

install two or more liners	17 H	265.301(a)				
notify Regional Administrator	17 H	265.301(b)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
alternative design	†17 H	265.301(c)				

†,9 **Waiver From Double Liner Requirements**

		265.301(d)				
		265.301(d)(1)				
		265.301(d)(2)(i)(A)				
		265.301(d)(2)(i)(B)				
		265.301(d)(2)(i)(C)				
waiver for monofills	17 H	265.301(d)(2)(ii)				

liner systems installed pursuant to 265.301(a) will be honored, unless leaking	†17 H	265.301(e)				
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GENERAL OPERATING REQUIREMENTS

run-on control	IV B	265.302(a)				
run-off control	IV B	265.302(b)				
collection and holding facilities	IV B	265.302(c)				
wind dispersal control	IV B	265.302(d)				
reserved		265.303-265.308				

SURVEYING AND RECORDKEEPING

items which must be in operating record	*	265.309				
location and dimensions of landfill to be shown on maps	IV B	265.309(a)				
contents of each cell and location of each hazardous waste type in each cell	IV B	265.309(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

CLOSURE AND POST-CLOSURE CARE

cover requirements at final closure	IV B,15	265.310(a)				
		265.310(a)(1)				
		265.310(a)(2)				
		265.310(a)(3)				
		265.310(a)(4)				
		265.310(a)(5)				
post-closure requirements	IV B,15	265.310(b)				
final cover requirements	IV B,15	265.310(b)(1)				
ground-water monitoring system requirements	IV B,15	265.310(b)(2)				
run-on and run-off control requirements	IV B,15	265.310(b)(3)				
protect and maintain surveyed benchmarks	IV B,15	265.310(b)(4)				
22 removed	IV B,15	265.310(c)				
		265.310(d)				
reserved		265.311				

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

placement prohibited unless waste and landfill meet Part 268 requirements and waste is no longer ignitable or reactive and 265.17(b) is complied with	IV B,78	265.312(a)				
	IV B	265.312(a)(1)				
		265.312(a)(2)				
containerized wastes	IV B,78	265.312(b)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

conditions for disposal in landfill	IV B	265.313				
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23 SPECIAL REQUIREMENTS FOR BULK AND CONTAINERIZED LIQUIDS

bulk liquid disposal prior to May 8, 1985 only if:	IV B, 17 F	265.314(a)				
liner and leachate system requirements	IV B	265.314(a)(1)				
liquids must be stabilized	IV B	265.314(a)(2)				
May 8, 1985 free liquids ban	IV B, 17 F	265.314(b)				
conditions for placement of containers holding free liquids in a landfill	IV B, †17 F	265.314(c)				
		265.314(c)(1)				
		265.314(c)(2)				
		265.314(c)(3)				
		265.314(c)(4)				
paint filter test	16, †17 F, 25	265.314(d)				
compliance date	IV B, †17 F	265.314(e)				
nonhazardous liquids ban effective November 8, 1985; what must be demonstrated to Regional Administrator for exemption	17 F	265.314(f)				
only reasonable available alternative	†17 F	265.314(f)(1)				
not a risk of contaminating underground source of drinking water	†17 F	265.314(f)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

24 SPECIAL REQUIREMENTS FOR CONTAINERS

requirements if containers not very small	15	265.315				
at least 90% full crushed, shredded or reduced in volume before burial	IV B,15	265.315(a)				
	IV B,15	265.315(b)				

DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS (LAB PACKS)

conditions for placement of overpacked drums in landfills	*	265.316				
inside container re- quirements including DOT requirements	IV B	265.316(a)				
overpacking--DOT requirements; outer container	IV B	265.316(b)				
absorbent material	IV B	265.316(c)				
incompatible wastes	IV B	265.316(d)				
reactive wastes	IV B	265.316(e)				
†,25 disposal in com- pliance with Part 268; fiber drums allowed for incineration of lab packs	78	265.316(f)				

SUBPART O - INCINERATORS**APPLICABILITY**

applies to incineration facilities	IV B,13	265.340(a)				
HW incinerators	13	265.340(a)(1)				
boilers and industrial furnaces	13,19	265.340(a)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
exemptions	IV B	265.340(b)				
		265.340(b)(1)				
		265.340(b)(2)				
		265.340(b)(3)				
		265.340(b)(4)				

WASTE ANALYSIS

analyze wastes not previously burned	*	265.341				
factors which at a minimum must be analyzed	IV B	265.341(a)				
		265.341(b)				
		265.341(c)				
reserved		265.342-265.344				

GENERAL OPERATING REQUIREMENTS

during start-up and shut-down, limit waste feed to steady state	IV B	265.345				
reserved		265.346				

MONITORING AND INSPECTIONS

monitoring and inspection requirement	*	265.347				
15-minute monitoring of combustion and emission control instruments; appropriate corrections	IV B	265.347(a)				
daily inspection of incinerator and associated equipment	IV B	265.347(b)				
reserved		265.348-265.350				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
CLOSURE						
remove all hazardous wastes and residues	IV B	265.351				

INTERIM STATUS INCINERATORS BURNING PARTICULAR HAZARDOUS WASTES

certification to burn dioxins	14	265.352(a)				
		265.352(b)				
		265.352(b)(1)				
		265.352(b)(2)				
certification standards and procedures	14	265.352(b)(3)				

SUBPART P - THERMAL TREATMENT

OTHER THERMAL TREATMENT

treatment in other than enclosed devices using controlled flame combustion	IV B,13	265.370				
reserved		265.371-265.372				

GENERAL OPERATING REQUIREMENTS

waste feed limited to steady state conditions of operation, unless process is non- continuous	IV B	265.373				
reserved		265.374				

WASTE ANALYSIS

analyze wastes not previously burned to establish steady state or other appropriate operating conditions	*	265.375				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
factors which at a minimum must be analyzed	IV B	265.375(a)				
		265.375(b)				
		265.375(c)				
reserved		265.376				

MONITORING AND INSPECTIONS

items requiring monitoring and inspections	IV B	265.377(a)				
		265.377(a)(1)				
		265.377(a)(2)				
		265.377(a)(3)				
reserved		265.378-265.380				

CLOSURE

remove all hazardous waste and residues	IV B	265.381				
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OPEN BURNING; WASTE EXPLOSIVES

prohibition on open burning of hazardous wastes except for open burning and detonation of waste explosives; definitions	IV B	265.382				
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INTERIM STATUS THERMAL TREATMENT DEVICES BURNING PARTICULAR HAZARDOUS WASTE

certification to burn dioxins	14	265.383(a)				
certification standards and procedures	14	265.383(b)				
		265.383(b)(1)				
		265.383(b)(2)				
		265.383(b)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART Q - CHEMICAL, PHYSICAL, AND BIOLOGICAL TREATMENT

APPLICABILITY

applies to owners/ operators of facilities which treat by chemical, physical or biological methods in other than tanks, surface impoundments and land treatment facilities, except as 265.1 provides otherwise	IV B	265.400				
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GENERAL OPERATING REQUIREMENTS

comply with 265.17(b)	IV B	265.401(a)				
placement of wastes	IV B	265.401(b)				
cut-off for continuous feed	IV B	265.401(c)				

WASTE ANALYSIS AND TRIAL TESTS

requirements in addition to 265.13	IV B	265.402(a)				
		265.402(a)(1)				
		265.402(a)(2)				
		265.402(a)(2)(i)				
		265.402(a)(2)(ii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

INSPECTIONS

items to be inspected and frequency of inspection	IV B	265.403(a)				
		265.403(a)(1)				
		265.403(a)(2)				
		265.403(a)(3)				
		265.403(a)(4)				

CLOSURE

remove all hazardous wastes and residues	IV B	265.404				
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SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

ignitable or reactive waste must not be placed in treatment process or equipment unless certain conditions are met	IV B	265.405(a)				
		265.405(a)(1)				
		265.405(a)(2)				

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

no treatment of incompatible wastes unless 265.17(b) compliance	IV B	265.406(a)				
no hazardous waste placed in unwashed treatment equipment unless 265.17(b) compliance	IV B	265.406(b)				

SUBPART R - UNDERGROUND INJECTION**APPLICABILITY**

except as 265.1 provides otherwise:	*	265.430				
owner/operator exclusion	IV B	265.430(a)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Class I and Class IV wells	IV B	265.430(b)				

SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS

APPLICABILITY

regulations in this subpart apply to owners and operators of facilities that treat, store or dispose of hazardous waste except as provided in 265.1	79	265.1030(a)				
except for 265.1034(d) and 265.1035(d), Subpart AA applies to process vents associated with operations manag- ing hazardous wastes with at least 10-ppmw organic concen- trations if conducted in specific units	79	265.1030(b)				
units subject to the permitting requirements of Part 270	79	265.1030(b)(1)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
hazardous waste recycling units located on hazardous waste management facilities otherwise subject to Part 270 permitting requirements	79	265.1030(b)(2)				
DEFINITIONS						
all terms have meaning given them in 264.1031, the Act, and Parts 260-266	79	265.1031				
STANDARDS: PROCESS VENTS						
owner or operator of facility with process vents meeting certain conditions shall either:	79	265.1032(a)				
reduce total organic emissions below 1.4 kg/h and 2.8 Mg/yr	79	265.1032(a)(1)				
using control device, reduce total organic emissions by 95 weight percent	79	265.1032(a)(2)				
265.1033 requirements must be met if owner or operator installs closed-vent system and control device to comply with 265.1032(a) provisions	79	265.1032(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
use of engineering calculations or performance tests conforming to 265.1034(c) requirements may be used for determination of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices	79	265.1032(c)				
use of 265.1034(c) procedures to resolve disagreements between owner or operator and Regional Administrator on vent determinations	79	265.1032(d)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

compliance with provisions of 265.1033 by owners or operators of closed-vent systems and control devices used to comply with provisions of Part 265	79	265.1033(a)(1)				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
preparation of an implementation schedule by owner or operator, of existing facility, who cannot install a closed-vent system and control device to comply with Subpart AA provisions by effective date; units that begin operation after December 21, 1990, must comply with the rules immediately	79	265.1033(a)(2)				
specification of efficiency standards for control device involving vapor recovery unless 265.1032(a)(1) emission limits can be attained	79	265.1033(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
organic emission standards for enclosed combustion device; for boiler or process heater used as control device, vent stream introduced into flame zone	79	265.1033(c)				
specifications for the design and operation of a flare	79	265.1033(d)(1)				
	79	265.1033(d)(2)				
	79	265.1033(d)(3)				
	79	265.1033(d)(4)(i)				
	79	265.1033(d)(4)(ii)				
	79	265.1033(d)(4)(iii)				
	79	265.1033(d)(5)				
	79	265.1033(d)(6)				
determination of compliance of a flare with the visible emission provisions of Subpart AA using Reference Method 22 in 40 CFR Part 60	79	265.1033(e)(1)				
calculation of net heating value of gas being combusted in a flare using specified equation	79	265.1033(e)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination of actual exit velocity of a flare using flow rate as determined by Reference Methods 2, 2A, 2C or 2D in 40 CFR Part 60	79	265.1033(e)(3)				
determination of maximum allowed velocity for a flare complying with 265.1033(d)(4)(iii)	79	265.1033(e)(4)				
determination of maximum allowed velocity for an air-assisted flare	79	265.1033(e)(5)				
monitoring and inspection of control device by owner and oper- ator to ensure compliance with 265.1033 by implementing specified requirements:	79	265.1033(f)				
installation, cali- bration, main- tenance, and operation of a flow indicator; where sensor shall be installed	79	265.1033(f)(1)				
specifications for installation, cali- bration, mainte- nance, and oper- ation of a device to continuously monitor control device operation:	79	265.1033(f)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
temperature monitoring device with a continuous recorder for a thermal vapor incinerator	79	265.1033(f)(2)(i)				
temperature monitoring device with a continuous recorder for a catalytic vapor incinerator	79	265.1033(f)(2)(ii)				
heat sensing monitoring device with a continuous recorder for a flare	79	265.1033(f)(2)(iii)				
temperature monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity less than 44 MW	79	265.1033(f)(2)(iv)				
monitoring device with a continuous recorder for a boiler or process heater having a design heat input capacity greater than or equal to 44 MW	79	265.1033(f)(2)(v)				
for a condenser, either:	79	265.1033(f)(2)(vi)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring device with a continuous recorder to measure concentration level of the organic compounds in the exhaust vent stream from the condenser	79	265.1033(f)(2)(vi)(A)				
temperature monitoring device with a continuous recorder; specifications	79	265.1033(f)(2)(vi)(B)				
for a carbon adsorption system, either:	79	265.1033(f)(2)(vii)				
monitoring device with a continuous recorder to measure concentration level of organic compounds in exhaust vent stream from carbon bed	79	265.1033(f)(2)(vii)(A)				
monitoring device with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular predetermined time cycle	79	265.1033(f)(2)(vii)(B)				
daily inspection of readings from monitoring device required by 265.1033(f)(1) and 265.1033(f)(2); implement corrective measures if necessary	79	265.1033(f)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
replacement of existing carbon in control device by owner or oper- ator using a fixed- bed carbon adsorber that meets the 265.1035(b)(4) (iii)(F) requirement	79	265.1033(g)				
replacement of carbon on a regular basis by owner or operator using a carbon canister	79	265.1033(h)				
monitor organic compounds daily or at interval no greater than 20 percent of time required to consume total carbon working capacity established at 265.1035(b)(4) (iii)(G), which- ever is longer; replace existing carbon when carbon break- through occurs	79	265.1033(h)(1)				
replacement of existing carbon at intervals less than design carbon replacement inter- val established as a requirement of 265.1035(b)(4) (iii)(G)	79	265.1033(h)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
documentation requirements for owner or operator seeking to comply with Part 265 provisions by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater condenser, or carbon adsorption system	79	265.1033(i)				
design and operational requirements for closed-vent systems based on 265.1034(b) methods	79	265.1033(j)(1)				
monitoring of closed-vent systems during initial leak detection monitoring, conducted by the date that the facility becomes subject to 265.1033 provisions, annually, and as requested by Regional Administrator	79	265.1033(j)(2)				
control of detectable emissions no later than 15 calendar days after emission is detected	79	265.1033(j)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
first attempt at repair no later than 5 calendar days after emission is detected	79	265.1033(j)(4)				
closed vent systems and control devices used to comply with provisions of Subpart AA shall be operated at all times when emissions may be vented to them	79	265.1033(k)				

TEST METHODS AND PROCEDURES

compliance with 265.1034 test methods and procedures by owner or operator subject to provisions of Subpart AA	79	265.1034(a)				
when testing a closed-vent system for compliance with 265.1033(j) requirements, comply with following test requirements:	79	265.1034(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	79	265.1034(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	79	265.1034(b)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
calibration of instrument by procedures specified in Reference Method 21	79	265.1034(b)(3)				
calibration gases shall be:	79	265.1034(b)(4)				
zero air	79	265.1034(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	79	265.1034(b)(4)(ii)				
background level determined as set forth in Reference Method 21	79	265.1034(b)(5)				
instrument probe traverse requirements as described in Reference Method 21	79	265.1034(b)(6)				
arithmetic difference compared with 500 ppm for compliance determination	79	265.1034(b)(7)				
performance test requirements to determine compliance with 265.1032(a) and 265.1033(c)	79	265.1034(c)				
reference methods and calculation procedures to use when determining total organic compound concentrations and mass flow rates	79	265.1034(c)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Method 2 in 40 CFR Part 60 for velocity and volumetric flow rate	79	265.1034(c)(1)(i)				
Method 18 in 40 CFR Part 60 for organic content	79	265.1034(c)(1)(ii)				
performance tests in three separate runs; conditions for conducting runs; averaging results on a time-weighted basis	79	265.1034(c)(1)(iii)				
equation for determining total organic mass flow rates	79	265.1034(c)(1)(iv)				
equation for determining annual total organic emission rate	79	265.1034(c)(1)(v)				
determination of total organic emissions from all process vents using 265.1034(c)(1)(iv) equation and 265.1034(c)(1)(v) equation	79	265.1034(c)(1)(vi)				
recording of pro- cess information necessary to determine per- formance test conditions; certain operational periods not applicable	79	265.1034(c)(2)				
performance testing facilities provided by owner or operator	79	265.1034(c)(3)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
sampling ports adequate for 265.1034(c)(1) test methods	79	265.1034(c)(3)(i)				
safe sampling platform(s)	79	265.1034(c)(3)(ii)				
safe access to sampling platform(s)	79	265.1034(c)(3)(iii)				
utilities for sampling and testing equipment	79	265.1034(c)(3)(iv)				
use of time- weighted average of three runs in making comp- liance determina- tions; Regional Administrator approval needed for average based on two runs if a sample is accidentally lost or certain conditions occur	79	265.1034(c)(4)				
to demonstrate a process vent is not subject to Subpart AA requirements, use one of two methods to deter- mine an annual average total organic concen- tration of less than 10 ppmw	79	265.1034(d)				
direct measurement using the following procedures:	79	265.1034(d)(1)				
minimum of four grab samples under specified process conditions	79	265.1034(d)(1)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
for waste generated onsite, collect grab samples before exposure to the atmosphere; for waste generated offsite, collect grab samples at the inlet to the first waste management unit that receives the waste under specific conditions	79	265.1034(d)(1)(ii)				
sample analysis using Method 9060 or 8240 of SW-846	79	265.1034(d)(1)(iii)				
calculation of time-weighted, annual average total organic concentration of waste	79	265.1034(d)(1)(iv)				
using knowledge of the waste to determine its total organic concentration is less than 10 ppmw; documentation of the waste determination is required; examples of acceptable documentation	79	265.1034(d)(2)				
guidelines for the determination that hazardous wastes are managed with time-weighted annual average total organic concentrations less than 10 ppmw	79	265.1034(e)				
	79	265.1034(e)(1)				
	79	265.1034(e)(2)				
	79	265.1034(e)(3)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
Method 8240 procedures used to resolve dispute in case of disagreement between owner or operator and Regional Administrator regarding the determination made in 265.1034(e)	79	265.1034(f)				

RECORDKEEPING REQUIREMENTS

compliance with recordkeeping requirements	79	265.1035(a)(1)				
recordkeeping requirements for more than one hazardous waste management unit in one record-keeping system	79	265.1035(a)(2)				
information that must be recorded in the facility operating record	79	265.1035(b)				
for 265.1033(a)(2)-complying facilities, an implementation schedule that includes specified dates and rationale; inclusion in operating record by effective date the facility becomes subject to Subpart AA provisions	79	265.1035(b)(1)				
up-to-date documentation of 265.1032 standards	79	265.1035(b)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information and data identifying all affected process vents and specific information for each vent	79	265.1035(b)(2)(i)				
information and data supporting determinations of vent emissions and emission reductions; new determination required if any action taken increases total emissions	79	265.1035(b)(2)(ii)				
a performance test plan for owners or operators using test data for determination	79	265.1035(b)(3)				
a description of the determination that a planned test will be conducted when unit is operating at the highest load or capacity level	79	265.1035(b)(3)(i)				
detailed engineering description of closed-vent system and control device	79	265.1035(b)(3)(ii)				
	79	265.1035(b)(3)(ii)(A)				
	79	265.1035(b)(3)(ii)(B)				
	79	265.1035(b)(3)(ii)(C)				
	79	265.1035(b)(3)(ii)(D)				
	79	265.1035(b)(3)(ii)(E)				
detailed description of sampling and monitoring procedures	79	265.1035(b)(3)(iii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
documentation of compliance with 265.1033	79	265.1035(b)(4)				
information references and source	79	265.1035(b)(4)(i)				
records including the dates of each compliance test required by 265.1033(i)	79	265.1035(b)(4)(ii)				
if engineering calculations are used, a design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters	79	265.1035(b)(4)(iii)				
design analysis requirements for a thermal vapor incinerator	79	265.1035(b)(4)(iii)(A)				
design analysis requirements for a catalytic vapor incinerator	79	265.1035(b)(4)(iii)(B)				
design analysis requirements for a boiler or process heater	79	265.1035(b)(4)(iii)(C)				
design analysis requirements for a flare	79	265.1035(b)(4)(iii)(D)				
design analysis requirements for a condenser	79	265.1035(b)(4)(iii)(E)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis requirements for carbon adsorption system that regenerates the carbon bed directly onsite	79	265.1035(b)(4)(iii)(F)				
design analysis requirements for a carbon adsorption system that does not regenerate the carbon bed directly onsite	79	265.1035(b)(4)(iii)(G)				
certification statement signed and dated by owner or operator regarding operating parameters	79	265.1035(b)(4)(iv)				
certification statement signed and dated by owner or operator regarding control equipment meeting design specifications	79	265.1035(b)(4)(v)				
all test results when performance tests are used to demonstrate compliance	79	265.1035(b)(4)(vi)				
information to be recorded and kept up-to-date in the facility operating record for each closed-vent system and control device subject to the Part 265 regulations	79	265.1035(c)				
description and date of each modification	79	265.1035(c)(1)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
identification of operating para- meter, description of monitoring device and location diagram for comp- liance with 265.1033(f)(1) and (f)(2)	79	265.1035(c)(2)				
information required by 265.1033(f)-(j)	79	265.1035(c)(3)				
date, time and duration of each period that occurs while control device is operating when any moni- tored parameter exceeds the value established in the design analysis	79	265.1035(c)(4)				
when combustion temperature is below 760°C for a thermal vapor incinerator	79	265.1035(c)(4)(i)				
	79	265.1035(c)(4)(ii)				
when temperature of vent stream is more than 28°C below average temperature or when temperature difference across catalyst bed is less than 80 percent of the design average temperature	79	265.1035(c)(4)(iii)				
difference for a catalytic vapor incinerator	79	265.1035(c)(4)(iii)(A)				
	79	265.1035(c)(4)(iii)(B)				
boiler or process heater	79	265.1035(c)(4)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
flame zone temperature is more than 28°C below design average temper- ature	79	265.1035(c)(4)(iv)(A)				
position changes	79	265.1035(c)(4)(iv)(B)				
period when the pilot flame is not ignited for a flare	79	265.1035(c)(4)(v)				
period when organic compounds are more than 20 percent greater than the design level for a condenser	79	265.1035(c)(4)(vi)				
condenser that complies with 265.1033(f)(2) (vi)(B)	79	265.1035(c)(4)(vii)				
temperature of exhaust vent stream is more than 6°C above design average temperature	79	265.1035(c)(4)(vii)(A)				
temperature of exiting coolant fluid is more than 6°C above design average temperature	79	265.1035(c)(4)(vii)(B)				
period when organic compounds are more than 20 percent greater than the design level for a carbon adsorption system	79	265.1035(c)(4)(viii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
period when vent stream flow exceeds predetermined regeneration time for a carbon adsorption system	79	265.1035(c)(4)(ix)				
explanation for each period under 265.1035(c)(4) of the cause for parameters being exceeded and measures implemented	79	265.1035(c)(5)				
date when existing carbon is replaced	79	265.1035(c)(6)				
log to record specific dates	79	265.1035(c)(7)				
	79	265.1035(c)(7)(i)				
	79	265.1035(c)(7)(ii)				
date of each control device start-up and shutdown	79	265.1035(c)(8)				
records required by paragraphs 265.1035(c)(3)-(c)(8) need be kept only 3 years	79	265.1035(d)				
monitoring and inspection information for control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system must be recorded in the facility operating record	79	265.1035(e)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
logging of information used to determine if process vent is subject to 265.1032 and 265.1032(d)(2)	79	265.1035(f)				
reserved	79	265.1036 - 265.1049				

SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

APPLICABILITY

owners and operators of facilities that treat, store or dispose of hazardous wastes except as provided in 265.1	79	265.1050(a)				
except as provided in 265.1064(j), applicability of Subpart BB to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in units or facilities subject to Part 270 permitting requirements	79	265.1050(b)				
equipment subject to Subpart BB, Part 265 shall be marked	79	265.1050(b)(1)				
	79	265.1050(b)(2)				
	79	265.1050(c)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
equipment in vacuum service excluded from requirements of 265.1052 to 265.1060 requirements if identified as required in 265.1064(g)(5)	79	265.1050(d)				
DEFINITIONS						
all terms have meaning given them in 264.1031, the Act, and Parts 260-266	79	265.1051				
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE						
monthly monitoring to detect leaks as specified by 265.1063(b) methods except as provided in 265.1052(d), (e) and (f)	79	265.1052(a)(1)				
visual inspection each calendar week	79	265.1052(a)(2)				
conditions indicating a leak is detected	79	265.1052(b)(1)				
	79	265.1052(b)(2)				
time frame for leak repair, except as provided in 265.1059	79	265.1052(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	265.1052(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
pump equipped with dual mechanical seal system that includes a barrier fluid system is exempt from 265.1052(a) if specific requirements are met:	79	265.1052(d)				
operational and equipment requirements for a dual mechanical seal system	79	265.1052(d)(1)				
	79	265.1052(d)(1)(i)				
	79	265.1052(d)(1)(ii)				
	79	265.1052(d)(1)(iii)				
organic concentration limitation for barrier fluid system	79	265.1052(d)(2)				
sensor requirement	79	265.1052(d)(3)				
weekly visual check of pump	79	265.1052(d)(4)				
daily check of barrier fluid system sensor or monthly check of audible alarm	79	265.1052(d)(5)(i)				
determination of criterion to indicate failure of systems	79	265.1052(d)(5)(ii)				
leak detection criteria	79	265.1052(d)(6)(i)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	79	265.1052(d)(6)(ii)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	265.1052(d)(6)(iii)				
conditions under which pump desig- nated for no detec- table emissions is exempt from 265.1052(a),(c) and (d) requirements	79	265.1052(e)				
	79	265.1052(e)(1)				
	79	265.1052(e)(2)				
	79	265.1052(e)(3)				
pump equipped with closed-vent system and control device in comp- liance with 265.1060 is exempt from 265.1052(a)-(e) requirements	79	265.1052(f)				

STANDARDS: COMPRESSORS

seal system requirement for compressor, except as provided in 265.1053(h) and (i)	79	265.1053(a)				
specifications for compressor seal system	79	265.1053(b)				
	79	265.1053(b)(1)				
	79	265.1053(b)(2)				
	79	265.1053(b)(3)				
organic concen- tration limitation for barrier fluid	79	265.1053(c)				
sensor requirement	79	265.1053(d)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
daily check of barrier fluid system sensor or monthly check of audible alarm; daily check if compressor located within boundary of unmanned site	79	265.1053(e)(1)				
determination of criterion to indicate failure of systems	79	265.1053(e)(2)				
leak detection criteria	79	265.1053(f)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	79	265.1053(g)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	265.1053(g)(2)				
compressor equip- ped with closed- vent system and control device in compliance with 265.1060 is exempt from 265.1053(a) and (b) requirements, except as provided in 265.1053(i)	79	265.1053(h)				
conditions under which compressor designated for no detectable emis- sions is exempt from 265.1053(a) through (h) requirements	79	265.1053(i)				
	79	265.1053(i)(1)				
	79	265.1053(i)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS: PRESSURE RELIEF DEVICES IN GAS/VAPOR SERVICE						
except during pressure releases, no detectable emission standards for the operation of pressure relief device in gas/vapor service, as measured by 265.1063(c) method	79	265.1054(a)				
time requirement and criteria for return of pressure relief device to a condition of no detectable emissions, except as provided in 265.1059	79	265.1054(b)(1)				
monitoring of pressure relief device within 5 calendar days after pressure relief to confirm no detectable emissions, as measured by 265.1063(c) method	79	265.1054(b)(2)				
pressure relief device equipped with closed-vent system and control device in compliance with 265.1060 is exempt from 265.1054(a) and (b)	79	265.1054(c)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

STANDARDS: SAMPLING CONNECTING SYSTEMS

sampling connecting system equipped with closed purge or closed-vent system	79	265.1055(a)				
return collect and recycle purged waste with no detectable emissions; control device in compliance with 265.1060	79	265.1055(b)				
	79	265.1055(b)(1)				
	79	265.1055(b)(2)				
	79	265.1055(b)(3)				
in situ sampling systems exempt from 265.1055(a) and (b) requirements	79	265.1055(c)				

STANDARDS: OPEN-ENDED VALVES OR LINES

each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve	79	265.1056(a)(1)				
requirement to seal open end at all times except during specified operations	79	265.1056(a)(2)				
operational requirements for open-ended valve or line equipped with a second valve	79	265.1056(b)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirements for bleed valve or line when a double block and bleed system is used; compliance with 265.1056(a)	79	265.1056(c)				

STANDARDS: VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE

monthly monitoring of each valve in gas/vapor or light liquid service using 265.1063(b) methods; compliance with 265.1057(b)-(e), except as provided in 265.1057(f), (g) and (h), 265.1061 and 265.1062	79	265.1057(a)				
instrument reading of 10,000 ppm or greater indicates leak	79	265.1057(b)				
monitoring requirements if leak not detected for two successive months	79	265.1057(c)(1)				
monthly monitoring requirement if leak detected	79	265.1057(c)(2)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	79	265.1057(d)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	265.1057(d)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
best practices to include in first attempt at repair valve designated for no detectable emissions under 265.1064(g)(2) is exempt from 265.1057(a) requirements if specified conditions are met	79	265.1057(e)				
	79	265.1057(e)(1)				
	79	265.1057(e)(2)				
	79	265.1057(e)(3)				
	79	265.1057(e)(4)				
conditions under which an unsafe-to-monitor valve as described in 265.1064(h)(1) is exempt from 265.1057(a) requirements	79	265.1057(f)				
	79	265.1057(f)(1)				
	79	265.1057(f)(2)				
	79	265.1057(f)(3)				
conditions under which a difficult-to-monitor valve as described in 265.1064(h)(2) is exempt from 265.1057(a) requirements	79	265.1057(g)				
	79	265.1057(g)(1)				
	79	265.1057(g)(2)				
	79	265.1057(h)				
	79	265.1057(h)(1)				
	79	265.1057(h)(2)				
	79	265.1057(h)(3)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

**STANDARDS: PUMPS AND VALVES IN HEAVY LIQUID SERVICE, PRESSURE
RELIEF DEVICES IN LIGHT LIQUID OR HEAVY LIQUID SERVICE, AND FLANGES
AND OTHER CONNECTORS**

monitoring of specified pumps and valves, pressure relief devices, flanges and other con- nectors within 5 days using 265.1063(b) methods in case of potential leaks	79	265.1058(a)				
reading of 10,000 ppm or greater indicates leak	79	265.1058(b)				
repair of leak not to exceed 15 calendar days, except as provided in 265.1059	79	265.1058(c)(1)				
first attempt at leak repair not to exceed 5 calendar days after leak detection	79	265.1058(c)(2)				
first attempt at repair includes best practices described under 265.1057(e)	79	265.1058(d)				

STANDARDS: DELAY OF REPAIR

requirements for the delay of repair of equipment for which leaks have been detected	79	265.1059(a)				
type of equipment for which delay of repair allowed	79	265.1059(b)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
conditions under which delay of repair of valves allowed	79	265.1059(c)				
	79	265.1059(c)(1)				
	79	265.1059(c)(2)				
conditions under which delay of repair of pumps allowed	79	265.1059(d)				
	79	265.1059(d)(1)				
	79	265.1059(d)(2)				
conditions for delay of repair beyond a hazardous waste management unit shutdown	79	265.1059(e)				

STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

owners or oper- ators of closed- vent systems and control devices shall comply with 265.1033 provisions	79	265.1060				
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**ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID
SERVICE: PERCENTAGE OF VALVES ALLOWED TO LEAK**

alternative standard allowing no greater than 2 percent of valves to leak for an owner or operator subject to 265.1057 requirements	79	265.1061(a)				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
notification, performance test, and repair require- ments if an owner or operator decides to comply with alternative standard	79	265.1061(b)				
	79	265.1061(b)(1)				
	79	265.1061(b)(2)				
	79	265.1061(b)(3)				
monitoring standards, leak detection criterion and determination of leak percentage when conducting performance tests	79	265.1061(c)				
	79	265.1061(c)(1)				
	79	265.1061(c)(2)				
	79	265.1061(c)(3)				
written notification to Regional Administrator of intent to follow 265.1057(a)-(e) work practice standard if owner or operator decides to no longer comply with 265.1061	79	265.1061(d)				

**ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID
SERVICE: SKIP PERIOD LEAK DETECTION AND REPAIR**

election to comply with 265.1062(b)(2) and (3) alternative work practices by owner or operator subject to 265.1057 requirements	79	265.1062(a)(1)				
notification of Regional Admini- strator before implementing alternative work practice	79	265.1062(a)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with 265.1057 requirements, except as described in 265.1062(b)(2) and (b)(3)	79	265.1062(b)(1)				
conditions under which an owner or operator may begin to skip one of the quarterly leak detection periods for valves subject to 265.1057 requirements	79	265.1062(b)(2)				
conditions under which an owner or operator may begin to skip three of the quarterly leak detection periods for valves subject to 265.1057 requirements	79	265.1062(b)(3)				
compliance with 265.1057 monthly monitoring requirements if percentage of valves leaking exceeds 2 percent; may elect to use 265.1062 requirements again after meeting 265.1057(c)(1) requirements	79	265.1062(b)(4)				

TEST METHODS AND PROCEDURES

compliance with test methods and procedure requirements by owner or operator subject to provisions of Subpart BB	79	265.1063(a)				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
leak detection monitoring as required in 265.1052-265.1062 shall comply with specified requirements:	79	265.1063(b)				
monitoring in compliance with Reference Method 21 in 40 CFR Part 60	79	265.1063(b)(1)				
detection instrument shall meet the performance criteria of Reference Method 21	79	265.1063(b)(2)				
calibration of instrument by procedures specified in Reference Method 21	79	265.1063(b)(3)				
calibration gases shall be:	79	265.1063(b)(4)				
zero air	79	265.1063(b)(4)(i)				
mixture of methane or n-hexane and air at specified concentration	79	265.1063(b)(4)(ii)				
instrument probe traverse requirements as described in Reference Method 21	79	265.1063(b)(5)				

3-2-97

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
test compliance requirements for equipment with no detectable emissions as required in 265.1052(e), 265.1053(i), 265.1054 and 265.1057(f)	79	265.1063(c)				
	79	265.1063(c)(1)				
	79	265.1063(c)(2)				
	79	265.1063(c)(3)				
	79	265.1063(c)(4)				
in accordance with 265.13(b), determination by owner or operator of whether equipment contains or contacts a hazardous waste with organic concentration equal to or greater than 10% by weight using the following:	79	265.1063(d)				
methods described in ASTM Methods D 2267-88, E 169-87, E 168-88 and E 260-85	79	265.1063(d)(1)				
Method 9060 or 8240 of SW-846	79	265.1063(d)(2)				
application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced; documentation required; examples of documentation	79	265.1063(d)(3)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
determination as specified in 265.1063(d) can be revised only after following 265.1063(d)(1) or (d)(2) procedures	79	265.1063(e)				
use of 265.1063(d)(1) or (d)(2) to resolve determination disputes between owner or operator and Regional Administrator	79	265.1063(f)				
samples used for determination representative of highest expected total organic content hazardous waste	79	265.1063(g)				
to determine if pumps or valves are in light liquid service, vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86	79	265.1063(h)				
performance tests for control device shall comply with 265.1034(c)(1) through (c)(4) procedures	79	265.1063(i)				
RECORDKEEPING REQUIREMENTS						
compliance with recordkeeping requirements	79	265.1064(a)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
recordkeeping requirements for more than one hazardous waste management unit in one recordkeeping system	79	265.1064(a)(2)				
specific information that owners and operators must record in the facility operating record for facilities that comply with the provisions of 265.1033(a)(2), an implementation schedule as specified in 265.1033(a)(2)	79	265.1064(b)				
	79	265.1064(b)(1)				
	79	265.1064(b)(1)(i)				
	79	265.1064(b)(1)(ii)				
	79	265.1064(b)(1)(iii)				
	79	265.1064(b)(1)(iv)				
	79	265.1064(b)(1)(v)				
	79	265.1064(b)(1)(vi)				
performance test plan as specified in 265.1035(b)(3) if test data are used for control device demonstration	79	265.1064(b)(2)				
documentation of compliance with 265.1060, including documentation or results specified in 265.1035(b)(4)	79	265.1064(b)(3)				
	79	265.1064(b)(4)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information requirements when each leak is detected as specified in 265.1052, 265.1053, 265.1057 and 265.1058	79	265.1064(c)				
	79	265.1064(c)(1)				
	79	265.1064(c)(2)				
	79	265.1064(c)(3)				
inspection log information requirements when each leak is detected as specified in 265.1052, 265.1053, 265.1057 and 265.1058	79	265.1064(d)				
	79	265.1064(d)(1)				
	79	265.1064(d)(2)				
	79	265.1064(d)(3)				
	79	265.1064(d)(4)				
	79	265.1064(d)(5)				
	79	265.1064(d)(6)				
	79	265.1064(d)(7)				
	79	265.1064(d)(8)				
	79	265.1064(d)(9)				
for each closed-vent system and control device subject to 265.1060, design documentation and monitoring, operating and inspection information recorded in facility operating record as specified in 265.1035(c)	79	265.1064(d)(10)				
	79	265.1064(e)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring and inspection information for control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system must be recorded in the facility operating record	79	265.1064(f)				
	79	265.1064(g)				
	79	265.1064(g)(1)				
	79	265.1064(g)(2)(i)				
	79	265.1064(g)(2)(ii)				
	79	265.1064(g)(3)				
	79	265.1064(g)(4)(i)				
	79	265.1064(g)(4)(ii)				
	79	265.1064(g)(4)(iii)				
	79	265.1064(g)(5)				
information requirements for equipment subject to the requirements of 265.1052 through 265.1060 to be recorded in a log and kept in the facility operating record	79	265.1064(h)				
	79	265.1064(h)(1)				
	79	265.1064(h)(2)				
information requirements for valves subject to the requirements of 265.1057(g) and (h)	79	265.1064(i)				
	79	265.1064(i)(1)				
	79	265.1064(i)(2)				

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
additional information requirements	79	265.1064(j)				
criteria required in 265.1052(d)(5)(ii) and 265.1053(e)(2) and an explanation of the design criteria	79	265.1064(j)(1)				
any changes to the criteria and the reasons for the changes	79	265.1064(j)(2)				
information requirements to be recorded in a log for determining exemptions as pro- vided in the appli- cability section of Subpart BB and other specific Subparts	79	265.1064(k)				
	79	265.1064(k)(1)				
	79	265.1064(k)(2)				
	79	265.1064(k)(3)				
records of equip- ment leak and operating informa- tion need be kept for only three years	79	265.1064(l)				

SPA 9

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
the owner or operator of facility subject to Subpart BB and to regulations at 40 CFR Part 60, Subpart VV, or 40 CFR Part 61, Subpart V, may elect to determine compliance by documentation either pursuant to 265.1064 or provisions of 40 CFR Part 60 or Part 61, to the extent that the documentation duplicates the documentation required under Subpart BB	79	265.1064(m)				
reserved	79	265.1065 - 265.1079				

APPENDIX I TO PART 265

RECORDKEEPING INSTRUCTIONS

additional instructions for keeping portions of the operating record	*	Appendix I				
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APPENDIX III TO PART 265

EPA INTERIM PRIMARY DRINKING WATER STANDARDS

table of parameters and maximum levels	*	Appendix III				
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**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX IV TO PART 265

TESTS FOR SIGNIFICANCE

background information on use of Student's t-test	*	Appendix IV				
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APPENDIX V TO PART 265

EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

list of wastes and potential consequences of mixing	*	Appendix V				
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∇ This paragraph was affected by Revision Checklist 51 (September 1, 1988; 53 FR 33938) which was withheld by EPA. See note at the beginning of this checklist for explanation.

- 1 This subsection was modified by 50 FR 28702, the final rule addressed by Revision Checklists 17 A - 17 S, but was not included in these checklists.
- 2 Revision Checklist 54 removed the comment following 265.54(e).
- 3 This requirement was moved from 265.75(h) to 265.75(j) by Revision Checklist 30.
- 4 265.110(b) was added by Revision Checklist 24. It was amended by Revision Checklist 28 to read as 265.110(b)(3) presently reads. Revision Checklist 52 added a new 265.110(b)(2), redesignating the old 265.110(b)(2) as 265.110(b)(3). Interestingly, the wording of the 265.110(b)(2) added by Revision Checklist 52 is the same as the wording of the 265.110(b)(2) added by Revision Checklist 24.
- 5 Revision Checklist 24 significantly revised the 265.112 section. Much of the original code (Base Program Checklist IV B) survived but was modified and also moved to different paragraphs/subparagraphs by Revision Checklist 24. Thus, when IV B appears in the Checklist Reference column for any of the 265.112 citations, it more times than not indicates that the text of those citations is relevant to Checklist IV B while the actual citation number is not. For example, IV B appears as a checklist reference for 265.112(b)(4), (6) and (7), yet paragraph 265.112(b) was not broken down into subparagraphs (1)-(7) in code relevant to Checklist IV B. Footnotes at the paragraph level will indicate where the code appeared under the old formatting as per Base Program Checklist IV B.

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
6						
Many of the current requirements of 265.112(b) and (b)(1)-(b)(7), as designated and modified by Revision Checklist 24, were part of the base program at 265.112(a) and (a)(1)-(4). States which do not adopt the optional (less stringent) requirement at 265.112(b)(7) must be careful to retain the closure plan requirement for "an estimate of the expected year of closure" as first introduced into the base program as a portion of 265.112(a)(4).						
7						
Part or all of the text of the following citations was introduced into the code at 265.112(b) as per Base Program Checklist IV B: 265.112(c), (c)(1), (c)(1)(i)-(ii), and (c)(2). Revision Checklist 24 modified this text and moved it from paragraph (b) to paragraph (c).						
8						
Revision Checklist 24 designated the citations within the double lines as optional revisions (265.112(d)(1)-(d)(4)). Similar, more stringent and nonoptional provisions originated in the code at 265.112(c), (c)(1), (c)(2), and (d) as per Base Program Checklist IV B. If States choose to adopt the 265.112(d)(1)-(d)(4) optional provisions as per Revision Checklist 24, they must adopt them as a unit rather than by individual provision. In other words, all or none of the (d)(1)-(d)(4) provisions must be included in a State's code. The only exception for adopting States is the optional revisions subsequently made by Revision Checklist 64. These subsequent changes are less stringent than those addressed by Revision Checklist 24, so States may or may not make those changes. If a State chooses not to adopt the Revision Checklist 24 optional provisions, it must retain code equivalent to that found in the base program at 265.112(c), (c)(1), (c)(2), and (d).						
9						
Citations within the double lines are optional, but if a State chooses to modify its program to adopt requirements equivalent to these provisions, it must adopt such requirements as a unit rather than by individual provision. In other words, all or none of these provisions must be included in a State's code. Subsequent changes to these provisions may or may not be optional for States that have adopted the original unit of provisions. An optional sign appears in front of the subsequent revision checklist number(s) if such subsequent changes are less stringent than or reduce the scope of the original requirements.						
10						
Text from 265.118(a)(1-3) in Base Program Checklist IV B was moved to 265.118(c)(1-3) by Revision Checklist 24.						
11						
Text from 265.118(b) and (e) in Base Program Checklist IV B was moved to 265.118(d)(1-2) by Revision Checklist 24.						
12						
Text from 265.118(c)(1-2) in Base Program Checklist IV B was moved to 265.118(e)(1-2) by Revision Checklist 24.						
13						
Text from 265.118(d) in Base Program Checklist IV B was moved to 265.118(f) by Revision Checklist 24.						
14						
Text from 265.118(f)(1-2) in Base Program Checklist IV B was moved to 265.118(g)(1-2) by Revision Checklist 24.						
15						
Revision Checklist 24 extensively revised 265.119 as per Base Program Checklist IV B, including a new section title. The original code contained no subparagraphs.						

**CONSOLIDATED CHECKLIST C6: Interim Status Standards for Owners and Operators
of Hazardous Waste Treatment, Storage, and Disposal Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
16						
The current text of 265.120 was introduced by Revision Checklist 24 whereas the original text of 265.120 as in the base program was moved to 265.119(b) by Revision Checklist 24.						
17						
The text of 265.142(a)(1) was originally included in 265.142(a).						
18						
Note there is an error in both the July 1, 1989 and 1990 <u>CFRs</u> . Both incorrectly omit 265.147(a)(1)(i)&(ii) and 265.147(b)(1)(i)&(ii). A technical correction will be published in the near future to fix these omissions. In the meantime, States should include analogous requirements in their regulations.						
19						
Although not included in Checklist IV B, the text of the current 265.147(h) was included in the base program as 265.147(g). This paragraph was moved by Revision Checklist 27.						
20						
Revision Checklist 28 completely revised this base program (Checklist IV B) section, 265.190.						
21						
Revision Checklist 28 completely reorganized and revised the regulations pertaining to tank systems which originally appeared in Checklist IV B at 265.191 through 265.194 and 265.197.						
22						
Paragraphs 265.310(c) and (d) were removed by the final rule addressed by Revision Checklist 15; however, these removals were not included on Revision Checklist 15.						
23						
Revision Checklist 17 F made extensive changes to this section of code, including redesignating the original paragraphs 265.314(b) and (c) to (c) and (e), reserving (d), and adding new paragraphs (b) and (f).						
24						
Revision Checklist 15 completely revised the regulations at 264.315.						
25						
This code is part of the optional requirements for the alternate treatment standards for lab packs under the Third Third Scheduled Waste Rule. If adopted, all of the requirements (i.e., 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268) related to these alternate treatment standards must be adopted.						

SPA 9

CONSOLIDATED CHECKLIST C7

Standards for the Management of Specific Hazardous Wastes and
Specific Types of Hazardous Waste Management Facilities
40 CFR Part 266 as of June 30, 1990

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - [RESERVED]

SUBPART B - [RESERVED]

SUBPART C - RECYCLABLE MATERIALS USED IN A MANNER CONSTITUTING DISPOSAL

APPLICABILITY

applied to or placed on the land:	13	266.20(a)				
without mixing	13	266.20(a)(1)				
after mixing or in combination	13,37	266.20(a)(2)				
subparagraph removed	13,37	266.20(a)(3)				
products for general public's use; must have undergone chemical reaction so they are inseparable and must meet treatment stan- dards of 268, Subpart D; exemption for certain commercial fertilizers containing recyclable materials; zinc-containing fertilizer exemption	†13,50 66	266.20(b)				

STANDARDS APPLICABLE TO GENERATORS AND TRANSPORTERS OF MATERIALS USED IN A MANNER THAT CONSTITUTES DISPOSAL

generator and trans- porter requirements	13	266.21				
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**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

**STANDARDS APPLICABLE TO STORERS OF MATERIALS THAT ARE TO BE USED IN A
MANNER THAT CONSTITUTES DISPOSAL WHO ARE NOT THE ULTIMATE USERS**

requirements for storers of material	13	266.22				
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**STANDARDS APPLICABLE TO USERS OF MATERIALS THAT ARE USED IN A MANNER
THAT CONSTITUTES DISPOSAL**

requirements for users of material	13,17 G	266.23(a)				
use of dioxin-contami- nated material is prohibited	17 G	266.23(b)				

SUBPART D - HAZARDOUS WASTE BURNED FOR ENERGY RECOVERY

APPLICABILITY

recovery in boilers and industrial furnaces; definition of "hazardous waste fuel"	13,19	266.30(a)				
hazardous wastes not regulated under this subpart:	13	266.30(b)				
used oil burned for energy recovery meeting certain re- quirements is subject to Part 266, Subpart E regulation	13,†19	266.30(b)(1)				
wastes exempt from regulation under 261.4 and 261.6(a)(3)(v) through (ix) and wastes subject to 261.5	13,†19	266.30(b)(2)				

PROHIBITIONS

hazardous waste fuel may be marketed to:	19	266.31(a)				
notifiers who have EPA ID	19	266.31(a)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
burners with 266.31(b) boilers or industrial furnaces	19	266.31(a)(2)				
devices hazardous waste fuel may be burned in:	19	266.31(b)				
industrial furnaces identified in 260.10	19	266.31(b)(1)				
260.10-defined boilers; specific industrial boilers; specific utility boilers	19	266.31(b)(2)				
		266.31(b)(2)(i)				
		266.31(b)(2)(ii)				
1 no burning in cement kilns in incorporated municipalities greater than 500,000; exception	17 J,19	266.31(c)				

STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE FUEL

generators are subject to 262	13,19	266.32(a)				
generators who market are also subject to 266.34	13,19	266.32(b)				
generators who burn are subject to 266.35	13,19	266.32(c)				

STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE FUEL

transporters are subject to 263	13,19	266.33				
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2 STANDARDS APPLICABLE TO MARKETERS OF HAZARDOUS WASTE FUEL

definition of marketers	19	266.34				
prohibitions under 266.31(a)	19	266.34(a)				
notification of activities	19	266.34(b)				
applicable provisions for storage	19	266.34(c)				
Part 262 standards for off-site shipment	19	266.34(d)				

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
required notices from burner or marketer; marketer certifies EPA notification	19	266.34(e)(1)				
		266.34(e)(1)(i)				
		266.34(e)(1)(ii)				
		266.34(e)(2)				
recordkeeping requirements	19	266.34(f)				

STANDARDS APPLICABLE TO BURNERS OF HAZARDOUS WASTE FUEL

definition of "burners"	19	266.35				
prohibitions under 266.31(b)	19	266.35(a)				
notification of activities	19	266.35(b)				
3 applicable provisions for generators, existing storage facilities, new storage facilities	13,19	266.35(c)(1)				
		266.35(c)(2)				
		266.35(c)(3)				
required notices from burner to marketer	19	266.35(d)				
		266.35(d)(1)				
		266.35(d)(2)				
recordkeeping requirements	19	266.35(e)				

**CONDITIONAL EXEMPTION FOR SPENT MATERIALS AND BY-PRODUCTS EXHIBITING
A CHARACTERISTIC OF HAZARDOUS WASTE**

paragraph removed	†13,19	266.36				
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SPA 9

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART E - USED OIL BURNED FOR ENERGY RECOVERY

APPLICABILITY

used oil burned for energy recovery; definition of "used oil fuel"	19	266.40(a)				
definition of "used oil"	19	266.40(b)				
used oil mixed with hazardous waste	19	266.40(c)				
used oil subject to regulation under Subpart E; criteria it must meet	19	266.40(d)				
		266.40(d)(1)				
		266.40(d)(2)				
		266.40(e)				
allowable levels of constituents	19					
PROHIBITIONS						
off-specification used oil may be marketed to:	19	266.41(a)				
burners or other marketers who have notified EPA and have EPA ID	19	266.41(a)(1)				
burners burning in industrial furnaces or boilers identified in 266.41(b)	19	266.41(a)(2)				
devices for burning off-specification used oil:	19	266.41(b)				
260.10 defined industrial furnaces	19	266.41(b)(1)				

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
260.10 defined boilers; specific in- dustrial boilers; specific utility boilers; specific used oil-fired space heaters	19	266.41(b)(2)				
		266.41(b)(2)(i)				
		266.41(b)(2)(ii)				
		266.41(b)(2)(iii)				
		266.41(b)(2)(iii)(A)				
		266.41(b)(2)(iii)(B)				
		266.41(b)(2)(iii)(C)				

STANDARDS APPLICABLE TO GENERATORS OF USED OIL BURNED FOR ENERGY RECOVERY

except 266.42(b)&(c), generators not subject to Subpart E	19	266.42(a)				
generators who market directly to burner are subject to 266.43	19	266.42(b)				
generators burning used oil are subject to 266.44	19	266.42(c)				

STANDARDS APPLICABLE TO MARKETERS OF USED OIL BURNED FOR ENERGY RECOVERY

"marketers" defined; persons who are not requirements marketers are subject to: analysis of used oil fuel prohibitions under 266.41(a) notification of location and activities	19	266.43(a)				
		266.43(a)(1)				
		266.43(a)(2)				
	19	266.43(b)				
	19	266.43(b)(1)				
	19	266.43(b)(2)				
	19	266.43(b)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
preparation of invoice and information requirements	19	266.43(b)(4)				
		266.43(b)(4)(i)				
		266.43(b)(4)(ii)				
		266.43(b)(4)(iii)				
		266.43(b)(4)(iv)				
		266.43(b)(4)(v)				
		266.43(b)(4)(vi)				
required notices from burner or marketer; marketer certifies EPA notification	19	266.43(b)(5)(i)				
		266.43(b)(5)(i)(A)				
		266.43(b)(5)(i)(B)				
		266.43(b)(5)(ii)				
recordkeeping require- ments for used oil fuel meeting specifi- cation and off-specifi- cation used oil fuel	19	266.43(b)(6)(i)				
		266.43(b)(6)(i)(A)				
		266.43(b)(6)(i)(B)				
		266.43(b)(6)(i)(C)				
		266.43(b)(6)(i)(D)				
		266.43(b)(6)(ii)				

STANDARDS APPLICABLE TO BURNERS OF USED OIL BURNED FOR ENERGY RECOVERY

definition of "burners"	19	266.44				
prohibition under 266.41(b)	19	266.44(a)				
notification of location and activities; exemptions from notification	19	266.44(b)				

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
required notices from burner to marketer	19	266.44(c)				
		266.44(c)(1)				
		266.44(c)(2)				
used oil fuel analysis	19	266.44(d)(1)				
		266.44(d)(2)				
recordkeeping requirements	19	266.44(e)				

SUBPART F - RECYCLABLE MATERIALS UTILIZED FOR PRECIOUS METAL RECOVERY

APPLICABILITY AND REQUIREMENTS

reclamation of recyclable materials to recover precious metals	13	266.70(a)				
requirements for generators, trans- porters or storers	13	266.70(b)				
		266.70(b)(1)				
		266.70(b)(2)				
recordkeeping requirements for storers	13	266.70(c)				
		266.70(c)(1)				
		266.70(c)(2)				
		266.70(c)(3)				
applicable provisions for materials accumu- lated speculatively	13	266.70(d)				

**CONSOLIDATED CHECKLIST C7: Standards for the Management of
Specific Hazardous Wastes and Specific Types of Hazardous
Waste Management Facilities (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART G - SPENT LEAD-ACID BATTERIES BEING RECLAIMED

APPLICABILITY AND REQUIREMENTS

persons who reclaim batteries	13	266.80(a)				
		266.80(b)				
		266.80(b)(1)				
requirements for storage before reclamation	13	266.80(b)(2)				

- ¹ In Revision Checklist 17 J, this requirement was 266.31(b)(1). Revision Checklist 19 moved this paragraph to 266.31(c), reworded it and removed the requirements of the former 266.31(b)(2) regarding petroleum refinery hazardous wastes.
- ² This section was originally introduced by Revision Checklist 13, but Revision Checklist 19's changes completely superseded it. Revision Checklist 17 K also affected 266.34(d), but Revision Checklist 19's changes completely superseded these changes as well.
- ³ This subparagraph was introduced by Revision Checklist 13, but the changes made by Revision Checklist 19 completely superseded it.

CONSOLIDATED CHECKLIST C8

Land Disposal Restrictions
40 CFR Part 268 as of June 30, 1990

Notes: 1) The following Part 268 sections are not delegable to States because of the national concerns which must be examined when decisions are made relative to them: 268.5 (case-by-case effective date extensions); 268.42(b) (application for alternate treatment method); and 268.44 (variance from a treatment standard). "No migration" petitions under 268.6 will be handled by EPA, even though States may be authorized to grant such petitions in the future. States have the authority to grant such petitions under RCRA Section 3006 because such decisions do not require a national perspective, as is the case for decisions under 268.5, 268.42(b) or 268.44. However, EPA has had few opportunities to implement the land disposal restrictions and expects to gain valuable experience and information from reviewing "no-migration" petitions.

2) In the past, the nondelegable sections/paragraphs of the LDR regulations have been omitted from the LDR checklists because States could not assume the authority for them. However, this procedure has led to confusion among the States on how to handle the sections/paragraphs in their code. For this reason, the Agency has decided to include these nondelegable sections on the LDR checklists. To differentiate these sections from the delegable portions of the LDR restrictions, asterisks precede (a single row) and follow (a double row) each non-delegable section. If States have already filled out a version of this consolidated checklist which does not include the nondelegable sections, they need not fill out a revised version containing these sections. This change in format was made only to improve clarity.

The Agency suggests that States incorporate the nondelegable portions of the LDR regulation into their regulations. It is essential, however, that States leave the terms "Administrator", "Federal Register" and "Agency" unchanged, i.e., States may not substitute analogous State terms for these Federal terms. Similarly, States incorporating by reference must be careful to except these sections from blanket substitutions of State terms for Federal terms. For a more complete discussion of issues surrounding nondelagable sections, see Appendix J of the State Authorization Manual (SAM).

3) Note that while 268.40(b) is delegable to States, "Administrator" in the following phrase "approved by the Administrator under the procedures set forth in 268.42(b)" should not be replaced with an analogous State term because it is referring to decisions under 268.42(b) which will be made by the EPA Administrator.

4) Adopting the alternate treatment standards for lab packs is optional. However, if a State chooses to adopt these alternate standards, all of the requirements related to these standards must be adopted, including all of the provisions added by the Third Third Scheduled Waste Rule (i.e., Revision Checklist 78) at 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268.

7) Guidance regarding the use of the new TCLP versus the EP Toxicity Test may be found at 55 FR 22660 (June 1, 1990). The code (40 CFR 268.40(a) and 268.41(a)) addressing this issue contains a serious technical error which is discussed in Footnote 27 found at the end of this checklist.

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART A - GENERAL

PURPOSE, SCOPE AND APPLICABILITY

<u>purpose</u>	34	268.1(a)				
<u>applicability</u>	34	268.1(b)				
<u>conditions for con- tinued land disposal:</u>	34,66	268.1(c)				
<u>persons with an extension</u>	34	268.1(c)(1)				
<u>persons with an exemption</u>	34	268.1(c)(2)				
1 <u>wastes that are hazar- dous only because they exhibit a hazar- dous characteristic, and which are other- wise prohibited from land disposal if the wastes:</u>	78	268.1(c)(3)				
<u>disposed into a nonhazardous or hazardous injection well as defined in 40 CFR 144.6(a)</u>	78	268.1(c)(3)(i)				
<u>do not exhibit any prohibited characteristic of hazardous waste at the point of injection</u>	78	268.1(c)(3)(ii)				
2 <u>removed</u>	34,39, 50,66	268.1(c)(4)				
3 <u>removed</u>	39,48, 50,78	268.1(c)(5)				
<u>preserve waiver availability under 121(d)(4) of CERCLA</u>	50	268.1(d)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
wastes which are not subject to any provisions of Part 268:	66	268.1(e)				
wastes generated by generators of less than 100 kg of hazardous waste or less than 1 kg of acute hazardous waste, as defined in 261.5	66	268.1(e)(1)				
waste pesticides that a farmer disposes pursuant to 262.70	66	268.1(e)(2)				
wastes identified or listed as hazardous after November 8, 1984 for which EPA has not promulgated land disposal prohibitions or treatment standards	66	268.1(e)(3)				

DEFINITIONS APPLICABLE TO THIS PART

introductory paragraph regarding definitions	78	268.2				
"halogenated organic compounds" or "HOCs"	39,78	268.2(a)				
4 "hazardous constituent or constituents"	34,78	268.2(b)				
4 "land disposal"	34,39,78	268.2(c)				
5 "nonwastewaters"	78	268.2(d)				
6 "polychlorinated biphenyls" or "PCBs"	39,78	268.2(e)				
"wastewaters"	78	268.2(f)				
"F001, F002, F003 F004, F005 solvent-water mixtures"	78	268.2(f)(1)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"K011, K013, K014 wastewaters"	78	268.2(f)(2)				
"K103 and K104 wastewaters"	78	268.2(f)(3)				
"inorganic solid debris"; specific inorganic or metal materials:	78	268.2(g)				
metal slags	78	268.2(g)(1)				
classified slag	78	268.2(g)(2)				
glass	78	268.2(g)(3)				
concrete	78	268.2(g)(4)				
masonry and refractory bricks	78	268.2(g)(5)				
metal cans, containers, drums or tanks	78	268.2(g)(6)				
metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment	78	268.2(g)(7)				
scrap metal as defined in 40 CFR 261.1(c)(6)	78	268.2(g)(8)				

DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT

7 except as provided in 268.3(b), dilution not substitute for treatment; restriction regarding circumven- tion of effective dates and avoidance of prohibition of Subpart C or RCRA 3004	34,39, 78	268.3(a)				
permissible forms of dilution related to Sections 307 or 402 of the CWA	78	268.3(b)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
TREATMENT SURFACE IMPOUNDMENT EXEMPTION						
when prohibited wastes may be treated in a surface impoundment	34	268.4(a)				
treatment occurs in impoundments	34	268.4(a)(1)				
soft hammer wastes in treatment surface impoundments that meet a list of conditions:	34,39, 50	268.4(a)(2)				
sampling and testing requirements for wastes with and without treatment standards; supernatant and sludge samples tested separately	50	268.4(a)(2)(i)				
annual removal of specific residues; residues subject to valid certification; flow-through standard of removal for supernatant	50	268.4(a)(2)(ii)				
requirements for subsequent management of treatment residues in another impoundment; prohibited unless certification under 268.8 and standards of 268.8(a) are met	50	268.4(a)(2)(iii)				
recordkeeping requirements must be specified in the facility's waste analysis plan	50	268.4(a)(2)(iv)				
design requirements/exemptions	34	268.4(a)(3)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
exempt under 264.221(d) or (e) or 265.221(c) or (d)	34	268.4(a)(3)(i)				
conditions under which Administrator grants waiver of requirements; meets §3005(j)(2)	34	268.4(a)(3)(ii)				
		268.4(a)(3)(ii)(A)				
		268.4(a)(3)(ii)(B)				
		268.4(a)(3)(ii)(C)				
modification granted on basis of a demon- stration of no migra- tion into groundwater or surface water at any future time; satisfies §3005(j)(11) no migration	34	268.4(a)(3)(iii)				
submittal of written certification and waste analysis plan	34	268.4(a)(4)				
evaporation of hazard- ous constituents not considered treatment for exemption purposes	39	268.4(b)				

Guidance note: 268.5 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

PROCEDURES FOR CASE-BY-CASE EXTENSIONS TO AN EFFECTIVE DATE

application to EPA Administrator for an extension to effective date of any Part 268, Subpart C restriction; what the applicant must demonstrate:	34	268.5(a)				
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**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
good-faith effort to locate and contract with treatment, recovery, or disposal facilities nationwide to manage waste according to Subpart C effective date	34	268.5(a)(1)				
binding contractual commitment to construct or provide alternate treatment, recovery (e.g., recycling), or disposal capacity that meets Subpart D treatment standards; requirements when no treatment standards	34,39	268.5(a)(2)				
demonstration that alternative capacity cannot reasonably be available by effective date due to circumstances beyond applicant's control; how this must be demonstrated	34	268.5(a)(3)				
capacity being constructed or provided by applicant must be sufficient capacity for entire quantity of waste	34	268.5(a)(4)				
detailed schedule for obtaining required permits or outlines of how and when alleviate capacity available	34	268.5(a)(5)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
arranged for adequate capacity during extension and documented in all site locations where wastes will be managed	34	268.5(a)(6)				
surface impoundment or landfill used must meet 268.5(h)(2) requirements	34	268.5(a)(7)				
certification by authorized representative signing an application	34	268.5(b)				
Administrator may request additional information	34	268.5(c)				
extension applies only to waste generated at individual facility covered by extension	34	268.5(d)				
Administrator may grant extension of up to 1 year from effective date; extension for 1 additional year if 268.5(a) demonstration can still be made; no extension beyond 24 months from 268, Subpart C effective date; length of extension determined by Administrator and basis; public notice and comment; final decision published in Federal Register	34	268.5(e)				
notify Administrator of change in certified conditions	34	268.5(f)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
written progress re- ports at intervals designated by Admini- strator; what progress reports must include; conditions for revoca- tion of extension by Administrator	34	268.5(g)				
during period establi- shed by Administrator for which extension is in effect:	34	268.5(h)				
268.5(a) storage restrictions do not apply	34,39	268.5(h)(1)				
conditions on disposal in landfill or surface impoundment regard- less if unit is existing, new, replacement or lateral extension	34,50,66	268.5(h)(2)				
interim status landfill requirements	34	268.5(h)(2)(i)				
permitted landfill requirements	34	268.5(h)(2)(ii)				
interim status surface impoundment requirements	34,39	268.5(h)(2)(iii)				
permitted surface impoundment requirements	34	268.5(h)(2)(iv)				
requirements for landfills disposing of specified PCB waste	39	268.5(h)(2)(v)				
pending decision on application, com- pliance with all legal disposal restrictions once effective date has been reached	34	268.5(i)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

 Guidance note: 268.6 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

**PETITIONS TO ALLOW LAND DISPOSAL OF A WASTE PROHIBITED
UNDER SUBPART C OF PART 268**

submit petition to Administrator; demonstration of no waste migration; demonstration components	34	268.6(a)				
identify specific unit and waste	34	268.6(a)(1)				
waste analysis	34	268.6(a)(2)				
comprehensive disposal unit characterization	34	268.6(a)(3)				
monitoring plan detecting migration at the earliest time	50	268.6(a)(4)				
sufficient information to assure Administrator that owner/operator is in compliance with other applicable Federal State and local laws	50	268.6(a)(5)				
Administrator approved sampling, testing and estimation techniques	34	268.6(b)(2)				
model calibration; models verified with actual data	34	268.6(b)(3)				
quality assurance/control plan approved by Administrator	34	268.6(b)(4)				
uncertainty analysis	34	268.6(b)(5)				
8 what each petition must include:	50	268.6(c)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring plan including description of monitoring program to verify continued compliance with variance; information which must be included	50	268.6(c)(1)				
media monitored	50	268.6(c)(1)(i)				
type of monitoring	50	268.6(c)(1)(ii)				
monitoring station location	50	268.6(c)(1)(iii)				
monitoring interval	50	268.6(c)(1)(iv)				
specific hazardous constituents to be monitored	50	268.6(c)(1)(v)				
monitoring program implementation schedule	50	268.6(c)(1)(vi)				
monitoring station equipment	50	268.6(c)(1)(vii)				
sampling and analytical techniques employed	50	268.6(c)(1)(viii)				
data recording/reporting procedures	50	268.6(c)(1)(ix)				
268.6(c)(1) monitoring program must be in place by Administrator specified time period, as part of approval of the petition prior to prohibited waste receipt at unit	50	268.6(c)(2)				
268.6(c)(1) monitoring data sent to Administrator according to monitoring plan must be according to approved format and schedule	50	268.6(c)(3)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
monitoring data as per 268.6(c)(1) monitoring plan must be kept in on-site operating record	50	268.6(c)(4)				
criteria the 268.6(c)(1) monitoring program must meet:	50	268.5(c)(5)				
Administrator approval for all sampling, testing, and analytical data; data accurate and reproducible	50	268.6(c)(5)(i)				
Administrator approval of all estimation and monitoring techniques	50	268.6(c)(5)(ii)				
QA/QC plan for all aspects of monitoring program provided to and approved by Administrator	50	268.6(c)(5)(iii)				
9 petition submitted to Administrator	34,50	268.6(d)				
10 reporting of changes at unit and/or surrounding environment that significantly depart from variances and affect migration potential	50	268.6(e)				
changes to unit design, construction or operation proposed in writing and a demonstration to Administrator 30 days prior to change; Administrator makes determination if petition is invalidated and determines appropriate response; Administrator approval before changes can be made	50	268.6(e)(1)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
within 10 days of discovering change, written notification to Administrator if condition is not as predicted or modeled in petition; Administrator decides if change requires further action	50	268.6(e)(2)				
11 owner/operator responsibilities if hazardous waste migration:	50	268.6(f)				
immediate suspension of prohibited waste receipt	50,66	268.6(f)(1)				
within 10 days written notification to Administrator	50	268.6(f)(2)				
Administrator decision within 60 days as to continued receipt of prohibited waste; Administrator deter- mines if further examination of any migration warranted	50	268.6(f)(3)				
12 signed statement	34,50	268.6(g)				
12 Administrator may request additional information	34,50	268.6(h)				
12 waste unit to which petition applies	34,50	268.6(i)				
12 Administrator gives public notice in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	34,50	268.6(j)				
12 term of petition	34,50	268.6(k)				
12 requirements prior to Administrator's decision	34,50	268.6(l)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
12 petition granted by Administrator does not relieve responsibilities under RCRA	34,50	268.6(m)				
13 noneligibility of certain liquid PCB waste for "no migration" petitions under 268.6	39,50	268.6(n)				

WASTE ANALYSIS AND RECORDKEEPING

generator determines if restricted waste; 268.32 and 268.43 exceptions	34,39 50	268.7(a)				
if generator is managing restricted waste that does not meet applicable treatment standards, must notify treatment or storage facility of appropriate treatment standards	34,39, 50	268.7(a)(1)				
information the notice must include	34	268.7(a)(1)(i)				
	34,39, 78	268.7(a)(1)(ii)				
		268.7(a)(1)(iii)				
	34	268.7(a)(1)(iv)				
if managing restricted waste that can be land disposed without further treatment, notice and certification to treatment, storage, or land disposal facility	34,39, 50	268.7(a)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information required in notice to treatment, storage or land disposal facility certification signature/statement for waste subject to exemption from prohibition (such as a case-by-case 268.5 extension, 268.6 exemption or Subpart C nationwide capacity variance) on land disposal method used for the waste, notice to receiving facility that waste is not prohibited from land disposal		268.7(a)(2)(i)				
	34	268.7(a)(2)(i)(A)				
	34,39, 78	268.7(a)(2)(i)(B)				
		268.7(a)(2)(i)(C)				
	34	268.7(a)(2)(i)(D)				
	34,39	268.7(a)(2)(ii)				
14 information the notice must include for prohibited waste managed in tanks or containers under 262.34 and treated to meet 268 Subpart D standards, waste analysis plan to be developed, followed and kept on-site	34,50, 66	268.7(a)(3)				
	50	268.7(a)(3)(i)				
	50,78	268.7(a)(3)(ii)				
		268.7(a)(3)(iii)				
		268.7(a)(3)(iv)				
	50	268.7(a)(3)(v)				
	50,66, 78	268.7(a)(4)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
15 waste analysis plan based on detailed chemical and physical analysis of representative sample; contain information necessary to treat waste in accordance with 268 requirements	50,78	268.7(a)(4)(i)				
15 file plan with EPA Regional Administrator or authorized State 30 days prior to treatment; delivery verified	50,78	268.7(a)(4)(ii)				
15 compliance with 268.7(a)(2) notification requirements for wastes shipped off-site	50,78	268.7(a)(4)(iii)				
15 removed	50,78	268.7(a)(4)(iv)				
16 maintenance of data supporting knowledge of waste; retention of waste analysis data on-site in files	34,50	268.7(a)(5)				
five-year retention period for notices, certifications, demonstrations, etc., produced relative to 268.7; extensions during enforcement actions	50	268.7(a)(6)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
†, notice for a generator 17 managing a lab pack that contains wastes identified in Appendix IV if use alternative treatment standards under 268.42; 268.7(a)(5)&(6) compliance; certification	78	268.7(a)(7)				
†, notice for a 17 generator managing a lab pack that contains organic wastes specified in Appendix V if use alternate treatment standard under 268.42; 268.7(a)(5)&(6) compliance; certification	78	268.7(a)(8)				
notification and certification requirements for small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e)	78	268.7(a)(9)				
treatment facility testing at frequency specified in waste analysis plan	34,39, 50	268.7(b)				
testing when standards are expressed as concentrations in waste extract	50	268.7(b)(1)				
testing of 268.32 or 3004(d) prohibited wastes not subject to Subpart D treatment standards	50	268.7(b)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
testing for wastes with treatment standards expressed as concentrations in waste	50	268.7(b)(3)				
18 notice with each shipment by treatment facility to land disposal facility	34,50	268.7(b)(4)				
	34,50	268.7(b)(4)(i)				
	34,39, 50,78	268.7(b)(4)(ii)				
		268.7(b)(4)(iii)				
18 information the notice must include	34,50	268.7(b)(4)(iv)				
19 certification of each shipment	34,39, 50	268.7(b)(5)				
19 certification requirements for wastes with treatment standards expressed as concentrations in the waste extract or in the waste, or for wastes prohibited under 268.32 or RCRA Section 3004(d) which do not have 268, Subpart D treatment standards	34,39, 50,78	268.7(b)(5)(i)				
19 certification requirements for wastes with treatment standards expressed as technologies	34,50	268.7(b)(5)(ii)				
certification requirements for wastes with treatment standards expressed as concentrations in the waste pursuant to 268.43	78	268.7(b)(5)(iii)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with generator notice and certification requirements if waste sent offsite	50	268.7(b)(6)				
20 no 268.7(b)(4) notification for recyclable materials used in a manner constituting disposal and subject to 266.20(b); with each shipment 268.7(b)(5) certification and 268.7(b)(4) notice to Regional Administrator; records of recipients of waste-derived products	50,66 78	268.7(b)(7)				
21 requirements for land disposal facility except where the owner or operator is disposing recyclable wastes pursuant to 266.20(b):	34,39, 50,78	268.7(c)				
21 have copies of notice and certifications under 268.7(a) or (b) and certifications in 268.8 if applicable	34,39 50	268.7(c)(1)				
21 test of waste or extract; applicable treatment standards to be met; frequency of testing	39,50	268.7(c)(2)				
22 removed	50,78	268.7(c)(3)				
22 removed	66,78	268.7(c)(4)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
LANDFILL AND SURFACE IMPOUNDMENT DISPOSAL RESTRICTIONS						
disposal of 268.33(f) prohibited wastes in landfills or surface impoundments in compliance with 268.5(h)(2) if requirements of 268.8 are met; section not in effect as of May 8, 1990	50,78	268.8(a)				
good faith generator effort to contract with treatment and recovery facilities providing greatest environmental benefit	50	268.8(a)(1)				
specific requirements for generator if no practically available treatment for waste:	50,66	268.8(a)(2)				
prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	50,66	268.8(a)(2)(i)				
for initial shipment, demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	50,66	268.8(a)(2)(ii)				
specific requirements for generator if there are practically available treatments for waste:	50,66	268.8(a)(3)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	66	268.8(a)(3)(i)				
with initial shipment copy of demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	66	268.8(a)(3)(ii)				
23 where there is practically available treatment for waste prior to disposal, copy of demonstration and certification submitted to receiving facility with initial shipment; certification only for subsequent shipments; generator recordkeeping and five-year retention	50	268.8(a)(4)				
additional information for certification if requested by Regional Administrator; submittal of new demonstration and certification as provided in 268.8(a) to the receiving facility	50	268.8(b)				
notification when any change in conditions forming basis of certification occurs	50,66	268.8(b)(1)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
invalidation when Regional Administrator finds practically available treatment method or a method yielding greater environmental benefit than certified	50	268.8(b)(2)				
when certification is invalidated, generator must cease shipment, communicate with facilities receiving waste, and keep records of communication	50	268.8(b)(3)				
receiving treatment, recovery or storage facilities keep copy of generator's demonstration and certification	50	268.8(c)				
receiving treatment, storage or recovery facility certify waste treated according to generator's demonstration	50	268.8(c)(1)				
for initial shipment, treatment, recovery or storage facility must send copy of generator's demonstration and certification(s) to facility receiving waste or treatment residues; certification only for subsequent shipments, if certification conditions remain unchanged	50,66	268.8(c)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
disposal facility must assure certification prior to disposal in landfill or surface impoundment unit and units in accordance with 268.5(h)(2) for wastes prohibited under 268.33(f)	50,66	268.8(d)				
wastes may be disposed in landfill or surface impoundment meeting 268.5(h)(2) requirements if certified and treated	50	268.8(e)				

SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC

determination of applicable treatment standards under Subpart D of Part 268 by initial generator of a solid waste; code designation	78	268.9(a)				
the treatment standard for the waste code listed in 40 CFR Part 261, Subpart D will operate for wastes both listed under Subpart D, Part 261 and exhibit a characteristic under Subpart C, Part 261; conditions under which treatment standards for all applicable listed and characteristic waste codes must be met	78	268.9(b)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no prohibited waste which exhibits a characteristic under 40 CFR Part 261, Subpart C may be land disposed unless waste complies with Part 268, Subpart D treatment standards	78	268.9(c)				
wastes that exhibit a characteristic are subject to all 268.7 requirements, but no notification once the wastes are no longer hazardous; if not hazardous, notification/certification sent to EPA Regional Administrator or authorized State	78	268.9(d)				
information needed with each notification certification signed by authorized representative stating language found in 268.7(b)(5)(i)	78	268.9(d)(1)				
		268.9(d)(1)(i)				
		268.9(d)(1)(ii)				
		268.9(d)(1)(iii)				
certification signed by authorized representative stating language found in 268.7(b)(5)(i)	78	268.9(d)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - PROHIBITIONS ON LAND DISPOSAL

WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES

24	effective November 8, 1986, F001-F005 spent solvent wastes, as specified in 261.31, are prohibited from land disposal unless one or more conditions apply:	34	268.30(a)			
	generated by an SQG of 100-1000 kg/mo	34	268.30(a)(1)			
	generated by a CERCLA/corrective action except where waste is contaminated soil or debris	34,50	268.30(a)(2)			
	concentration-specific exemption (solvent waste with less than 1% total solvent constituent)	34,50	268.30(a)(3)			
	solvent waste residue of treating a 268.30(a)(1), (a)(2), or (a)(3) waste or residue from other wastes meeting specific requirements	39	268.30(a)(4)			
	effective November 8, 1988, the F001-F005 solvent exemptions of 268.30(a)(1)-(4) are prohibited from land disposal	34,50	268.30(b)			

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
land disposal of F001-F005 solvent wastes that are contaminated soil and debris (and their treatment residues) resulting from CERCLA action or RCRA corrective action prohibited after November 8, 1990; permitted disposal in landfill or surface impoundment unit in compliance with 268.5(h)(2) prior to November 8, 1990	50	268.30(c)				
25 situations where 268.30(a), (b) and (c) do not apply:	34,50	268.30(d)				
25 wastes treated to meet Subpart D of Part 268	34,50	268.30(d)(1)				
25 disposal at facility with successful no-migration petition	34,50	268.30(d)(2)				
25 wastes and units for which case-by-case extensions have been granted	34,50	268.30(d)(3)				
WASTE SPECIFIC PROHIBITIONS - DIOXIN-CONTAINING WASTES						
effective November 8, 1988, the dioxin-containing wastes, F020-F023 and F026-F028, are prohibited from land disposal unless a specific condition applies:	34,50	268.31(a)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
these wastes are contaminated soil and debris waste resulting from response action under CERCLA or from a RCRA corrective action	50	268.31(a)(1)				
prohibit land disposal of F020-F023 and F026-F028 dioxin-containing wastes of 268.31(a)(1) effective November 8, 1990	50	268.31(b)				
between November 8, 1988, and November 8, 1990, wastes of 268.31(a)(1) disposed in landfill or surface impoundment must meet 268.5(h)(2) and applicable 264 and 265 requirements	34,50	268.31(c)				
26 situations where 268.31(a) and (b) do not apply	34,50	268.31(d)				
26 wastes treated to meet Subpart D, Part 268 standards	34,50	268.31(d)(1)				
26 disposal at facility with successful no-migration petition	34,50	268.31(d)(2)				
26 extension to effective date of a prohibition	34,50	268.31(d)(3)				

WASTE SPECIFIC PROHIBITIONS - CALIFORNIA LIST WASTES

prohibitions effective July 8, 1987, except in injection wells:	39	268.32(a)				
liquids having pH less than or equal to 2.0	39	268.32(a)(1)				
liquids containing PCBs greater than or equal to 50 ppm	39	268.32(a)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
liquids containing HOCs greater than or equal to 1,000 mg/l and less than 10,000 mg/l	39	268.32(a)(3)				
reserved	39	268.32(b)				
reserved	39	268.32(c)				
268.32(a) and (e) requirements do not apply until specific calendar dates:	39,50	268.32(d)				
July 8, 1989 for contaminated soil or debris <u>not</u> resulting from a 104 or 106 CERCLA response or a RCRA corrective action; disposal allowed between July 8, 1987, and July 8, 1989, in landfill or surface impoundment in compliance with 268.5(h)(2)	50	268.32(d)(1)				
November 8, 1990 for contaminated soil or debris resulting from a CERCLA 104 or 106 response or a RCRA corrective action; disposal between November 8, 1988, and November 8, 1990, permitted in landfill or surface impoundment in com- pliance with 268.5(h)(2)	50	268.32(d)(2)				
land disposal prohibitions effective November 8, 1988:	39,50	268.32(e)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
27 liquids containing HOCs greater than or equal to 1,000 mg/l and not prohibited under 268.32(a)(3)	39	268.32(e)(1)				
nonliquid wastes containing HOCs greater than or equal to 1,000 mg/kg and not wastes described in 268.32(d)	39,50	268.32(e)(2)				
between July 8, 1987, and November 8, 1988, 268.32(e)(1) and (e)(2) wastes may be disposed of in a landfill or surface impoundment if disposal complies with 268.5(h)(2)	39,50 66	268.32(f)				
requirements of 268.32(a), (d) and (e) do not apply under certain conditions:	39,50	268.32(g)				
granted a 268.6 exemption	39	268.32(g)(1)				
granted a 268.5 extension	39	268.32(g)(2)				
in compliance with Subpart D standards, RCRA 3004(d) or section prohibitions	39	268.32(g)(3)				
requirements of 268.32(a)(3), (d) and (e) do not apply when subject to Part 268, Subpart C prohibition	39,50	268.32(h)				
method 9095 required	39	268.32(i)				
applicability of waste analysis/recordkeeping requirements of 268.7:	39	268.32(j)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
initial generator must use 261.22(a)(1) procedures or knowledge of pH; pH less than or equal to 2.0 restriction	39	268.32(j)(1)				
initial generator must test for or have knowledge of HOC or PCB concentration levels; restriction above levels	39	268.32(j)(2)				

WASTE SPECIFIC PROHIBITIONS - FIRST THIRD WASTES

specific wastes prohibited from land disposal effective August 8, 1988	50,66	268.33(a)				
land disposal prohibition of K061 waste containing 15% or greater of zinc pursuant to 268.41 treatment standard for K061 containing less than 15% zinc	50	268.33(a)(1)				
K048, K049, K050, K051, K052, K061 (contain 5% or greater zinc), K071 wastes prohibited from land disposal effective August 8, 1990	50	268.33(b)				
effective August 8, 1990, land disposal prohibition of wastes specified in 268.10 having a treatment treatment standard in 268, Subpart D based on incineration and which are contaminated soil and debris	50	268.33(c)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between November 8, 1988, and August 8, 1990, landfill or surface impoundment disposal of wastes included under 268(b) & (c) permitted if unit is in compliance with 268.5(h)(2)	50	268.33(d)				
requirements of 268(a)-(d) do not apply if:	50	268.33(e)				
waste meets applicable 268, Subpart D standards	50	268.33(e)(1)				
granted an exemption from prohibition for wastes and units under 268.6	50	268.33(e)(2)				
granted an extension to an effective date for wastes under 268.5	50	268.33(e)(3)				
prohibition of landfill or surface impoundment disposal of wastes specified in 268.10 for which treatment standards have not been promulgated (other than 268.32 or section 3004(d) prohibitions) unless a demonstration and certification have been submitted	50,66	268.33(f)				
for a waste listed in 268.10, initial generator testing to determine exceedance of 268.41 and 268.43 treatment standards; prohibition from land disposal if exceed standards	50,66	268.33(g)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
WASTE SPECIFIC PROHIBITIONS - SECOND THIRD WASTES						
effective June 8, 1989, prohibition from land disposal of specific 261.31, 261.32 and 261.33 wastes	63	268.34(a)				
effective June 8, 1989, prohibition from land disposal, except underground injection pursuant to 148.14(f) and 148.15(d), of certain 261.32 wastes	63	268.34(b)				
effective June 8, 1989, prohibition from land disposal of F006, F008, F009, F011 and F012	63	268.34(c)				
effective July 8, 1989, F007 prohibited from land disposal except underground injection pursuant to 148.14(f)	63	268.34(c)(1)				
July 8, 1989, until December 8, 1989, F011 and F012 non-wastewaters prohibited from land disposal pursuant to 268.41 and 268.43 treatment standards for F007, F008 and F009 non-wastewaters; effective December 8, 1989, F011 and F012 prohibited from land disposal pursuant to 268.41 and 268.43 treatment standards for F011 and F012 nonwastewaters	63	268.34(c)(2)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective June 8, 1991, wastes specified in 268.34 with Part 268, Subpart D treatment standard based on incineration, and which are contaminated soil and debris, are prohibited from land disposal	63	268.34(d)				
requirements for landfill or surface impoundment disposal of wastes included in 268.34(c) and (d) between June 8, 1989, and June 8, 1991; applies to F007, F008, F009, F011, and F012 only between June 8, 1989, and July 8, 1989	63	268.34(e)				
requirements of 268.34(a)-(d) do not apply if:	63	268.34(f)				
meet applicable 268 Subpart D standards	63	268.34(f)(1)				
granted an exemption pursuant to a 268.6 petition for the wastes and units covered by the petition	63	268.34(f)(2)				
268.34(a), (b) and (c) do not apply if granted extension under 268.5 for wastes covered by extension	63	268.34(g)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between June 8, 1989, and May 8, 1990, prohibition from land disposal in landfills or surface impoundments of 268.11 wastes for which Subpart D treatment standards are not applicable, including California list wastes subject to prohibitions under 3004(d) or 268.32; exceptions under 268.8	63	268.34(h)				
initial generator testing to determine if a 268.10, 268.11 and 268.12 waste exceeds applicable 268.41 and 268.43 treatment standards; land disposal prohibited and all 268 requirements apply if constituents exceed Part 268, Subpart D levels	63	268.34(i)				
WASTE SPECIFIC PROHIBITIONS - THIRD THIRD WASTES						
effective August 8, 1990, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e) and 261.33(f)	78	268.35(a)				
effective November 8, 1990, prohibition from land disposal of certain wastes specified in 261.32	78	268.35(b)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
effective May 8, 1992, prohibition from land disposal of certain wastes specified in 261.31, 261.32, 261.33(e), and 261.33(f); certain characteristic wastes; inorganic debris defined in 268.2(a)(7); and RCRA hazardous wastes containing naturally occurring radioactive materials	78	268.35(c)				
effective May 8, 1992, prohibition from land disposal of 268.12 mixed radioactive/hazardous wastes	78	268.35(d)				
effective May 8, 1992, prohibition from land disposal of wastes specified in 268.35 as having Subpart D, Part 268 treatment standards based on incineration, mercury retorting, or vitrification, and which are contaminated soil or debris	78	268.35(e)				
between May 8, 1990, and August 8, 1990, wastes included in paragraph 268.35(a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(f)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
between May 8, 1990, and November 8, 1990, wastes included in paragraph 268.35(b) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(g)				
between May 8, 1990, and May 8, 1992, wastes included in paragraphs 268.35(c), (d) and (e) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(h)				
conditions under which requirements of paragraphs 268.35(a), (b), (c), (d) and (e) do not apply:	78	268.35(i)				
wastes meet applicable Part 268, Subpart D standards	78	268.35(i)(1)				
persons granted exemption under 268.6	78	268.35(i)(2)				
wastes meet applicable alternate standards under 268.44	78	268.35(i)(3)				
persons granted extension to the effective date of a prohibition under 268.5	78	268.35(i)(4)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
initial generator testing to determine if a 268.10, 268.11 and 268.12 waste exceeds applicable 268.41 and 268.43 treatment standards; land disposal prohibited and all 268 requirements apply if constituents exceed Part 268, Subpart D levels	78	268.35(j)				
SUBPART D - TREATMENT STANDARDS						

APPLICABILITY OF TREATMENT STANDARDS

28 restricted waste under 268.41 may be land disposed if extract of waste or treatment residue, developed using Appendix I methods, does not exceed 268.41 Table CCWE values; exceptions; specific wastes may be land disposed if extract or treatment residue does not exceed Table CCW values for any hazardous constituent in Table CCWE for waste	34,†39, 50,78	268.40(a)				
restricted waste with a 268.42 treatment technology may be land disposed if specified technology or an Administrator-approved method is used	39	268.40(b)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
except as specified in 268.43(c), restricted waste identified in 268.43 may be land disposed only if Table CCW constituent concentration values are not exceeded	50,78	268.40(c)				

TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT

28 treatment standards; explanation of Table CCWE	34,50, 63,78	268.41(a)				
Constituent Concentrations in Waste Extract	34,50, 63,70	268.41(a)/ Table CCWE				
treatment standards for common constituents in combined wastes	34	268.41(b)				

TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES

treatment of wastes identified in 268.42(a)(1)&(2) and Tables 2 and 3 with technology(s) specified in 268.42(a)(1)&(2) and in Table 1 of 268.42	34,78	268.42(a)				
standard for incineration of liquid hazardous wastes containing PCBs	39	268.42(a)(1)				
standard for incineration of certain nonliquid hazardous wastes containing HOCs; where standards do not apply	39,50, 78	268.42(a)(2)				
29 removed	63,78	268.42(a)(3)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
29 removed	63,78	268.42(a)(4)				
Technology Codes and Description of Technology-Based Standards	78	268.42(a)/Table 1				
Technology-Based Standards by RCRA Waste Code	78	268.42(a)/Table 2				
Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste	78	268.42(a)/Table 3				

Guidance note: 268.42(b) is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this paragraph into their code.

submit application to Administrator demonstrating alter- nate treatment can achieve 268.42(a), (c), & (d) performance specifications; information demon- strating compliance with Federal, State and local require- ments; criteria for approval by Administrator; approval in writing containing provisions and con- ditions as the Admini- strator deems appro- priate; compliance by person to whom approval is issued	34,39,78	268.42(b)				
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**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
ALTERNATE TREATMENT STANDARDS FOR LAB PACKS						
conditions for eligibility of lab packs for land disposal:	78	268.42(c)				
compliance of lab packs with applicable provisions of 264.316 and 265.316	78	268.42(c)(1)				
Part 268 Appendix IV and Appendix V hazardous wastes contained in lab packs	78	268.42(c)(2)				
incineration of lab packs in accordance with Part 264, Subpart O and Part 265, Subpart O requirements	78	268.42(c)(3)				
treatment standards for incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010 and D011	78	268.42(c)(4)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
30 radioactive hazardous mixed wastes with Table 3 treatment standards not subject to 268.41, 268.43 or Table 2 treatment standards; radioactive hazardous mixed wastes not subject to Table 3 treatment standards remain subject to 268.41, 268.43 and Table 2 treatment standards	78	268.42(d)				
TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS						
introductory paragraph for Table CCW explaining table	34,50, 63,78	268.43(a)				
Constituent Concentrations in Wastes; no land disposal for specified K wastes	50,62, 63,78	268.43(a)/ Table CCW				
31 meet lowest constituent treatment standard when mixing wastes with differing treatment standards for a constituent of concern	50,63	268.43(b)				
conditions for demonstrating compliance with treatment standards for organic constituents provided:	78	268.43(c)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
treatment for organic constituents established based on incineration in units operated in accordance with Subpart O requirements of Part 264 or Part 265 or based on combustion in fuel substitution units in accordance with applicable technical requirements	78	268.43(c)(1)				
organic constituents treated using paragraph 268.43(c)(1) methods	78	268.43(c)(2)				
good-faith efforts fail to detect the organic constituents; when such efforts must be demonstrated	78	268.43(c)(3)				

 Guidance note: 268.44 is NOT DELEGABLE. States should see Note 2 at the beginning of this checklist regarding how to incorporate this section into their code.

VARIANCE FROM A TREATMENT STANDARD

conditions for variance; petition Administrator; what must be demonstrated	34	268.44(a)				
procedures in accordance with 260.20	34	268.44(b)				
statement signed by petitioner or authorized representative	34	268.44(c)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
additional information or samples may be requested by Administrator; additional copies for affected States and region	34	268.44(d)				
Administrator gives public notification in <u>Federal Register</u> ; final decision in <u>Federal Register</u>	34	268.44(e)				
268.7 waste analysis requirements must be followed for wastes covered by variance	34	268.44(f)				
requirements during petition review	34	268.44(g)				
apply to Administrator or delegated representative for site-specific variance from a treatment standard if specified conditions are appropriate; what applicant must demonstrate	50,66	268.44(h)				
260.20(b)(1)-(4) information must be included	50	268.44(i)				
Assistant Administrator or delegated representative may request additional information	50	268.44(j)				
if site-specific treatment standard variance then compliance with 268.7 waste analysis requirements	50	268.44(k)				

3.2.75

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
during application review process, com- pliance with land disposal restrictions once effective date for waste reached	50	268.44(l)				

SUBPART E - PROHIBITIONS ON STORAGE

PROHIBITIONS ON STORAGE OF RESTRICTED WASTES

except as provided in 268.50, storage of wastes restricted from land disposal is prohibited unless certain conditions are met:	34,39	268.50(a)				
on-site storage exemption for generator	34	268.50(a)(1)				
treatment, storage, and disposal facility exemption	34	268.50(a)(2)				
container labeling	34	268.50(a)(2)(i)				
tank labeling	34	268.50(a)(2)(ii)				
transporter exemption	34	268.50(a)(3)				
storage up to one year	34	268.50(b)				
storage longer than one year	34	268.50(c)				
268.50(a) prohibition does not apply if waste is exempt from a prohibition on the type of land disposal utilized for the waste	34,50, 66	268.50(d)				

**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
no prohibition where treatment standards are not specified or are met, or compliance with 268.32 or RCRA 3004 exists	34,†39	268.50(e)				
requirements for storage of liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm	39	268.50(f)				

APPENDIX I TO PART 268

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

32 TCLP is published in Appendix II of Part 261	34,74	Appendix I				
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APPENDIX II TO PART 268

TREATMENT STANDARDS (AS CONCENTRATIONS IN THE TREATMENT RESIDUAL EXTRACT)

table	34	Appendix II				
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APPENDIX III TO PART 268

LIST OF HALOGENATED ORGANIC COMPOUNDS REGULATED UNDER 268.32

HOC definition and list of HOCs regulated under 268.32	39	Appendix III				
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**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX IV TO PART 268

†,
17 **ORGANOMETALLIC LAB PACKS**

list of hazardous wastes that may be placed in "organometallic" or "Appendix IV lab packs"	78	Appendix IV				
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APPENDIX V TO PART 268

†,
17 **ORGANIC LAB PACKS**

list of hazardous wastes that may be placed in "organic" or "Appendix V lab packs"	78	Appendix V				
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APPENDIX VI TO PART 268

RECOMMENDED TECHNOLOGIES TO ACHIEVE DEACTIVATION OF CHARACTERISTICS IN SECTION 268.42

list of technologies which achieve the standard of "deactivation to remove characteristics of ignitability, corrosivity, and reactivity"; use of specified technologies not mandatory; alternative methods not performed in land disposal units	78	Appendix VI				
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**CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

APPENDIX VII TO PART 268

EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs

comprehensive list of wastes and effective dates	78	Appendix VII				
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APPENDIX VIII TO PART 268

NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES

comprehensive list of national capacity LDR variances for UIC wastes	78	Appendix VIII				
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- ¹ A new subparagraph was introduced into the code by Revision Checklist 78. The original subparagraph 268.1(c)(3) was introduced by Revision Checklist 34, modified by Checklist 39, then removed by Revision Checklist 50, with 268.1(c)(4) redesignated as (c)(3). The redesignated subparagraph 268.1(c)(3) was subsequently removed by Revision Checklist 66.
- ² Subparagraph 268.1(c)(4) originated in Revision Checklist 34, was modified by Revision Checklist 39, redesignated as 268.1(c)(3) while the original 268.1(c)(5) was redesignated as 268.1(c)(4) by Revision Checklist 50, and finally removed by Revision Checklist 66.
- ³ Subparagraph 268.1(c)(5) originated in Revision Checklist 39, and was revised by Revision Checklist 48. This text was redesignated as 268.1(c)(4) and new 268.1(c)(5) text was introduced by Revision Checklist 50. This subparagraph was finally removed by Revision Checklist 78.
- ⁴ These definitions were introduced into the code as part of 268.2(a) by Revision Checklist 34. Revision Checklist 78 designated them as individual paragraphs 268.2(b) and (c). The text of the old 268.2(b), introduced into the code by Revision Checklist 34, was deleted from the section by Revision Checklist 78.
- ⁵ Note there is a typographical error in the Federal Register notice for Revision Checklist 78 (55 FR 22520, June 1, 1990). The reference to "(g)(6)" should be "(f)."
- ⁶ This definition was introduced into the code as part of 268.2(a) by Revision Checklist 39. Revision Checklist 78 designated it as an individual paragraph 268.2(e).
- ⁷ This subparagraph was originally 268.3 when it was added to the code by Revision Checklist 34. However, it was redesignated as 268.3(a) by Revision Checklist 78.

CONSOLIDATED CHECKLIST C Land
Disposal Restrictions (cont)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE	
8	268.6(c) was originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(c) as 268.6(d) and inserted a new 268.6(c).						
9	The original 268.6(d) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that paragraph as 268.6(g). That same checklist redesignated 268.6(c) as 268.6(d).						
10	268.6(e) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(e) as 268.6(h) and inserted a new 268.6(e).						
11	268.6(f) was introduced by Revision Checklist 34. Revision Checklist 50 redesignated that 268.6(f) as 268.6(i) and inserted a new 268.6(f).						
12	268.6(d)-(j) were originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated these paragraphs as 268.6(g)-(m).						
13	268.6(k) was originally introduced by Revision Checklist 39. Revision Checklist 50 redesignated it as 268.6(n).						
14	Note that the rule addressed by Revision Checklist 78 (55 <u>FR</u> 22520) makes it appear as if 268.7(a)(3)(iii)-(v) were removed (see page 22687). This was an error and these subparagraphs should remain in the code.						
15	Initially, subparagraphs 268.7(a)(4)(i)-(iv) were introduced into the code by Revision Checklist 50. Revision Checklist 78 completely changed the text of (a)(4)(i)-(iii) and removed (a)(4)(iv).						
16	This subparagraph was originally 268.7(a)(4) when it was added to the code by Revision Checklist 34. However, it was redesignated as 268.7(a)(5) by Revision Checklist 50.						
17	This code is part of the optional requirements for the alternate treatment standards for lab packs under the Third Third Scheduled Waste Rule. If adopted, all of the requirements (i.e., 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268) related to these alternate treatment standards must be adopted.						
18	These subparagraphs were originally 268.7(b)(1) and 268.7(b)(1)(i)-(iv) when they were added to the code by Revision Checklist 34. However, they were redesignated as 268.7(b)(4) and 268.7(b)(4)(i)-(iv) by Revision Checklist 50.						
19	These subparagraphs were originally 268.7(b)(2) and 268.7(b)(2)(i)-(ii) when they were added to the code by Revision Checklist 34. However, they were redesignated as 268.7(b)(5) and 268.7(b)(5)(i)-(ii) by Revision Checklist 50.						
20	This paragraph was originally 268.7(b)(8) when it was entered into the code by Revision Checklist 50, but it was redesignated as 268.7(b)(7) by Revision Checklist 78 because the old 278.7(b)(7) and 278.7(b)(7)(i)-(iv) were removed by Revision Checklist 78. Revision Checklist 66 corrected 268.7(b)(8) before it was redesignated by Revision Checklist 78.						

CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE	
21	The notice, certification and test requirements currently found in Federal code at 268.7(c)(1) and (c)(2) were originally addressed in paragraph 268.7(c), as introduced into the code by Revision Checklist 34. 268.7(c) was subsequently modified by Revision Checklists 39 and 50. Revision Checklist 39 added the testing requirements now found at 268.7(c)(2), although at the time the paragraph was still designated as 268.7(c). It was Revision Checklist 50 that significantly revised the paragraph so that the notice and certification requirements now appear at (c)(1) and the testing requirements appear at (c)(2). The checklist reference column, then, includes all relevant checklists for 268.7(c)(1) and (c)(2), rather than just Revision Checklist 50 which primarily affected the format.						
22	Subparagraphs 268.7(c)(3) and (c)(4), introduced into the code by Revision Checklists 50 and 66, respectively, were removed from the code by Revision Checklist 78.						
23	An error in the September 6, 1989 rule (54 FR 36967) makes it appear that the revisions to 268.8(a) include the removal of 268.8(a)(4). This was not the Agency's intent and 268.8(a)(4) remains in Federal code as introduced by Revision Checklist 50.						
24	The 268.30(a) introduction appeared in the final rule addressed by Revision Checklist 50, but was not changed by that rule. See Revision Checklist 50 for more information.						
25	These subparagraphs were originally 268.30(c) and 268.30(c)(1)-(3) when they were introduced into the code by Revision Checklist 34. However, Revision Checklist 50 redesignated them as 268.30(d) and 268.30(d)(1)-(3) because that checklist inserted a new paragraph at 268.30(c).						
26	These subparagraphs were originally 268.31(b) and 268.31(b)(1)-(3) when they were introduced into the code by Revision Checklist 34. However, Revision Checklist 50 redesignated them as 268.31(d) and 268.31(d)(1)-(3) because that checklist inserted a new paragraph at 268.31(b).						
27	While this subparagraph appeared in the final rule addressed by Revision Checklist 50, this rule did not change this subparagraph. See Footnote 9 of Revision Checklist 50.						
28	The current text of 268.40(a) and 268.41(a) indicates that an extract or treatment residue of certain wastes may be land disposed only if certain requirements are met using either the test method in Appendix I of Part 268 or the test method in Appendix II of Part 261. Following promulgation of the March 29, 1990 Toxicity Characteristics rule addressed by Revision Checklist 74 (55 FR 11798, as amended at 55 FR 26986), both of these appendices relate to the same test method, the TCLP. Previously, the Part 261 appendix contained the EP Toxicity test procedures while the Part 268 appendix contained the TCLP. EPA will issue a correction to the rule for these particular paragraphs in the near future, clarifying which procedures may be used. Until such time, however, EPA indicates that for the specific waste exceptions listed in these paragraphs, the TCLP can be used for measuring compliance with the treatment standards for those specified wastes, and if the extract or treatment residue fails that test, the EP Toxicity test can be used. If the extract or residue passes that less stringent test, then such waste is considered in compliance with the treatment standards. For more information related to the use of either of the two test methods, see the discussion at 55 FR 22660 (June 1, 1990).						

CONSOLIDATED CHECKLIST C8: Land
Disposal Restrictions (cont'd)

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
29	268.42(a)(3) and 268.42(a)(4) were introduced into the code by Revision Checklist 63. Revision Checklist 78 removed these paragraphs.					
30	The 55 <u>FR</u> 22520, June 1, 1990, code incorrectly states that a subparagraph 268.42(e) is added. The <u>Federal Register</u> did not contain a 268.42(e); it only added 268.42(d).					
31	While 268.43(b) appeared in the final rule addressed by Revision Checklist 63, the text of the paragraph was not changed and remains the same as that introduced by Revision Checklist 50.					
32	As background, the TCLP was originally promulgated in 268, Appendix I, on November 7, 1986 (51 <u>FR</u> 40572; Revision Checklist 34) for use in the Land Disposal Restrictions (LDR) program to determine whether certain wastes require treatment prior to land disposal and to determine whether certain treated wastes meet the applicable treatment standards. The TC rule and its June 29, 1990 modification promulgated a revised TCLP at 261, Appendix II, with modifications based on the Agency's own research and public comment. This TCLP is to be used in both the TC and the LDR programs. The objective of the above footnoted revision to 268, Appendix I, is to assure that the TCLP entered into the code by the November 7, 1986 notice (51 <u>FR</u> 40572; Revision Checklist 34) is removed and replaced by the TCLP entered into the code and amended by the final rules (55 <u>FR</u> 11798 and 55 <u>FR</u> 26986) addressed by Revision Checklist 74. The actual placement of the TCLP within a State's code is not that important, per se; what is important is that a State's code contains only the Revision Checklist 74 TCLP.					

CONSOLIDATED CHECKLIST C9

EPA Administered Permit Programs: The Hazardous Waste Permit Program;
Procedures for Decision Making
40 CFR Parts 270 and 124 as of June 30, 1990

Notes: 1) States need not use a two-part permit application process. The State application process must, however, require information in sufficient detail to satisfy the requirements of §§270.13 through 270.29.

2) Note that this checklist uses "@" and "#" in the left margin as special footnoting symbols. These symbols are defined at the end of this checklist.

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS
WASTE PERMIT PROGRAM

SUBPART A - GENERAL INFORMATION

1 PURPOSE AND SCOPE OF THESE REGULATIONS

o/o permit and post-closure permit requirements	V, 44 G, †61	270.1(c)				
facilities for which RCRA permits are required	V	270.1(c)(1)				
		270.1(c)(1)(i)				
		270.1(c)(1)(ii)				
		270.1(c)(1)(iii)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE	
† persons not required to obtain a RCRA permit	V	270.1(c)(2)					
	V,23	270.1(c)(2)(i)					
	V,48	270.1(c)(2)(ii)					
		270.1(c)(2)(iii)					
		270.1(c)(2)(iv)					
		270.1(c)(2)(v)					
		270.1(c)(2)(vi)					
	V	270.1(c)(2)(vii)					
	† further exclusions from RCRA permit requirements		270.1(c)(3)(i)				
			270.1(c)(3)(i)(A)				
270.1(c)(3)(i)(B)							
270.1(c)(3)(i)(C)							
V		270.1(c)(3)(ii)					
† permits for less than an entire facility	V	270.1(c)(4)					
post-closure permit if closure by removal or decontamination; how demonstration may be made:		270.1(c)(5)					
		44 G	270.1(c)(5)(i)				
	†44 G	270.1(c)(5)(ii)					
		270.1(c)(5)(ii)(A)					
		270.1(c)(5)(ii)(B)					

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
procedures for closure equivalency deter- mination; public hearing; written statement if closure fails standards; subject to post- closure permitting requirements	44 G	270.1(c)(6)(i) 270.1(c)(6)(ii) 270.1(c)(6)(iii)				
DEFINITIONS						
applicability to Parts 270, 271 and 124	*	270.2(intro)				
"Administrator"	*	270.2				
"application"	*	270.2				
"aquifer"	*	270.2				
"closure"	*	270.2				
"component"	†54	270.2				
"CWA"	*	270.2				
"Director"	*	270.2				
"disposal"	*	270.2				
"disposal facility"	*	270.2				
"draft permit"	*	270.2				
"elementary neutral- ization unit"	*,52	270.2				
		270.2(a)				
		270.2(b)				
"emergency permit"	*	270.2				
"Environmental Pro- tection Agency (EPA)"	*	270.2				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"EPA"	*	270.2				
"existing hazardous waste management (HWM) facility or existing facility"	*	270.2				
		270.2(a)				
		270.2(b)(1)				
		270.2(b)(2)				
"facility mailing list"	†54	270.2				
"facility or activity"	*	270.2				
"Federal, State and local approvals or permits necessary to begin physical construction"	*	270.2				
"functionally equiva- lent component"	†54	270.2				
"generator"	*	270.2				
"ground water"	*	270.2				
"hazardous waste"	*	270.2				
"Hazardous Waste Management facility"	*	270.2				
"HWM facility"	*	270.2				
"injection well"	*	270.2				
"in operation"	*	270.2				
"major facility"	*	270.2				
"manifest"	*	270.2				
"National Pollutant Discharge Elimination System"	*	270.2				
"NPDES"	*	270.2				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"new HWM facility"	*	270.2				
"off-site"	*	270.2				
"on-site"	*	270.2				
"owner or operator"	*	270.2				
"permit"	*	270.2				
"permit-by-rule"	*	270.2				
"person"	*	270.2				
"Phase I"	*	270.2				
"Phase II"	*	270.2				
"physical construction"	*	270.2				
"POTW"	*	270.2				
"publicly owned treatment works"	*	270.2				
"RCRA"	*	270.2				
"Regional Administrator"	*	270.2				
"schedule of compliance"	*	270.2				
"SDWA"	*	270.2				
"site"	*	270.2				
"State"	*	270.2				
"State Director"	*	270.2				
"State/EPA Agreement"	*	270.2				
"storage"	*	270.2				
"transfer facility"	*	270.2				
"transporter"	*	270.2				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
"treatment"	*	270.2				
"UIC"	*	270.2				
"underground injection"	*	270.2				
"underground source of drinking water (USDW)"	*	270.2				
		270.2(a)(1)				
		270.2(a)(2)				
		270.2(a)(2)(i)				
		270.2(a)(2)(ii)				
		270.2(b)				
"USDW"	*	270.2				
"wastewater treat- ment unit"	*,52	270.2				
		270.2(a)				
		270.2(b)				
		270.2(c)				
EFFECT OF A PERMIT						
effects of compliance with RCRA permit; permit may be modified, revoked, reissued or terminated	V, 44 E, †54	270.4(a)				
property rights or exclusive privilege not conveyed by permit	V	270.4(b)				
permit not authorize injury/infringement	*	270.4(c)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

NONCOMPLIANCE AND PROGRAM REPORTING BY THE DIRECTOR

preparation and submittal of reports by Director	V	270.5				
quarterly reports for major facilities	V	270.5(a)				
format of quarterly reports	V	270.5(a)(1)				
		270.5(a)(1)(i)				
		270.5(a)(1)(ii)				
		270.5(a)(1)(iii)				
		270.5(a)(1)(iii)(A)				
		270.5(a)(1)(iii)(B)				
		270.5(a)(1)(iii)(C)				
		270.5(a)(1)(iii)(D)				
		270.5(a)(1)(iii)(E)				
		270.5(a)(2)				
@ instances of noncompliance to be reported in quarterly reports	V	270.5(a)(2)(i)				
		270.5(a)(2)(ii)				
		270.5(a)(2)(iii)				
		270.5(a)(2)(iv)				
		270.5(a)(2)(v)				
		270.5(a)(2)(v)(A)				
		270.5(a)(2)(v)(B)				
		270.5(a)(2)(v)(C)				
		270.5(a)(2)(vi)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
	V	270.5(b)(1)				
@ annual reports	V,†1	270.5(b)(2)				
@ schedule	V	270.5(c)				

REFERENCES

publications incor- porated by reference available at Office of the Federal Register; approved by director; incorporation and changes	*,11,35	270.6(a)				
	*	270.6(b)				

SUBPART B - PERMIT APPLICATION**GENERAL APPLICATION REQUIREMENTS**

permit application	V,17 P, †17 Q	270.10(a)				
who applies/signs	V	270.10(b)				
@ completeness	V,17 P, †17 S, †61	270.10(c)				
information requirements	V	270.10(d)				
when existing HWM facilities must submit Part A of their permit application	V,†17 P	270.10(e)(1)				
		270.10(e)(1)(i)				
	V	270.10(e)(1)(ii)				
	23	270.10(e)(1)(iii)				
extension of Part A due date using Federal Register	V	270.10(e)(2)				
Part A due date extension using RCRA 3008 compliance order	V	270.10(e)(3)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
submission of Part B	V,17 P	270.10(e)(4)				
failure to furnish a Part B	V	270.10(e)(5)				
2 permits for new HWM facilities	V, 17 M	270.10(f)(1)				
	V	270.10(f)(2)				
	V,17 M, †17 M	270.10(f)(3)				
		270.10(g)(1)				
updating permit applications	V	270.10(g)(1)(i)				
		270.10(g)(1)(ii)				
		270.10(g)(1)(iii)				
		270.10(g)(2)				
permit reapplications	V	270.10(h)				
recordkeeping	V	270.10(i)				
exposure information must be included in Part B application after August 8, 1985		270.10(j)(1)				
		270.10(j)(1)(i)				
		270.10(j)(1)(ii)				
		270.10(j)(1)(iii)				
	17 S	270.10(j)(2)				
information for permit conditions	44 F	270.10(k)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS

who should sign permit applications	V	270.11(a)				
		270.11(a)(1)				
		270.11(a)(1)(i)				
		270.11(a)(1)(ii)				
	V,+2	270.11(a)(1)(ii)				
	V	270.11(a)(2)				
		270.11(a)(3)				
		270.11(a)(3)(i)				
		270.11(a)(3)(ii)				
	V,+2	270.11(a)(3)(ii)				
who should sign reports		270.11(b)				
		270.11(b)(1)				
		270.11(b)(2)				
	V	270.11(b)(3)				
changes to authorization	V	270.11(c)				
certification by signatories	V,+2	270.11(d)				

CONFIDENTIALITY OF INFORMATION

# confidential business information claims	*	270.12(a)				
@ denial of claims	V	270.12(b)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

3 CONTENTS OF PART A OF THE PERMIT APPLICATION

#	*	270.13				
		270.13(a)				
#	V	270.13(b)				
		270.13(c)				
#	*	270.13(d)				
		270.13(e)				
#	*	270.13(f)				
		270.13(g)				
		270.13(h)				
		270.13(h)(1)-(2)				
		270.13(i)				
		270.13(j)				
		270.13(k)				
		270.13(k)(1)-(9)				
#	*	270.13(l)				
		270.13(m)				

information
which must be
included in Part A
of the permit
application

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

3 CONTENTS OF PART B: GENERAL REQUIREMENTS

# general information requirements; specific requirements as in 270.14-270.29; compliance with Part 264 standards; case-by-case allowances; 270.11 requirements; registered professional engineer certification	*	270.14(a)				
general information required for all HWM facilities	V	270.14(b)				
general facility description	V	270.14(b)(1)				
chemical and physical analyses	V	270.14(b)(2)				
copy of waste analysis plan	V	270.14(b)(3)				
description of security procedures and equipment	V	270.14(b)(4)				
copy of general inspection schedule	V,28,45,59,79	270.14(b)(5)				
justification of waiver(s) request for preparedness and prevention	V	270.14(b)(6)				
copy of contingency plan	V,14	270.14(b)(7)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
description of various procedures, structures or equipment used at the facility to prevent emergencies/hazardous waste releases	V	270.14(b)(8)				
		270.14(b)(8)(i)				
		270.14(b)(8)(ii)				
	V,79	270.14(b)(8)(iii)				
		270.14(b)(8)(iv)				
		270.14(b)(8)(v)				
	79	270.14(b)(8)(vi)				
description of precautions to prevent accidental ignition or reaction of wastes	V	270.14(b)(9)				
traffic pattern, volume and control	V	270.14(b)(10)				
facility location information; seismic standard; political jurisdiction	V	270.14(b)(11)(i)				
demonstration of compliance with the seismic standard; information to be submitted, what it must show:	V	270.14(b)(11)(ii)				
no displacement in Holocene time; what the information must show	V	270.14(b)(11)(ii)(A)				
		270.14(b)(11)(ii)(A)(1)				
		270.14(b)(11)(ii)(A)(2)				
		270.14(b)(11)(ii)(A)(3)				
		270.14(b)(11)(ii)(A)(4)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
requirement that no faults pass within 200 feet of treatment, storage, or disposal activities if faults within 3,000 feet of facility have had Holocene displacement	V	270.14(b)(11)(ii)(B)				
100-year floodplain identification requirement	V	270.14(b)(11)(iii)				
information requirements for facilities located in the 100-year floodplain	V	270.14(b)(11)(iv)				
		270.14(b)(11)(iv)(A)				
		270.14(b)(11)(iv)(B)				
		270.14(b)(11)(iv)(C)				
		270.14(b)(11)(iv)(C)(1)				
		270.14(b)(11)(iv)(C)(2)				
		270.14(b)(11)(iv)(C)(3)				
		270.14(b)(11)(iv)(C)(4)				
plan and schedule for compliance with 264.18(b)	V	270.14(b)(11)(v)				
outline of introductory and continuing training programs	V	270.14(b)(12)				
specific inclusion requirements for closure and post-closure plans	V,28,45,59	270.14(b)(13)				
documentation that notices under 264.119 have been filed	V,24	270.14(b)(14)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
most recent closure cost estimate under 264.142; financial assurance documentation under 264.143	V,24	270.14(b)(15)				
most recent closure cost estimate under 264.144; financial assurance documentation under 264.145	V,24	270.14(b)(16)				
copy of insurance policy; compliance with 264.147	V	270.14(b)(17)				
proof of coverage by a State financial mechanism	V	270.14(b)(18)				
topographic map requirements and specifications	V	270.14(b)(19)				
what the topographic map must specifically show	V	270.14(b)(19)(i)				
		270.14(b)(19)(ii)				
		270.14(b)(19)(iii)				
		270.14(b)(19)(iv)				
		270.14(b)(19)(v)				
		270.14(b)(19)(vi)				
		270.14(b)(19)(vii)				
		270.14(b)(19)(viii)				
		270.14(b)(19)(ix)				
		270.14(b)(19)(x)				
		270.14(b)(19)(xi)				
		270.14(b)(19)(xii)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
submittal of information to Regional Administrator as necessary	V	270.14(b)(20)				
copy of notice of approval for extension under 268.5 or petition under 268.6	34	270.14(b)(21)				
additional information requirements for protection of groundwater	V,44 A	270.14(c)				
summary of ground-water monitoring data	V	270.14(c)(1)				
identification of aquifers	V	270.14(c)(2)				
additional typographic map requirements	V	270.14(c)(3)				
description of contamination plume that has entered ground water	V	270.14(c)(4)				
plume delineated on typographic map	V	270.14(c)(4)(i)				
identification of Appendix IX constituents	V,40	270.14(c)(4)(ii)				
description of proposed ground-water monitoring program	V	270.14(c)(5)				
establish a detection monitoring program to meet 264.98 requirements	V	270.14(c)(6)				
		270.14(c)(6)(i)				
		270.14(c)(6)(ii)				
		270.14(c)(6)(iii)				
		270.14(c)(6)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
establish a compliance monitoring program to meet 264.99 requirements	V,38	270.14(c)(7)				
items to be addressed to demonstrate compliance with 264.99	V	270.14(c)(7)(i)				
		270.14(c)(7)(ii)				
		270.14(c)(7)(iii)				
		270.14(c)(7)(iv)				
		270.14(c)(7)(v)				
		270.14(c)(7)(vi)				
if hazardous constituents in ground water exceed 264.94 limits, additional information to establish corrective action program; when information is not required	V	270.14(c)(8)				
		270.14(c)(8)(i)				
		270.14(c)(8)(ii)				
		270.14(c)(8)(iii)				
		270.14(c)(8)(iv)				
	V,38	270.14(c)(8)(v)				
information require- ments for solid waste management units	44 A	270.14(d)				
		270.14(d)(1)				
		270.14(d)(1)(i)				
		270.14(d)(1)(ii)				
		270.14(d)(1)(iii)				
		270.14(d)(1)(iv)				
		270.14(d)(1)(v)				
hazardous waste release information	44 A	270.14(d)(2)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
RCRA Facility Assessment information	44 A	270.14(d)(3)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR CONTAINERS

additional information requirements	V	270.15				
what containment system description must show for compliance with 264.175	V	270.15(a)				
		270.15(a)(1)				
		270.15(a)(2)				
		270.15(a)(3)				
		270.15(a)(4)				
		270.15(a)(5)				
if no free liquids, what demonstration of compliance with 264.175(c) must include	V	270.15(b)				
		270.15(b)(1)				
		270.15(b)(2)				
compliance with 264.176 and 264.177(c)	V	270.15(c)				
compliance with 264.177(a) and (b) and 264.17(b) and (c)	V	270.15(d)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR TANK SYSTEMS

information facility owners/operators using tanks must provide	V	270.16				
written, certified assessment of each tank system	V,28	270.16(a)				
dimensions and capacity of each tank	V,28	270.16(b)				

2.284

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
description of feed systems, safety cutoff bypass systems, and pressure controls	V,28	270.16(c)				
diagram of piping, instrumentation, and process flow for each tank system	V,28	270.16(d)				
description of external corrosion protection	V,28	270.16(e)				
description of new tank installation	V,28	270.16(f)				
plans and description of secondary containment systems	14,28	270.16(g)				
information requirements for systems for which a variance from 264.193 will be sought	28	270.16(h)				
		270.16(h)(1)				
		270.16(h)(2)				
description of controls and practices to prevent spills and overflows	28	270.16(i)				
description of design and operation of tank systems handling ignitable, reactive, or incompatible wastes	28	270.16(j)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR SURFACE IMPOUNDMENTS

information required for facility owner/operator using surface impoundments	V	270.17				
list of hazardous wastes	V	270.17(a)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
detailed plans and an engineering report; 264.221 items which must be addressed	V	270.17(b)				
		270.17(b)(1)				
		270.17(b)(2)				
		270.17(b)(3)				
4 description of inspections	V	270.17(c)				
4 certification by qualified engineer regarding structural integrity of each dike	V	270.17(d)				
4 description of procedure for removal from service	V	270.17(e)				
4 description of residue and contaminated material removal procedures or compliance with 264.228(a)(2) and (b)	V	270.17(f)				
4 ignitable or reactive wastes, compliance with 264.229	V	270.17(g)				
4 incompatible wastes, compliance with 264.230	V	270.17(h)				
4 waste management plan for F020, F021, F022, F023, F026, and F027 wastes	14	270.17(i)				
		270.17(i)(1)				
		270.17(i)(2)				
		270.17(i)(3)				
		270.17(i)(4)				

2.014

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SPECIFIC PART B INFORMATION REQUIREMENTS FOR WASTE PILES

additional information requirements for facility owners/operators using waste piles for hazardous wastes	V	270.18				
list of hazardous wastes placed or to be placed in waste pile	V	270.18(a)				
5 requirements if exemption is sought	V	270.18(b)				
		270.18(c)				
		270.18(c)(1)				
		270.18(c)(2)				
		270.18(c)(3)				
		270.18(c)(4)				
detailed plans and an engineering report; relative to requirements of 264.251	V	270.18(c)(5)				
6 description of inspections	V	270.18(d)				
6 treatment done on or in pile, details of process and equipment used	V	270.18(e)				
6 ignitable or reactive wastes, compliance with 264.256	V	270.18(f)				
6 incompatible wastes, compliance with 264.257	V	270.18(g)				
6 description of removal procedures or compliance with 264.310(a) & (b)	V	270.18(h)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
6 waste management plan for F020, F021, F022, F023, F026 and F027 wastes	14	270.18(i)				
		270.18(i)(1)				
		270.18(i)(2)				
		270.18(i)(3)				
		270.18(i)(4)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR INCINERATORS

incinerators of hazardous waste must meet 270.19(a),(b) & (c), except as 264.340 provides otherwise	V	270.19				
requirements when seeking an exemption under 264.340(b) or (c)	V	270.19(a)				
		270.19(a)(1)				
		270.19(a)(2)				
		270.19(a)(3)				
		270.19(a)(4)				
trial burn in accordance with 270.62	V	270.19(b)				
requirements in lieu of a trial burn; submit specified information:	V	270.19(c)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
analysis of each waste or mixture of wastes	V	270.19(c)(1)				
		270.19(c)(1)(i)				
		270.19(c)(1)(ii)				
		270.19(c)(1)(iii)				
		270.19(c)(1)(iv)				
		270.19(c)(1)(v)				
detailed engineering description of incinerator	V	270.19(c)(2)				
		270.19(c)(2)(i)				
		270.19(c)(2)(ii)				
		270.19(c)(2)(iii)				
		270.19(c)(2)(iv)				
		270.19(c)(2)(v)				
		270.19(c)(2)(vi)				
		270.19(c)(2)(vii)				
		270.19(c)(2)(viii)				
		270.19(c)(2)(ix)				
comparison of waste data; what data must include	V	270.19(c)(2)(x)				
comparison of design and operating conditions	V	270.19(c)(3)				
	V	270.19(c)(4)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
results from previously conducted trial burn(s)	V	270.19(c)(5)				
		270.19(c)(5)(i)				
		270.19(c)(5)(ii)				
expected incinerator operation information to demonstrate compliance with 264.343 and 264.345 supplemental informa- tion, as Director finds necessary	V	270.19(c)(6)				
		270.19(c)(6)(i)				
		270.19(c)(6)(ii)				
		270.19(c)(6)(iii)				
		270.19(c)(6)(iv)				
		270.19(c)(6)(v)				
		270.19(c)(6)(vi)				
		270.19(c)(6)(vii)				
		270.19(c)(6)(viii)				
		270.19(c)(6)(ix)				
waste analysis data	V	270.19(c)(7)				
	V	270.19(c)(8)				
approval of permit application without a trial burn	V	270.19(d)				
		270.19(d)(1)				
		270.19(d)(2)				
SPECIFIC PART B INFORMATION REQUIREMENTS FOR LAND TREATMENT FACILITIES						
additional informa- tion requirements for facilities that use land treatment	V	270.20				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
description of plans for treatment demonstration	V	270.20(a)				
wastes and potential hazardous constituents	V	270.20(a)(1)				
data sources to be used	V	270.20(a)(2)				
information related to specific laboratory or field tests	V	270.20(a)(3)				
		270.20(a)(3)(i)				
		270.20(a)(3)(ii)				
		270.20(a)(3)(iii)				
		270.20(a)(3)(iv)				
description of land treatment program required under 264.271	V	270.20(b)				
wastes to be land treated	V	270.20(b)(1)				
design measures and operating practices necessary to maximize treatment	V	270.20(b)(2)				
		270.20(b)(2)(i)				
		270.20(b)(2)(ii)				
		270.20(b)(2)(iii)				
		270.20(b)(2)(iv)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
provisions for unsaturated zone monitoring	V	270.20(b)(3)				
		270.20(b)(3)(i)				
		270.20(b)(3)(ii)				
		270.20(b)(3)(iii)				
		270.20(b)(3)(iv)				
		270.20(b)(3)(v)				
		270.20(b)(3)(vi)				
		270.20(b)(3)(vii)				
list of hazardous constituents expected to be in or derived from wastes used	V	270.20(b)(4)				
proposed dimensions of treatment zone	V	270.20(b)(5)				
description of how unit will meet 264.273 require- ments; what submission must address	V	270.20(c)				
		270.20(c)(1)				
		270.20(c)(2)				
		270.20(c)(3)				
		270.20(c)(4)				
		270.20(c)(5)				
		270.20(c)(6)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
food-chain crops and description of how required 264.276(a) demonstration will be conducted	V	270.20(d)				
		270.20(d)(1)				
		270.20(d)(2)				
		270.20(d)(3)				
		270.20(d)(4)				
presence of cadmium	V	270.20(e)				
vegetative cover and maintenance plan during post-closure	V	270.20(f)				
ignitable or reactive wastes; meeting 264.281	V	270.20(g)				
incompatible wastes; meeting 264.282	V	270.20(h)				
waste management plan for F020, F021, F022, F023, F026 and F027 wastes	14	270.20(i)				
		270.20(i)(1)				
		270.20(i)(2)				
		270.20(i)(3)				
		270.20(i)(4)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR LANDFILLS

additional information requirements for facilities using landfills	V	270.21				
list of hazardous wastes to be placed in each landfill or landfill cell	V	270.21(a)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
detailed plans and engineering report for landfill	V	270.21(b)				
		270.21(b)(1)				
		270.21(b)(2)				
		270.21(b)(3)				
		270.21(b)(4)				
		270.21(b)(5)				
if exemption from Subpart F, Part 264, then detailed plan and engineering report explaining specifically listed items	V	270.21(c)				
description of inspections	V	270.21(d)				
description of cover and maintenance procedures during post closure; closure/post-closure plans	V	270.21(e)				
ignitable or reactive wastes, meeting 264.312	V	270.21(f)				
incompatible wastes, meeting 264.313	V	270.21(g)				
liquid waste or wastes containing free liquids prior to May 8, 1985; meeting 264.314(a)	V,17 F	270.21(h)				
containers of hazardous waste, meeting 264.315 or 264.316	V	270.21(i)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
waste management plan for F020, F021, F022, F023, F026 and F027	14	270.21(i)				
		270.21(i)(1)				
		270.21(i)(2)				
		270.21(i)(3)				
		270.21(i)(4)				
reserved		270.22				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR MISCELLANEOUS UNITS

additional informa- tion for facilities using miscellaneous units	45	270.23				
detailed description of unit	45	270.23(a)				
		270.23(a)(1)				
		270.23(a)(2)				
		270.23(a)(3)				
hydrologic, geologic, and meteorologic assessments and land use maps for addressing and meeting environmental performance standards	45	270.23(b)				
potential exposure pathways	45	270.23(c)				
effectiveness of treatment	45	270.23(d)				
additional information, as determined by Director	45	270.23(e)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

SPECIFIC PART B INFORMATION REQUIREMENTS FOR PROCESS VENTS

additional information that must be provided by owners and operators of facilities that have process vents to which Subpart AA of Part 264 applies, except as provided in 264.1	79	270.24				
implementation schedule as specified in 264.1033(a)(2) for facilities that cannot install a closed-vent system and control device to comply with Part 264 Subpart AA provisions on the effective date the facility becomes subject to Part 264 or Part 265 Subpart AA provisions	79	270.24(a)				
documentation of compliance with process vent standards in 264.1032 including:	79	270.24(b)				
information and data identifying all affected process vents and specific information for each vent	79	270.24(b)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
information and data supporting estimates of vent emissions and emission reductions; estimates made using parameter values representing highest load or capacity level conditions	79	270.24(b)(2)				
information and data for determining if a process vent is subject to 264.1032 requirements	79	270.24(b)(3)				
a performance test plan as specified in 264.1035(b)(3) if applying to use certain control devices and using test data to determine efficiency or concentration	79	270.24(c)				
documentation of compliance with 264.1033 including:	79	270.24(d)				
references and sources used in preparing documentation	79	270.24(d)(1)				
records including dates of each compliance test required by 264.1033(k)	79	270.24(d)(2)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters as specified in 264.1035(b)(4)(iii)	79	270.24(d)(3)				
certification statement signed and dated by owner or operator regarding operating parameters used in design analysis	79	270.24(d)(4)				
certification statement signed and dated by owner or operator regarding control device meeting efficiency design specifications	79	270.24(d)(5)				

SPECIFIC PART B INFORMATION REQUIREMENTS FOR EQUIPMENT

additional information that must be provided by owners and operators of facilities that have equipment to which Subpart BB of Part 264 applies, except as provided in 264.1	79	270.25				
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SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
for each piece of equipment to which Subpart BB of Part 264 applies:	79	270.25(a)				
equipment identification number and hazardous waste management unit identification	79	270.25(a)(1)				
approximate locations within the facility	79	270.25(a)(2)				
type of equipment	79	270.25(a)(3)				
percent by weight total organics in the hazardous waste stream at the equipment	79	270.25(a)(4)				
hazardous waste state at the equipment	79	270.25(a)(5)				
method of compliance with the standard	79	270.25(a)(6)				
implementation schedule as specified in 264.1033(a)(2) for facilities that cannot install a closed-vent system and control device to comply with Part 264 Subpart BB provisions on the effective date the facility becomes subject to Part 264 or Part 265 Subpart BB provisions	79	270.25(b)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
a performance test plan as specified in 264.1035(b)(3) if applying to use certain control devices and using test data to determine or efficiency or concentration	79	270.25(c)				
documentation demonstrating compliance with 264.1052 to 264.1059 equipment standards and containing records required under 264.1064; Regional Administrator may request further documentation	79	270.25(d)				
documentation to demonstrate compliance with 264.1060 shall include:	79	270.25(e)				
references and sources used in preparing documentation	79	270.25(e)(1)				
records including dates of each compliance test required by 264.1033(j)	79	270.25(e)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
design analysis and other documents that present basic control device design information; design analysis addresses vent stream characteristics and control device operation parameters as specified in 264.1035(b)(4)(iii)	79	270.25(e)(3)				
certification statement signed and dated by owner or operator regarding operating parameters used in design analysis	79	270.25(e)(4)				
certification statement signed and dated by owner or operator regarding control device meeting efficiency design specifications	79	270.25(e)(5)				
reserved		270.26-270.28				
† PERMIT DENIAL						
director denial of entire permit application or active life of hazardous waste facility or unit	61	270.29				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE

SUBPART C - PERMIT CONDITIONS

CONDITIONS APPLICABLE TO ALL PERMITS

conditions which will be incorporated into all permits	V	270.30				
duty to comply	V	270.30(a)				
duty to reapply	V	270.30(b)				
need to halt or reduce activity not a defense	V	270.30(c)				
event of noncompliance with permit; permittee's responsibilities	V,2	270.30(d)				
proper operation and maintenance	V	270.30(e)				
permit actions	V	270.30(f)				
property rights	V	270.30(g)				
duty to provide information	V	270.30(h)				
		270.30(i)				
		270.30(i)(1)				
		270.30(i)(2)				
		270.30(i)(3)				
inspection and entry	V	270.30(i)(4)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
	V	270.30(i)(1)				
	V,17 D, 17 P	270.30(i)(2)				
		270.30(i)(3)				
		270.30(i)(3)(i)				
		270.30(i)(3)(ii)				
		270.30(i)(3)(iii)				
		270.30(i)(3)(iv)				
		270.30(i)(3)(v)				
monitoring and records	V	270.30(i)(3)(vi)				
signatory requirements	V	270.30(k)				
reporting require- ments; planned changes to facility	V	270.30(l)(1)				
planned changes resulting in non- compliance with permit; permittee may not treat, store or dispose of hazardous waste until certain specified conditions are met	V,†54	270.30(l)(2)				
		270.30(l)(2)(i)				
		270.30(l)(2)(ii)(A)				
	V	270.30(l)(2)(ii)(B)				
permit not transferable except after notice to Director; what Director may require	V	270.30(l)(3)				
monitoring reports	V	270.30(l)(4)				
submittal of reports no later than 14 days following compliance schedule date	V	270.30(l)(5)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
what permittee must report within 24 hours if noncompliance endangers health or the environment	V	270.30(l)(6)(i)				
		270.30(l)(6)(i)(A)				
		270.30(l)(6)(i)(B)				
		270.30(l)(6)(ii)				
		270.30(l)(6)(ii)(A)-(G)				
		270.30(l)(6)(iii)				
submittal of manifest discrepancy report	V	270.30(l)(7)				
submittal of unmanifested waste report	V	270.30(l)(8)				
submittal of biennial report	V,†1	270.30(l)(9)				
submittal of other non- compliance reports	V	270.30(l)(10)				
submittal of other information	V	270.30(l)(11)				

REQUIREMENTS FOR RECORDING AND REPORTING OF MONITORING RESULTS

all permits shall specify:	V	270.31				
requirements for monitoring equipment or methods	V	270.31(a)				
required monitoring applicable reporting requirements	V	270.31(b)				
	V	270.31(c)				

ESTABLISHING PERMIT CONDITIONS

@ conditions established on a case-by-case basis	V	270.32(a)				
@ incorporation of appli- cable requirements of Parts 264 and 266 through 268	V,17 O, 34	270.32(b)(1)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
@ terms and conditions considered necessary by Director to protect human health and environment	17 O	270.32(b)(2)				
# what an applicable requirement is	*	270.32(c)				
# incorporation of applicable requirements into new, reissued, modified or revoked and reissued permits	*	270.32(d)				
@ incorporation either expressly or by reference	V	270.32(e)				
† SCHEDULES OF COMPLIANCE						
permit may specify a schedule of compliance	V	270.33(a)				
time for compliance	V	270.33(a)(1)				
interim requirements and dates for achievement	V	270.33(a)(2)				
		270.33(a)(2)(i)				
		270.33(a)(2)(ii)				
reporting within 14 days of scheduled dates	V	270.33(a)(3)				
# permit applicant or permittee may cease activities rather than continue to operate	*	270.33(b)				
decision to cease activities; permit modified or cease before noncompliance with schedule	*	270.33(b)(1)				
		270.33(b)(1)(i)				
		270.33(b)(1)(ii)				
cease activities before issuance of a permit; permit shall contain schedule leading to termination	*	270.33(b)(2)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
two schedules in permit if permittee undecided whether to cease regulated activities	*	270.33(b)(3)				
		270.33(b)(3)(i)				
		270.33(b)(3)(ii)				
		270.33(b)(3)(iii)				
		270.33(b)(3)(iv)				
evidence of firm public commitment	*	270.33(b)(4)				

SUBPART D - CHANGES TO PERMIT

TRANSFER OF PERMITS

transfers by modification	V,†54	270.40(a)				
Class 1 modifications; requirements of Part 264, Subpart H	†54	270.40(b)				

MODIFICATION OR REVOCATION AND REISSUANCE OF PERMITS

# cause for modification or revocation and reissuance	*,†54	270.41				
# causes for modification but not for revocation and reissuance unless permittee requests or agrees	*	270.41(a)				
alterations or additions	V	270.41(a)(1)				
information received by Director	V	270.41(a)(2)				
7 new statutory requirements or regulations	V,44 D,†54	270.41(a)(3)				
modification of compliance schedules	V	270.41(a)(4)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
8 when permit reviewed under 270.50(d); Director may modify permit as necessary for compliance	V, 17 N, †54	270.41(a)(5)				
causes for modification or revocation and reissuance	V	270.41(b)				
		270.41(b)(1)				
		270.41(b)(2)				
facility siting	V	270.41(c)				
†,9 PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE						
putting into effect Class 1 modifications as listed in Appendix I; conditions:	54	270.42(a)(1)				
notification of Director by permittee	54	270.42(a)(1)(i)				
to whom notice of modification must be sent and when	54	270.42(a)(1)(ii)				
rejection of modification by Director	54	270.42(a)(1)(iii)				
modifications requiring prior written approval	54	270.42(a)(2)				
Class 2 procedures instead of Class 1 procedures	54	270.42(a)(3)				
Class 2 modifications as listed in Appendix I; what request must include:	54	270.42(b)(1)				
description of exact changes	54	270.42(b)(1)(i)				
identification of Class 2 modification	54	270.42(b)(1)(ii)				
why modification is needed	54	270.42(b)(1)(iii)				
provision of applicable information	54	270.42(b)(1)(iv)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
to whom notice must be sent and when; what notice must include:	54	270.42(b)(2)				
announcement of a 60-day comment period	54	270.42(b)(2)(i)				
announcement of where and when public meeting will be held	54	270.42(b)(2)(ii)				
name and phone number of permittee's contact person	54	270.42(b)(2)(iii)				
name and phone number of Agency contact person	54	270.42(b)(2)(iv)				
location for viewing modification request	54	270.42(b)(2)(v)				
availability of permittee's compliance history	54	270.42(b)(2)(vi)				
placement of modifica- tion request copy in vicinity of facility for public access	54	270.42(b)(3)				
when and where permittee must hold a public meeting	54	270.42(b)(4)				
public comment period	54	270.42(b)(5)				
requirements after receipt of modification request:	54	270.42(b)(6)(i)				
approve request, with or without changes	54	270.42(b)(6)(i)(A)				
deny request	54	270.42(b)(6)(i)(B)				
determine if Class 3 modification pro- cedures are needed:	54	270.42(b)(6)(i)(C)				
significant public concern	54	270.42(b)(6)(i)(C)(1)				
complex nature of changes	54	270.42(b)(6)(i)(C)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
approve as temporary authorization	54	270.42(b)(6)(i)(D)				
notify permittee that decision will be made in 30 days	54	270.42(b)(6)(i)(E)				
requirements if decision is extended for 30 days:	54	270.42(b)(6)(ii)				
approve request, with or without changes	54	270.42(b)(6)(ii)(A)				
deny request	54	270.42(b)(6)(ii)(B)				
determine if Class 3 modification procedures are needed	54	270.42(b)(6)(ii)(C)				
significant public concern	54	270.42(b)(6)(ii)(C)(1)				
complex nature of changes	54	270.42(b)(6)(ii)(C)(2)				
approve as temporary authorization	54	270.42(b)(6)(ii)(D)				
temporary or automatic authorization following failure to make decision	54	270.42(b)(6)(iii)				
requirements of permittee under temporary or automatic authorization:	54	270.42(b)(6)(iv)(A)				
temporary authorization to conduct activities as in modification request	54	270.42(b)(6)(iv)(A)(1)				
unless final approval or denial, authorization for life of permit	54	270.42(b)(6)(iv)(A)(2)				
deferment of permanent authorization if failure to notify public	54	270.42(b)(6)(iv)(B)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
if no final approval or denial or reclassification, authority to conduct activities as described in modification request for life of permit unless later modification	54	270.42(b)(6)(v)				
consideration and response to all significant comments	54	270.42(b)(6)(vi)				
extension of time periods for final approval, denial or reclassification as Class 3	54	270.42(b)(6)(vii)				
reasons to deny or change Class 2 permit modification terms:	54	270.42(b)(7)				
request is incomplete	54	270.42(b)(7)(i)				
noncompliance with appropriate requirements	54	270.42(b)(7)(ii)				
failure to protect human health and environment	54	270.42(b)(7)(iii)				
commencement of construction under Class 2	54	270.42(b)(8)				
requirements for Class 3 modifications listed in Appendix I:	54	270.42(c)(1)				
description of exact changes	54	270.42(c)(1)(i)				
identification of Class 3 modification	54	270.42(c)(1)(ii)				
why modification is needed	54	270.42(c)(1)(iii)				
provision of applicable information	54	270.42(c)(1)(iv)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
to whom and when notice must be sent; what notice must include:	54	270.42(c)(2)				
announcement of a 60-day comment period	54	270.42(c)(2)(i)				
announcement of when and where public meeting will be held	54	270.42(c)(2)(ii)				
name and phone number of permittee's contact person	54	270.42(c)(2)(iii)				
name and phone number of Agency contact person	54	270.42(c)(2)(iv)				
location for viewing modification request	54	270.42(c)(2)(v)				
availability of permittee's com- pliance history	54	270.42(c)(2)(vi)				
placement of modifica- tion request copy in vicinity of facility for public access	54	270.42(c)(3)				
when and where permittee must hold a public meeting	54	270.42(c)(4)				
public comment period	54	270.42(c)(5)				
grant or deny modifi- cation request after public comment period; consider and respond to all significant written comments	54	270.42(c)(6)				
10 other modifications not explicitly listed in Appendix I	54	270.42(d)(1)				
determination of appropriate class:	54	270.42(d)(2)				
changes that necessitate Class 1 modifications	54	270.42(d)(2)(i)				

1.3.1.1

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
changes that necessitate Class 2 modifications	54	270.42(d)(2)(ii)				
variations in types and quantities of wastes managed	54	270.42(d)(2)(ii)(A)				
technological advancements	54	270.42(d)(2)(ii)(B)				
changes necessary to comply with new regulations	54	270.42(d)(2)(ii)(C)				
Class 3 modifications description	54	270.42(d)(2)(iii)				
granting of temporary authorizations	54	270.42(e)(1)				
temporary authorization may be requested for:	54	270.42(e)(2)(i)				
Class 2 modification meeting criteria	54	270.42(e)(2)(i)(A)				
Class 3 modification meeting criteria and providing improved management or treatment	54	270.42(e)(2)(i)(B)				
what temporary authorization request must include:	54	270.42(e)(2)(ii)				
description of activities	54	270.42(e)(2)(ii)(A)				
why temporary authorization is necessary	54	270.42(e)(2)(ii)(B)				
sufficient information to ensure compliance	54	270.42(e)(2)(ii)(C)				
to whom notice must be sent	54	270.42(e)(2)(iii)				
approve or deny temporary authorization quickly; basis for decision:	54	270.42(e)(3)				
authorized activities in compliance with Part 264	54	270.42(e)(3)(i)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
necessity of temporary authorization to achieve an objective:	54	270.42(e)(3)(ii)				
facilitate closure or corrective action activities	54	270.42(e)(3)(ii)(A)				
allow treatment or storage in tanks or containers of restricted wastes	54	270.42(e)(3)(ii)(B)				
prevent disruption of ongoing activities	54	270.42(e)(3)(ii)(C)				
respond to sudden changes in types or quantities of wastes managed	54	270.42(e)(3)(ii)(D)				
facilitate protection of human health and environment	54	270.42(e)(3)(ii)(E)				
reissuance of temporary authorization for Class 2 or 3	54	270.42(e)(4)				
reissuance of Class 2 in accordance with specific paragraphs	54	270.42(e)(4)(i)				
reissuance of Class 3 in accordance with specific paragraph	54	270.42(e)(4)(ii)				
when and to whom notification of grant, denial or automatic authorization decisions must be sent	54	270.42(f)(1)				
appeal of grant or denial decision	54	270.42(f)(2)				
appeal of automatic authorization	54	270.42(f)(3)				
newly listed or identified wastes; continued authority to manage wastes listed in Part 261 if:	54	270.42(g)(1)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
in existence as a hazardous waste facility on effective date of final rule listing or identifying waste	54	270.42(g)(1)(i)				
submit Class 1 modification request	54	270.42(g)(1)(ii)				
in compliance with 265 standards	54	270.42(g)(1)(iii)				
for Class 2 or 3 modifications, submit complete modification request within 180 days	54	270.42(g)(1)(iv)				
certification that land disposal units are in compliance within 12 months	54	270.42(g)(1)(v)				
expansions are not under 25 percent capacity limit for Class 2 modifications	54	270.42(g)(2)				
maintenance and notice of updated list of permit modifications	54	270.42(h)				
11 remove 270.42(i) through 270.42(p)	34,†39,†54	270.42(i)-(p)				
12 Appendix I; classification of modifications	†54,†61†64,78	270.42, Appendix I				

TERMINATION OF PERMITS

		270.43(a)				
		270.43(a)(1)				
		270.43(a)(2)				
causes for terminating a permit	V	270.43(a)(3)				
@ Director shall follow applicable Part 124 or State procedures	V	270.43(b)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

13

SUBPART E - EXPIRATION AND CONTINUATION OF PERMITS

DURATION OF PERMITS

@ maximum ten-year term	V	270.50(a)				
@ no extension of maximum term by modification except as 270.51 provides	V	270.50(b)				
† permit for less than fullterm	V	270.50(c)				
five-year review for land disposal facility permits	17 N	270.50(d)				

SUBPART F - SPECIAL FORMS OF PERMITS

† PERMITS BY RULE

RCRA permit by rule if listed conditions are met	*	270.60				
ocean disposal barges or vessels; specific conditions:	V	270.60(a)				
permit under Part 220	V	270.60(a)(1)				
compliance with conditions of that permit	V	270.60(a)(2)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with specified hazardous waste regulations	V	270.60(a)(3)				
		270.60(a)(3)(i)				
		270.60(a)(3)(ii)				
		270.60(a)(3)(iii)				
		270.60(a)(3)(iv)				
		270.60(a)(3)(v)				
		270.60(a)(3)(vi)				
injection wells; specific conditions:	V	270.60(b)				
permit under Part 144 or 145	V	270.60(b)(1)				
compliance with permit conditions and 144.14 requirements	V	270.60(b)(2)				
conditions for UIC permits issued after November 8, 1984	17 L	270.60(b)(3)				
	44 C	270.60(b)(3)(i)				
		270.60(b)(3)(ii)				
publicly owned treatment works; specific conditions:	V	270.60(c)				
NPDES permit	V	270.60(c)(1)				
compliance with conditions of permit	V	270.60(c)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
compliance with specified regulations	V	270.60(c)(3)				
		270.60(c)(3)(i)				
		270.60(c)(3)(ii)				
		270.60(c)(3)(iii)				
		270.60(c)(3)(iv)				
		270.60(c)(3)(v)				
		270.60(c)(3)(vi)				
waste meets all pretreatment requirements	17 L	270.60(c)(3)(vii)				
	V	270.60(c)(4)				
† EMERGENCY PERMITS						
temporary emergency permit	V	270.61(a)				
nonpermitted facility	V	270.61(a)(1)				
permitted facility	V	270.61(a)(2)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
conditions of emergency permit	V	270.61(b)(1)				
		270.61(b)(2)				
		270.61(b)(3)				
		270.61(b)(4)				
		270.61(b)(5)				
		270.61(b)(5)(i)				
		270.61(b)(5)(ii)				
		270.61(b)(5)(iii)				
		270.61(b)(5)(iv)				
		270.61(b)(5)(v)				
		270.61(b)(6)				

† **HAZARDOUS WASTE INCINERATOR PERMITS**

permit conditions to determine operational readiness; trial burn; permit modification	V,†54	270.62(a)				
submission of statement with Part B for com- pliance with 264.343	V	270.62(a)(1)				
review and specifi- cations by Director	V	270.62(a)(2)				
permit conditions during trial burn	V	270.62(b)				
trial burn plan, Part B	V	270.62(b)(1)				
trial burn plan must include:	V	270.62(b)(2)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
analysis of each waste or mixture of waste	V	270.62(b)(2)(i)				
		270.62(b)(2)(i)(A)				
		270.62(b)(2)(i)(B)				
		270.62(b)(2)(i)(C)				
		270.62(b)(2)(i)(D)				
detailed engineering description	V	270.62(b)(2)(ii)				
		270.62(b)(2)(ii)(A)				
		270.62(b)(2)(ii)(B)				
		270.62(b)(2)(ii)(C)				
		270.62(b)(2)(ii)(D)				
		270.62(b)(2)(ii)(E)				
		270.62(b)(2)(ii)(F)				
		270.62(b)(2)(ii)(G)				
		270.62(b)(2)(ii)(H)				
		270.62(b)(2)(ii)(I)				
		270.62(b)(2)(ii)(J)				
detailed description of sampling and monitoring procedures	V	270.62(b)(2)(iii)				
detailed test schedule for each waste	V	270.62(b)(2)(iv)				
detailed test protocol	V	270.62(b)(2)(v)				
emission control equipment description	V	270.62(b)(2)(vi)				
rapid shut-down procedures	V	270.62(b)(2)(vii)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
other information as Director finds necessary	V	270.62(b)(2)(viii)				
sufficiency of information	V	270.62(b)(3)				
trial POHCs	V	270.62(b)(4)				
conditions for approval of trial burn plan by Director	V	270.62(b)(5)				
		270.62(b)(5)(i)				
		270.62(b)(5)(ii)				
		270.62(b)(5)(iii)				
		270.62(b)(5)(iv)				
		270.62(b)(6)				
		270.62(b)(6)(i)				
		270.62(b)(6)(ii)				
		270.62(b)(6)(iii)				
		270.62(b)(6)(iv)				
		270.62(b)(6)(v)				
		270.62(b)(6)(vi)				
		270.62(b)(6)(vii)				
		270.62(b)(6)(viii)				
		270.62(b)(6)(ix)				
determinations to be made during trial burn certification and submittal of results	V	270.62(b)(6)(x)				
	V	270.62(b)(7)				
submittal of data	V	270.62(b)(8)				
certification of submissions	V	270.62(b)(9)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
operating requirements in final permit	V,†54	270.62(b)(10)				
establishment of permit conditions following trial burn; before final modification	V	270.62(c)				
submission of statement with Part B for compli- ance to 264.343	V	270.62(c)(1)				
Director's review of statement; specify requirements	V	270.62(c)(2)				
permit application for existing incinerator; submission and timing of trial burn plan	V,60	270.62(d)				

† PERMITS FOR LAND TREATMENT DEMONSTRATIONS USING FIELD TEST OR LABORATORY ANALYSES

treatment demonstra- tion permit containing 264.272(c) requirements	V	270.63(a)				
two-phase facility permit	V	270.63(a)(1)				
permit covering only field test or laboratory analyses	V	270.63(a)(2)				
conditions for phased permit; effectiveness submission of certifi- cation and data modification of second phase of permit to comply with Part 264, Subpart M	V	270.63(b)				
		270.63(b)(1)				
		270.63(b)(2)				
		270.63(c)				
	V	270.63(d)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
permit modification under 270.42 or 270.41(a)(2); when second phase of permit becomes effective	V,†54	270.63(d)(1)				
no second phase modifications; notice of final decision	V,†54	270.63(d)(2)				
remove	V,†54	270.63(d)(3)				

INTERIM PERMITS FOR UIC WELLS

# issuance of UIC permit; compliance with Part 264, Subpart R; maximum of two years	*	270.64				
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† RESEARCH, DEVELOPMENT AND DEMONSTRATION PERMITS

permit for experi- mental activity not promulgated under Part 264 or 266; permit provisions:	17 Q	270.65(a)				
construction of facilities; operation for maximum of one year unless renewed	17 Q	270.65(a)(1)				
receipt and treatment of necessary wastes to determine efficacy and performance capabilities	17 Q	270.65(a)(2)				
inclusion of necessary requirements by Administrator to protect health and environment	17 Q	270.65(a)(3)				
modify or waive Parts 124 and 270 require- ments except financial responsibility	17 Q	270.65(b)				
immediate termination as necessary	17 Q	270.65(c)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
maximum of three renewals; each renewal maximum of one year	17 Q	270.65(d)				

SUBPART G - INTERIM STATUS

† **QUALIFYING FOR INTERIM STATUS**

existing HWM facility; treated as having been issued permit provided:	V, †17 D, †17 P	270.70(a)			
compliance with section 3010(a) of RCRA	V	270.70(a)(1)			
compliance with 270.10	V	270.70(a)(2)			
failure to qualify	V,†6	270.70(b)			
previous denial of RCRA permit or authority to operate terminated	17 D, 17 P	270.70(c)			

† **OPERATION DURING INTERIM STATUS**

restrictions during interim status period	V	270.71(a)			
		270.71(a)(1)			
		270.71(a)(2)			
		270.71(a)(3)			
compliance with Part 265	V	270.71(b)			

†,14 **CHANGES DURING INTERIM STATUS**

allowed changes at interim status facility:	†61	270.72(a)			
new hazardous wastes not identified in Part A application; addition of TSD units; submittal of revised Part A	V,†61	270.72(a)(1)			

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
increases in design capacity	V,†61	270.72(a)(2)				
lack of available capacity	V,†61	270.72(a)(2)(i)				
compliance with Federal, State or local requirement	†61	270.72(a)(2)(ii)				
changes or addition of processes; revised Part A permit application	V,†61	270.72(a)(3)				
emergency situation	V,†61	270.72(a)(3)(i)				
compliance with Federal, State or local requirement	V,†61	270.72(a)(3)(ii)				
changes in ownership or operational control; compliance demonstrations; transfer of duties	V,24,†61	270.72(a)(4)				
changes made in accordance with corrective action or court order; changes limited to releases that originate within facility boundary	†61	270.72(a)(5)				
changes not allowed if amount to reconstruction of facility; exceptions:	V,†61	270.72(b)				
changes solely to comply with 265.193	28,†61	270.72(b)(1)				
changes necessary to satisfy standards of 3004(o) because of Federal, State or local requirements	†61	270.72(b)(2)				

5324

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
changes necessary to allow continuing treatment of newly listed or identified wastes treated, stored or disposed of prior to rule's effective date	†61	270.72(b)(3)				
changes during closure in accordance with approved closure plan	†61	270.72(b)(4)				
changes necessary to comply with interim status corrective action order or court order; changes limited to treatment, storage, or disposal of waste that originated within boundary of facility	†61	270.72(b)(5)				
changes to treat or store, in tanks or containers, wastes subject to 268 or RCRA Section 3004 land disposal restrictions, if solely made for compliance with these requirements	39,†61	270.72(b)(6)				
15 redesignated	V,†61	270.72(c)-(e)				
† TERMINATION OF INTERIM STATUS						
when interim status terminates	V	270.73				
final administrative disposition of a permit application	V	270.73(a)				
terminated as provided in 270.10(e)(5)	V	270.73(b)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
termination of interim status for land disposal facility granted interim status prior to November 8, 1984 on November 8, 1985, unless:	17 P	270.73(c)				
Part B submittal	17 P	270.73(c)(1)				
certification of compliance with ground-water monitoring and financial responsibility requirements	17 P	270.73(c)(2)				
for land disposal facility in existence on the effective date of statutory or regulatory amendment, twelve months after RCRA permit requirement; exceptions:	17 P	270.73(d)				
submittal of Part B application	17 P	270.73(d)(1)				
certification of compliance with ground-water monitoring and financial responsibility requirements	17 P	270.73(d)(2)				
16 for land disposal units operating under 270.72(a)(1), (2), or (3); 12 months after effective date unless certification of compliance	†61	270.73(e)				
16 for incinerators, on November 8, 1989 unless Part B applications by November 8, 1986	17 P, †61	270.73(f)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
16 any facility other than land disposal or incinerator facilities by November 8, 1992 unless Part B applications by November 8, 1988	17 P, †61	270.73(g)				

PART 124 - PROCEDURES FOR DECISION MAKING

SUBPART A - GENERAL PROGRAM REQUIREMENTS

APPLICATION FOR A PERMIT

if permit required, then must submit application; exceptions; when processing shall begin; signature and certification requirements	V,70	124.3(a)				
		124.3(a)(1)				
		124.3(a)(2)				
		124.3(a)(3)				

MODIFICATION, REVOCATION AND REISSUANCE, OR TERMINATION OF PERMITS

who initiates a modification, revocation and reissuance or termination of permit; reasons these actions can be taken	V,70	124.5(a)				
modify or revoke and reissue procedures:	V,†54, 70	124.5(c)(1)				
only those conditions to be modified shall be reopened; entire permit is reopened if permit revoked and reissued	V	124.5(c)(2)				
minor modifications are not subject to 124.5	V,†54, 70	124.5(c)(3)				

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
@ termination procedures; notice of intent to terminate	V,70	124.5(d)				
DRAFT PERMITS						
@ decision to prepare draft or deny application	V	124.6(a)				
	V	124.6(d)				
		124.6(d)(1)				
		124.6(d)(2)				
		124.6(d)(3)				
@ contents of a draft permit	V,70	124.6(d)(4)(i)				
@ statement of basis or fact sheet accompanies draft permit; available to public; public hearing; issue final decision; respond to comments; appeals	V	124.6(e)				
FACT SHEET						
@ what the fact sheet must be prepared for; what the sheet will set forth; who receives fact sheet	V	124.8(a)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV. ALENT	MORE STRINGENT	BROADER IN SCOPE
@ what the fact sheet shall include	V	124.8(b)				
		124.8(b)(1)				
		124.8(b)(2)				
		124.8(b)(4)				
		124.8(b)(5)				
		124.8(b)(6)				
		124.8(b)(6)(i)-(iii)				
		124.8(b)(7)				
		PUBLIC NOTICE OF PERMIT ACTIONS AND PUBLIC COMMENT PERIOD				
@ what the Director must give public notice of	V	124.10(a)(1)				
		124.10(a)(1)(ii)				
		124.10(a)(1)(iii)				
@ timing of public notice	V	124.10(b)(1)				
@ how public notice shall be given	V	124.10(b)(2)				
	V	124.10(c)				

1005

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
17, @ by mail; persons to whom notice must be mailed	V	124.10(c)(1)				
		124.10(c)(1)(i)				
		124.10(c)(1)(ii)				
	V, 70	124.10(c)(1)(iii)				
		124.10(c)(1)(ix)				
		124.10(c)(1)(ix)(A)				
		124.10(c)(1)(ix)(B)				
		124.10(c)(1)(ix)(C)				
		124.10(c)(1)(x)(A) & (B)				
@ publication in a newspaper	V	124.10(c)(2)(i)				
		124.10(c)(2)(ii)				
@ legal notice to public under State law	V	124.10(c)(3)				
@ any other method to give notice to persons potentially affected	V	124.10(c)(4)				
@ minimum information which must be contained in a public notice	V	124.10(d)(1)				
		124.10(d)(1)(i)				
		124.10(d)(1)(ii)				
		124.10(d)(1)(iii)				
		124.10(d)(1)(iv)				
		124.10(d)(1)(v)				
		124.10(d)(1)(vi)				
		124.10(d)(1)(ix)				

SPA 9

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
@ public notices for hearings; contents	V	124.10(d)(2)				
		124.10(d)(2)(i)				
		124.10(d)(2)(ii)				
		124.10(d)(2)(iii)				
@ all persons identified in 124.10(c)(1)(i)-(iv) must be mailed fact sheet, the permit application and the draft permit	V	124.10(e)				
PUBLIC COMMENTS AND REQUESTS FOR PUBLIC HEARINGS						
procedures	V	124.11				
PUBLIC HEARINGS						
@ when director must or may hold a public hearing; how public notice shall be given	V	124.12(a)(1)				
	V,70	124.12(a)(2)				
	V	124.12(a)(3)				
		124.12(a)(4)				
RESPONSE TO COMMENTS						
@ Director's response to comments and what it must contain	V	124.17(a)				
		124.17(a)(1)				
		124.17(a)(2)				
@ response to comments available to the public	V	124.17(c)				

@ Procedural requirement. For explanation, see the instructions for the Consolidated Base Program Checklists at the beginning of Appendix K.

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE

- # These provisions were not included in Base Program Checklist V, but were listed as provisions under 271.14 which States must have the legal authority to implement. Thus, if States do not have these provisions in their code, they must demonstrate legal authority to carry them out.
- 1 While included in the July 30, 1989 version of this consolidated checklist, 270.1(a) & (b) were removed from this consolidated checklist because EPA does not consider them essential for a State to be authorized for a permit program. States may include analogous paragraphs of code if they so choose, however.
 - 2 Note that the 17 M & †17 M designation is correct. Revision Checklist 17 M deleted the old 270.10(f)(3) provision that allows a person to begin physical construction of a new hazardous waste management facility subsequent to November 19, 1980, but prior to the effective date of the unit-specific Part 264 Standards in limited circumstances. The Agency felt that this provision was legally inconsistent with the general preconstruction ban. This removal is required. However, the Agency added the 3005(a) TSCA exemption to 270.10(f)(3). Inclusion of this exemption is considered optional as indicated on Revision Checklist 17 M.
 - 3 See guidance on contents of the application found in the instructions to the Consolidated Base Program Checklists.
 - 4 The base program's 270.17(c)-(i) differs from the July 1, 1988, CFR because the July 15, 1985, Federal Register (50 FR 28752) removed the original paragraph (c) and redesignated paragraphs (d)-(j) as (c)-(i). This FR is addressed by Revision Checklists 17 A through 17 S, but this change was not included in these checklists.
 - 5 The final rule at 50 FR 28752, addressed by Revision Checklists 17 A through 17 S, revised this subparagraph; however, this change was not included in any of these checklists.
 - 6 The base program's 270.18(d)-(i) differs from the July 1, 1988, CFR because the July 15, 1985, Federal Register (50 FR 28752), addressed by Revision Checklists 17 A through 17 S, removed paragraph (d) and redesignated paragraphs (e)-(j) as (d)-(i). However, this change was not included in any of these checklists.
 - 7 Revision Checklist 54 modified this paragraph, including the deletion of 270.41(a)(3)(i)-(iii). However, these are optional changes and States not adopting the modifications of Revision Checklist 54 should have code equivalent to that in the July 1, 1988 CFR.
 - 8 Revision Checklist 54 removed the 270.41(a)(5) that originally appeared in Checklist V. Revision Checklist 17 N added 270.41(a)(6). Revision Checklist 54 then redesignated 270.41(a)(6) as 270.41(a)(5).
 - 9 Section 270.42 existed as part of the original promulgated code but was not included in Checklist V for the base program. Checklist 54 completely revises and supersedes the original 270.42, including removing 270.42(i)-(o).
 - 10 Revision Checklist 24 modified the original 270.42(d); Revision Checklist 54 completely revised it.

**CONSOLIDATED CHECKLIST C9: EPA Administered Permit Programs:
The Hazardous Waste Permit Program; Procedures for Decision Making (cont'd)**

FEDERAL REQUIREMENT	CHECK- LIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:		
				EQUIV- ALENT	MORE STRINGENT	BROADER IN SCOPE
<p>11 Revision Checklist 34 added 270.42(o) and 270.42(o)(1)-(4) to the Federal code, and Revision Checklist 39 modified 270.42(o)(1) and (2) and added 270.42(p) and 270.42(p)(1)-(3). Revision Checklist 54 subsequently removed 270.42(i)-(p).</p>						
<p>12 Appendix I was introduced by Revision Checklist 54 as an optional modification to Section 270.42. Changes to this appendix addressed by Revision Checklist 78 are relevant only if a State has modified its code to include Appendix I as per Revision Checklist 54.</p>						
<p>13 Section 270.51 was inadvertently included in the June 30, 1989 version of this consolidated checklist, but was removed from this present version of this checklist because this section is not essential for a State to adopt for permit program authorization. States may include an analogous section of code if they so choose, however.</p>						
<p>14 Checklist 61 made extensive revisions to 40 <u>CFR</u> 270.72, including the redesignation of 270.72(b)-(e) paragraphs. Because Checklist V lists only the 270.72 citation without a breakdown into subparagraphs, all current text corresponding to the base program that has undergone revision will be identified as being associated with both Checklist V and the relevant revision checklist(s), regardless of its current formatting.</p>						
<p>15 All three 270.72(c)-(e) paragraphs were part of the base program. 270.72(c) was redesignated as 270.72(a)(3) by Revision Checklist 61. 270.72(d) was modified by Revision Checklist 24, then redesignated as 270.72(a)(4) by Revision Checklist 61. 270.72(e) was modified by Revision Checklist 28 and 39 before being redesignated as 270.72(b) by Revision Checklist 61.</p>						
<p>16 These subparagraphs were designated as 270.73(e) and (f) when Revision Checklist 17 P introduced them. Revision Checklist 61 added a new 270.73(e) and redesignated 270.73(e) and (f) as 270.73(f) and (g).</p>						
<p>17 The July 26, 1988 <u>Federal Register</u> (53 FR 28118) redesignated 124.10(c)(1)(viii) and (ix) as (c)(1)(ix) and (x). These changes were addressed by Revision Checklist 70.</p>						

SPA 9

**MODEL CONSOLIDATED
ATTORNEY GENERAL'S STATEMENT
FOR FINAL AUTHORIZATION,
INCLUDING CHANGES TO THE
FEDERAL RCRA PROGRAM
THROUGH JUNE 1990**

I hereby certify, pursuant to my authority as _____ and in accordance with Section 3006(b) of the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments of 1984, and 40 CFR 271 that in my opinion the laws of the State [Commonwealth] of _____ provide adequate authority to carry out the program set forth in the "Program Description" submitted by the [State Agency]. The specific authorities provided are contained in statutes or regulations lawfully adopted at the time this Statement is signed and which are in effect now [shall be fully effective by _____], as specified below.

I. DEFINITION OF TERMS, REFERENCES AND TEST METHODS

A. State statutes and regulations contain definition of terms and a list of publications (as in 40 CFR 260.11) which have applicability throughout the statutes and regulations as indicated in Consolidated Checklist C1 which includes the revisions made by Revision Checklists 5, 11, 13, 23, 24, 28, 34, 35, 39, 45, 49, 52, 67, 71, 73, and 79.

Federal Authority: RCRA §§2002(a), 3001-3007, 3010, 3014, 3015, 3017-3019, 7004; 40 CFR 260.10 and 260.11, as amended March 20, 1984 (49 FR 10490), December 4, 1984 (49 FR 47390), January 4, 1985 (50 FR 614), March 24, 1986 (51 FR 10146), May 2, 1986 (51 FR 16422), July 14, 1986 (51 FR 25422), November 7, 1986 (51 FR 40572), March 16, 1987 (52 FR 8072), July 8, 1987 (52 FR 25760), October 27, 1987 (52 FR 41295), December 10, 1987 (52 FR 46946), July 19, 1988 (53 FR 27290), and September 2, 1988 (53 FR 34079), September 29, 1989 (54 FR 40260), January 23, 1990 (55 FR 2322), March 9, 1990 (55 FR 8948), and June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow petitions for equivalent testing or analytical methods as specified in 40 CFR 260.21 and as indicated in Consolidated Checklist C1 which includes the requirements indicated in Revision Checklist 11.

¹ The phrase "OPTIONAL: This is a reduced requirement" is used to indicate provisions that either are less stringent or reduce the scope of the program. Any State which adopts an "optional" requirement must ensure that it is at least as stringent as the Federal requirement.

Federal Authority: RCRA §§2002(a), 3001, 3004; 40 CFR 260.21 as amended December 4, 1984 (49 FR 47390).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

C. Specific provisions amending 40 CFR 260.10, 260.11 and 260.21 since January 1, 1983, which are included in State statutes and regulations are listed below.

- (1) State statutes and regulations amend the definition of "manifest" and "manifest document number" as indicated in Revision Checklist 5 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3001; 40 CFR 260.10 as amended March 20, 1984 (49 FR 10490).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (2) State statutes and regulations incorporate the most recent edition and update to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) as indicated in Revision Checklists 11 and 35 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3001; 40 CFR 260.11 as amended December 4, 1984 (49 FR 47390) and March 16, 1987 (52 FR 8072).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) State statutes and regulations include definitions of "boiler" and "industrial furnace" and revise the definition of "incinerator" as indicated in Revision Checklist 13 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3004; 40 CFR 260.10 as amended January 4, 1985 (50 FR 614).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (4) State statutes and regulations revise the definition of "designated facility" as indicated in Revision Checklists 13 and 71 and included in Consolidated Checklist C1.

SPA 9

Federal Authority: RCRA §§2002(a), 3004; 40 CFR 260.10 as amended January 4, 1985 (50 FR 614) and January 23, 1990 (55 FR 2322).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and regulations define "small quantity generator" as indicated in Revision Checklist 23 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3001, 3002; 40 CFR 260.10 as amended March 24, 1986 (51 FR 10146).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) State statutes and regulations define "active life," "final closure," "hazardous waste management unit," and "partial closure" as indicated in Revision Checklist 24 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3004; 40 CFR 260.10 as amended May 2, 1986 (51 FR 16422).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (7) State statutes and regulations define "above ground tank," "ancillary equipment," "component," "corrosion expert," "existing tank system" or "existing component," "inground tank," "installation inspector," "leak-detection system," "new tank system" or "new tank component," "onground tank," "sump," "tank system," "underground tank," "unfit-for-use tank system" and "zone of engineering control" as indicated in Revision Checklist 28 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3004, 3005; 40 CFR 260.10 as amended July 14, 1986 (51 FR 25422).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (8) State statutes and regulations include the definitions at 40 CFR 260.10 and the references at 260.11(a) as applying to the land disposal restrictions (40

CFR Part 268) as indicated in Revision Checklists 34 and 39 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3004; 40 CFR 260.10 and 260.11(a) as amended November 7, 1986 (51 FR 40572), July 8, 1987 (52 FR 25760), and October 27, 1987 (52 FR 41295).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (9) State statutes and regulations include the definition of "miscellaneous unit" and revise the definition of "landfill" as indicated in Revision Checklist 45 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3004, 3005; 40 CFR 260.10 as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (10) State statutes and regulations define "treatability study" as indicated in Revision Checklist 49 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3001, 3004, 3005; 40 CFR 260.10 as amended July 19, 1988 (53 FR 27290).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (11) State statutes and regulations revise the definitions of "elementary neutralization unit" and "wastewater treatment unit" as indicated in Revision Checklist 52 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§2002(a), 3001, 3004, 3005; 40 CFR 260.10 as amended September 2, 1988 (53 FR 34079).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (12) State statutes and regulations incorporate 47 new testing methods as approved methods for use in meeting the regulatory requirements under Subtitle C of RCRA as indicated in Revision Checklists 67 and 73 and included in Consolidated Checklist C1.

SPA 9

Federal Authority: RCRA §§3001, 3004, 3005, and 3006; 40 CFR 260.11 as amended September 29, 1989 (54 FR 40260) and March 9, 1990 (55 FR 8948).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (13) State statutes and regulations incorporate eight new testing methods to the section of regulations that incorporates these methods by reference as indicated in Revision Checklist 79 and included in Consolidated Checklist C1.

Federal Authority: RCRA §§3001, 3004, 3005, and 3006; 40 CFR 260.11(a) as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

II. IDENTIFICATION AND LISTING

Federal Authority: Statutory Authorization RCRA §3001; 40 CFR 271.9 as amended September 22, 1986 (51 FR 33712).

A. State statutes and regulations contain a list of hazardous wastes and characteristics for identifying hazardous waste which encompass all wastes controlled under 40 CFR Part 261 as indicated in Consolidated Checklist C2 (formerly Checklists I B and I C), which includes the changes made by Revision Checklists 4, 7, 13, 14, 17 J, 18, 20, 21, 22, 23, 26, 29, 33, 34, 37, 41, 46, 53, 56, 57, 67, 68, 69, 72, 73, 74, 75, 76, and 78, the specific provisions of which are detailed further in other subsections of this Attorney General's Statement.

Federal Authority: RCRA §3001(b); 40 CFR 261.10 through 261.33 and applicable appendices as amended February 10, 1984 (49 FR 5308), May 10, 1984 (49 FR 19922), January 4, 1985 (50 FR 614), January 14, 1985 (50 FR 1978), April 11, 1985 (50 FR 14216), July 15, 1985 (50 FR 28702), October 23, 1985 (50 FR 42936), December 31, 1985 (50 FR 53315), February 13, 1986 (51 FR 5327), February 25, 1986 (51 FR 6537), March 24, 1986 (51 FR 10146), May 28, 1986 (51 FR 19320), August 6, 1986 (51 FR 28296), October 24, 1986 (51 FR 37725), November 7, 1986 (51 FR 40572), June 5, 1987 (52 FR 21306), July 10, 1987 (52 FR 26012), April 22, 1988 (53 FR 13382), September 13, 1988 (53 FR 35412), October 31, 1988 (53 FR 43878), and October 31, 1988 (53 FR 43881), September 29, 1989 (54 FR 40260), October 6, 1989 (54 FR 41402), December 11, 1989 (54 FR 50968), February 14, 1990 (55 FR 5340), March 9, 1990 (55 FR 8948), March 29, 1990 (55 FR 11798), May 2, 1990 (55 FR 18496), May 4, 1990 (55 FR 18726), and June 1, 1990 (55 FR 22520), and June 29, 1990 (55 FR 26986).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. State statute and regulations define solid and hazardous waste so as to control all hazardous waste controlled under 40 CFR Part 261, as indicated in Consolidated Checklist C2 (formerly Checklist I A) which includes the changes made by Revision Checklists 8, 9, 13, 17 C, 19, 23, 28, 34 49, 65, 71, and 74.

Federal Authority: RCRA §3001; 40 CFR 261.1 through 261.4 as amended June 5, 1984 (49 FR 23284), November 13, 1984 (49 FR 44978), January 4, 1985 (50 FR 614), April 11, 1985 (50 FR 14216), August 20, 1985 (50 FR 33541), July 15, 1985 (50 FR 28702), November 29, 1985 (50 FR 49164), November 19, 1986 (51 FR 41900), April 13, 1987 (52 FR 11819), March 24, 1986 (51 FR 10146), July 14, 1986 (51 FR 25422), November 7, 1986 (51 FR 40572), and July 19, 1988 (53 FR 27290), September 1, 1989 (54 FR 36592), January 23, 1990 (55 FR 2322), March 29, 1990 (55 FR 11798), and June 29, 1990 (55 FR 26986).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

2

C. [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide: 1) exemption from regulations for hazardous waste as specified at 40 CFR 261.5, 261.6, 261.7, 260.40 and 260.41, 2) variance from classification as a solid waste as specified at 260.30, 260.31 and 260.33, or 3) variance to be classified as a boiler as specified at 260.32 and 260.33 as indicated in Consolidated Checklists C1 and C2 (formerly Checklist I A) which include the changes made by Revision Checklists 13, 14, 17 A, 17 J, 19, 23, 31, 34 47, and 79.

Federal Authority: RCRA §3001; 40 CFR 260.30-260.41 and 261.5 through 261.7 as amended January 4, 1985 (50 FR 614), January 14, 1985 (50 FR 1978), April 11, 1985 (50 FR 14216), August 20, 1985 (50 FR 33541), July 15, 1985 (50 FR 28702), November 29, 1985 (50 FR 49164), March 24, 1986 (51 FR 10146), August 8, 1986 (51 FR 28664), November 7, 1986 (51 FR 40572), November 19, 1986 (51 FR 41900), April 13, 1987 (52 FR 11819), July 19, 1988 (53 FR 27162), and June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. [OPTIONAL: This is a reduced requirement.] State statutes and regulations for delisting hazardous wastes including public notice and opportunity for comment before requests are granted or denied as indicated in Consolidated Checklist C1 which includes

² If a State chooses not to adopt these provisions, its statutes and regulations must make it clear that the wastes covered by 40 CFR 261.5, 261.6 and 261.7 are subject to full regulation under that State's hazardous waste regulations. If a State chooses to adopt these provisions, its requirements must be at least as stringent as the Federal requirements of 261.5, 261.6 and 261.7.

SPA 9

the changes made by Revision Checklists 17 B and 34. The specific provisions of these revision checklists are detailed further in this Attorney General's Statement.

Federal Authority: RCRA §§2002(a), 3001; 260.20 and 260.22 as amended July 15, 1985 (50 FR 28702), November 7, 1986 (51 FR 40572), and June 27, 1989 (54 FR 27114).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

E. Specific provisions amending 40 CFR Part 261 and relevant portions of 40 CFR Part 260 since January 1, 1983, that are included in State statutes and requirements are as follows:

- (1) State statutes and regulations contain lists of hazardous waste which encompass all wastes controlled under the following Federal regulations as indicated in the designated Revision Checklists and included in Consolidated Checklist C2:
 - (a) Chlorinated aliphatic hydrocarbons, 40 CFR 261.31, as amended February 10, 1984 [49 FR 5308], Revision Checklist 4.
 - (b) [OPTIONAL: This is a reduced requirement.] Warfarin and zinc phosphide listing, 40 CFR 261.33(e) and (f), as amended May 10, 1984 [49 FR 19923], Revision Checklist 7.
 - (c) Dioxin wastes are listed and otherwise identified as hazardous wastes so as to encompass all such wastes controlled under 40 CFR 261.5(e), 261.7(b), 261.30(d), 261.31, and 261.33(f), as amended January 14, 1985 [50 FR 1978], Revision Checklist 14.
 - (d) TDI, DNT and TDA wastes, 40 CFR 261.32 and 261.33(f), as amended October 23, 1985 [50 FR 42936], Revision Checklist 18.
 - (e) Spent solvents, 40 CFR 261.31, as amended December 31, 1985 [50 FR 53319] and January 21, 1986 [51 FR 2702], Revision Checklist 20.
 - (f) EDB wastes, 40 CFR 261.32, as amended February 13, 1986 [51 FR 5330], Revision Checklist 21.
 - (g) Four spent solvents, 40 CFR 261.31 and 261.33(f), as amended February 25, 1986 [51 FR 6541], Revision Checklist 22.
 - (h) [OPTIONAL: This is a reduced requirement.] Listing of spent pickle liquor from steel finishing operations, 40 CFR 261.32, as amended May 28, 1986 [51 FR 19320] and September 22, 1986 [51 FR 33612], Revision Checklist 26.

- (i) Listing of commercial chemical products and Appendix VIII constituents, 40 CFR 261.33 and Appendix VIII, as amended August 6, 1986 [51 FR 28296], Revision Checklist 29; as amended July 10, 1987 [52 FR 26012], Revision Checklist 41; and as amended April 22, 1988 [53 FR 13382], Revision Checklist 46.
- (j) EBDC wastes, 40 CFR 261.32, as amended on October 24, 1986 [51 FR 37725], Revision Checklist 33.
- (k) Listing of spent potliners from aluminum reduction (K088) 40 CFR 261.32 and 261 Appendix VII as amended September 13, 1988 [53 FR 35412] as indicated in Revision Checklist 53.
- (l) [OPTIONAL: This is a reduced requirement.] Generic delisting of iron dextran (CAS No. 9004-66-4), 40 CFR 261.33(f) and Appendix VIII, as amended October 31, 1988 [53 FR 43878], Revision Checklist 56.
- (m) [OPTIONAL: This is a reduced requirement.] Generic delisting of strontium sulfide (CAS No. 1314-96-1), 40 CFR 261.33(e) and 261 Appendix VIII, as amended October 31, 1988 [53 FR 43881], Revision Checklist 57.
- (n) Listing of two wastes (K131 and K132) generated during the production of methyl bromide, 40 CFR 261.32 and 261 Appendices III and VII, as amended October 6, 1989 [54 FR 41402], Revision Checklist 68.
- (o) Listing of one generic category (F025) of waste generated during the manufacture of chlorinated aliphatic hydrocarbons by free radical catalyzed processes and amending F024, 40 CFR 261.31 and 261 Appendix VII; adding one toxicant to 261 Appendix VIII; as amended December 11, 1989 [54 FR 50968], Revision Checklist 69.
- (p) [OPTIONAL: This is a reduced requirement.] Amendments to the F019 hazardous waste listing to exclude wastewater treatment sludges from zirconium phosphating in aluminum can washing, when such phosphating is an exclusive conversion coating process, 40 CFR 261.31, as amended February 14, 1990 [55 FR 5340], Revision Checklist 72.
- (q) Listing of four wastes (K107-K110) generated during the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides, 40 CFR 261.31 and 261 Appendices III and VII, as amended May 2, 1990 [55 FR 18496], Revision Checklist 75.
- (r) Listing of one waste (F039), 40 CFR 261.31 and 261 Appendix VII, as amended June 1, 1990 [55 FR 22520], Revision Checklist 78.

SPA 9

Federal Authority: RCRA §3001(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (2) [OPTIONAL: This is a reduced requirement.] State statutes and regulations define hazardous waste so as to exclude waste pickle liquor sludge generated by lime stabilization, but only to the extent that such waste is excluded by 40 CFR 261.3(c)(2) as indicated in Revision Checklist 8 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261.3(c) as amended June 5, 1984 (49 FR 23284).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) [OPTIONAL: This is a reduced requirement.] State statutes and regulations define hazardous waste so as to not exclude household waste other than those household wastes excluded in 40 CFR 261.4(b)(1) and as indicated in Revision Checklists 9 and 17 C and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261.4(b)(1) as amended November 13, 1984 (49 FR 44980) and July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (4) State statutes and regulations define hazardous waste standards so as to control all the hazardous waste controlled under 40 CFR Part 261 as indicated in Revision Checklists 13 and 37 and included in Consolidated Checklists C1.

Federal Authority: RCRA §3001; 40 CFR Part 261 as amended January 4, 1985 (50 FR 614), April 11, 1985 (50 FR 14216), August 20, 1985 (50 FR 33541), and June 5, 1987 (52 FR 21306).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and regulations regulate the wastes of generators generating 100 kg or less per month of hazardous waste and 1 kg or less per month of acutely hazardous waste as specified in 40 CFR 261.5 and as indicated in

Revision Checklists 23 (supercedes prior amendments by Revision Checklist 17 A), 31 (amends Revision Checklist 23) and 47 (provides technical corrections to Checklist 23). These requirements are included in Consolidated Checklist C2.

Federal Authority: RCRA §3001(d); 40 CFR 261.5 as amended March 24, 1986 (51 FR 10146), August 8, 1986 (51 FR 28664), and July 19, 1988 (53 FR 27162).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) [This requirement applies only if States have a delisting mechanism. This requirement is NOT OPTIONAL for such States.] State statutes and regulations provide authority to delist hazardous waste as indicated in Revision Checklist 17 B and included in Consolidated Checklist C1.
 - (a) State statutes and regulations require that before deciding to delist a waste, the State must consider whether any listing factor (including additional constituents) other than those for which the waste was listed would cause the waste to be hazardous.
 - (b) State statutes and regulations require that there be no new temporary delistings without prior notice and comment. All temporary delistings received before November 18, 1984, without the opportunity for public comment and full consideration of such comment, shall lapse if not made final by November 8, 1986.

Federal Authority: RCRA §3001(f)(1) & (2); 40 CFR 260.20(d) and 260.22 as amended July 15, 1985 (50 FR 28702) and June 27, 1989 (54 FR 27114).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (7) State statutes and regulations include as hazardous wastes those materials specified in 40 CFR Part 261.33 if and when they are discarded or intended to be discarded, when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment or when, in lieu of their original intended use, they are otherwise applied to the land, they are contained in products applied to the land, they are produced for use as a (or component of) a fuel, distributed for use as a fuel, or burned as a fuel as indicated in Revision Checklists 17 J and 37 and included in Consolidated Checklist C2.

SPA 9

Federal Authority: RCRA §§3001, 3014(a); 40 CFR 261.33 as amended July 15, 1985 (50 FR 28702) and June 5, 1987 (52 FR 21306).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (8) State statutes and regulations identify waste fuels and used oil fuels as solid wastes so as to encompass all such wastes as controlled under 40 CFR 261.3, 261.5, and 261.6 as indicated in Revision Checklist 19 and included in Consolidated Checklist C2.

Federal Authority: RCRA §§3001, 3014(a); 40 CFR Part 261 as amended November 29, 1985 (50 FR 49164), November 19, 1986 (51 FR 41900), and April 13, 1987 (52 FR 11819).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (9) [OPTIONAL: This is an optional requirement.] State statutes and regulations exclude from regulation secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided they meet the requirements specified at 40 CFR 261.4(a)(8)(i)-(iv) as indicated in Revision Checklist 28 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261.4 as amended July 14, 1986 (51 FR 25422).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (10) State statutes and regulations require that spent industrial ethyl alcohol, which is exported for reclamation, must be either covered by an international agreement specified in 262.58 or the person initiating its shipment and its transporters are subject to the requirements specified in 261.6(a)(3)(i)(A) & (B) as indicated in Revision Checklist 31 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3017; 40 CFR 261.6(a)(3)(i) as amended August 8, 1986 (51 FR 28664).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (11) State statutes and requirements include reference to the land disposal restrictions (as specified at 40 CFR Part 268) so as to appropriately indicate that the hazardous waste, identified and defined as specified in 40 CFR Part 261, is also subject to this restriction as specified in Revision Checklist 34 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3004(d)-(k) & (m); 40 CFR Part 261 as amended November 7, 1986 (51 FR 40572).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (12) [OPTIONAL: This is a reduced requirement.] State statutes and regulations exempt (with certain limitations) waste samples used in small scale treatability studies from Subtitle C regulation as indicated in Revision Checklist 49 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261.4(e) & (f) as amended July 19, 1988 (53 FR 27290).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (13) State statutes and regulations exclude from the mining waste exemption the six wastes at 40 CFR 261.4(b)(7)(i) through 261.4(b)(7)(vi), as indicated in Revision Checklist 53.

Federal Authority: RCRA §3001(b); 40 CFR 261.4(b)(7) as amended September 13, 1988 (53 FR 34512).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (14) State statutes and regulations that:
- (a) provide final criteria to define Bevill-excluded mineral processing wastes, finalize the Bevill status of nine mineral processing waste streams, and list those mineral processing wastes subject to conditional retention as indicated in Revision Checklist 65.

SPA 9

Federal Authority: RCRA §3001(b); 40 CFR 261.3 and 261.4 as amended September 1, 1989 (54 FR 36592).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

- (b) remove five conditionally retained mineral processing wastes from the exemption from hazardous waste regulation under the Bevill exclusion, and amend the definitions of "beneficiation" and "designated facility" as indicated in Revision Checklist 71.

Federal Authority: RCRA §3001(b)(3)(A)(ii); 40 CFR 260.10 and 261.4(b)(7) as amended January 23, 1990 (55 FR 2372).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

- (15) State statutes and regulations replace first edition SW-846 information with third edition information as indicated in Revision Checklists 67 and 73 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261 Appendix III as amended September 29, 1989 (54 FR 40260) and March 9, 1990 (55 FR 8948).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

- (16) State statutes and regulations revise the existing toxicity characteristic by replacing the Extraction Procedure (EP) leach test with the Toxicity Characteristic Leaching Procedure (TCLP) for identifying wastes that are defined as hazardous and subject to regulation under Subtitle C of RCRA as indicated in Revision Checklist 74 and included in Consolidated Checklist C2. State statutes and regulations also provide for the addition of 25 organic chemicals and their regulatory levels to the list of toxic constituents of concern as indicated in Revision Checklist 74 and included in Consolidated Checklist C2.

Federal Authority: RCRA §§1006, 2002(a), 3001, 3002 and 3006; 40 CFR Part 261 as amended March 29, 1990 (55 FR 11798) and June 29, 1990 (55 FR 26986).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

- (17) State statutes and regulations contain language to result in consistent interpretation of the criteria for listing wastes as hazardous under RCRA as indicated in Revision Checklist 76 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001(a); 40 CFR 261.11(a)(3) as amended May 4, 1990 (55 FR 18726).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (18) State statutes and regulations include language making the characteristic of hazardous waste requirements and the requirements regarding container residues and inner liners consistent with the Third Third Land Disposal Restrictions as indicated in Revision Checklist 78 and included in Consolidated Checklist C2.

Federal Authority: RCRA §§3001, 3004(d)-(k) and (m); 40 CFR 261.20, 261.21, 261.22, 261.23, 261.24, and 261.33(c) as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (19) State statutes and regulations include requirements for recyclable materials addressing the organic air emission standards for process vents and equipment leaks as indicated in Revision Checklist 79 and included in Consolidated Checklist C2.

Federal Authority: RCRA §3001; 40 CFR 261.6(c)&(d) as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

III. STANDARDS FOR GENERATORS

Federal Authority: RCRA §3002; 271.10 as amended on April 1, 1983 (48 FR 14146), June 30, 1983 (48 FR 30113), March 20, 1984 (49 FR 10490), March 26, 1984 (49 FR 11180), August 8, 1986 (51 FR 28664), and September 22, 1986 (51 FR 33712).

A. State statutes and regulations provide coverage of all generators covered by 40 CFR Part 262 and include requirements for EPA identification number, reporting and recordkeeping, accumulation of hazardous waste for short time periods, packaging, labeling, marking, placarding, international shipments, manifesting of hazardous waste for off-site shipment, notification procedures for interstate shipments as indicated in Consolidated

SPA 9

Checklist C3 (formerly Checklist II) which includes the revisions represented by Revision Checklists 1, 5, 12, 17 D, 17 R, 23, 28, 31, 32, 34, 39, 42 48, 71, and 78.

Federal Authority: RCRA §3002; 40 CFR Part 262 as amended January 28, 1983 (48 FR 3977), March 20, 1984 (49 FR 10490), December 20, 1984 (49 FR 49568), July 15, 1985 (50 FR 28702), March 24, 1986 (51 FR 10146), July 14, 1986 (51 FR 25422), August 8, 1986 (51 FR 28664), October 1, 1986 (51 FR 35190), November 7, 1986 (51 FR 40572), July 8, 1987 (52 FR 25760), September 23, 1987 (52 FR 35894), July 19, 1988 (53 FR 27164), January 23, 1990 (55 FR 2322), and June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. Specific provisions amending 40 CFR Part 262 since January 1, 1983 that are included in State statutes and requirements are as follows:

- (1) State statutes and regulations require that generators submit a biennial report and that the biennial report contain the information in 40 CFR 262.41(a) as indicated in Revision Checklist 1 and included in Consolidated Checklist C3.

Federal Authority: RCRA §3002; 40 CFR Part 262 as amended January 28, 1983 (48 FR 3977).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (2) State statutes and regulations require generators to use the national uniform manifest as indicated in Revision Checklists 5, 17 D and 32 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§2002, 3002, 3003; 40 CFR Part 262 as amended March 20, 1984 (49 FR 10490), July 15, 1985 (50 FR 28702), and October 1, 1986 (51 FR 35190).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow generators to accumulate at the site of generation, without a permit or interim status, as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste provided that the generator complies with the requirements specified in §262.34(c) as indicated in Revision Checklist 12 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§2002, 3002, 3004, 3005; 40 CFR 262.34(c) as amended December 20, 1984 (49 FR 49568).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (4) State statutes and regulations require generators to submit as part of a Biennial Report a description and certification regarding efforts taken to minimize the amounts and toxicity of wastes as indicated in Revision Checklists 17 D and included in Consolidated Checklist C3.

Federal Authority: RCRA §3002(a)(6), (b); 40 CFR 262.41(a)(6)-(8) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and regulations require generators (including small quantity generators of between 100 and 1000 kg/mo) to certify to a good faith effort to minimize hazardous waste as specified in Revision Checklists 17 D and 32 and included in Consolidated Checklist C3.

Federal Authority: RCRA §3002(a)(6), b; 40 CFR Part 262 Appendix - Uniform Hazardous Waste Manifest Form as amended July 15, 1985 (50 FR 28702) and October 1, 1986 (51 FR 35190).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) State statutes and regulations require generators and transporters of hazardous waste destined for export outside the United States to comply with standards equivalent to those as indicated in Revision Checklists 17 R, 31, and 48 (with the latter providing technical corrections to Checklist 31) and included in Consolidated Checklists C3, C5, C6 and C9.

Federal Authority: RCRA §3017; 40 CFR 262.50, 264.1, 265.1, and 270.1(c)(2)(ii) as amended July 15, 1985 (50 FR 28702), August 8, 1986 (51 FR 28664), and July 19, 1988 (53 FR 27164).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

- (7) State statutes and regulations provide for special generator requirements for hazardous waste produced by small quantity generators of between 100 and 1000 kilograms/month as indicated in Revision Checklist 23 and included in Consolidated Checklist C3.

Federal Authority: RCRA §3001(d); 40 CFR Part 262 as amended March 24, 1986 (51 FR 10146).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (8) State statutes and regulations require that generators who accumulate hazardous waste on site in containers or tanks must comply with certain sections of 40 CFR Part 265 as indicated in Revision Checklist 28 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§1006, 2002, 3001, 3002, 3010; 40 CFR 262.34 as amended on July 14, 1986 (51 FR 25422).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (9) State statutes and regulations require that, if a waste is determined to be hazardous, the generator must refer to the requirements specified in 40 CFR Parts 264, 265 and 268 for possible exclusions or restrictions pertaining to management of his specific waste as indicated in Revision Checklist 34 and included in Consolidated Checklist C3.

Federal Authority: §3004(d)-(k) and (m); 40 CFR 262.11(d) as amended on November 7, 1986 (51 FR 40572).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (10) [OPTIONAL]: This is a reduced requirement.] State statutes and requirements provide that a farmer disposing of waste pesticide from his own use in accordance with the requirements specified at 40 CFR 262.70 is not subject to the land disposal restrictions as indicated in Revision Checklist 39 and included in Consolidated Checklist C3.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 262.70 as amended on July 8, 1987 (52 FR 25760) and July 19, 1988 (53 FR 27164).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (11) State statutes and regulations require that generators, of between 100 and 1000 kg/mo of hazardous waste, file an exception report in those instances where the generator does not receive confirmation of delivery of his hazardous waste to the designated facility as indicated in Revision Checklist 42 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§3001(d) and 3002(a)(5); 40 CFR Parts 262.42 and 262.44 as amended September 23, 1987 (52 FR 35894).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (12) State statutes and regulations require that generators who ship hazardous waste to a designated facility in an authorized state which has not yet obtained authorization to regulate that particular waste as hazardous assure that the designated facility agrees to sign and return the manifest to the generator, and that any out-of-state transporter signs and forwards the manifest to the designated facility, as indicated in Revision Checklist 71 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§2002, 3002 and 3003; 40 CFR 262.23(e) as amended on January 23, 1990 (55 FR 2322).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (13) State statutes and regulations provide for generator requirements as necessitated by the Third Third land disposal restrictions as indicated in Revision Checklist 78 and included in Consolidated Checklist C3.

Federal Authority: RCRA §§3002, 3004(d)-(k) and (m); 40 CFR 262.11(c), and 262.34(a) as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

IV. STANDARDS FOR TRANSPORTERS

Federal Authority: RCRA §3003; 40 CFR 271.11 as amended on April 1, 1983 (48 FR 14146), August 8, 1986 (51 FR 28664), and September 22, 1986 (51 FR 33712).

A. State statutes and regulations provide coverage of all the transporters covered by 40 CFR Part 263 and include requirements for EPA identification number, recordkeeping, manifesting, and actions regarding hazardous waste discharged during transit, as indicated in Consolidated Checklist C4 (formerly Checklist III) which includes the changes made by Revision Checklists 23, 31 and 34.

Federal Authority: RCRA §3003; 40 CFR Part 263 as amended on March 24, 1986 (51 FR 10146), August 8, 1986 (51 FR 28664), and November 7, 1986 (51 FR 40572).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

B. Specific provisions amending 40 CFR Part 263 since January 1, 1983 that are included in State statutes and requirements are as follows:

- (1) State statutes and regulations provide that transporters transporting hazardous waste from a generator who generates greater than 100 kg but less than 1000 kg of hazardous waste in a calendar month need not comply with the manifest and recordkeeping system requirements specified in 40 CFR 263.20 and 263.22 provided the requirements specified in 40 CFR 263.20(h)(1)-(4) are complied with as indicated in Revision Checklist 23 and included in Consolidated Checklist C4.

Federal Authority: RCRA §3001(d); 40 CFR Part 263 as amended March 24, 1986 (51 FR 10146).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

- (2) State statutes and regulations prohibit transporters from accepting wastes from an exporter unless an EPA Acknowledgement of Consent is attached to the manifest (except for transport by rail and water which must comply with the requirements specified at 263.20(e)(2) & (f)(2)). Both documents must accompany the waste enroute. The transporter is required to deliver a copy of the manifest to a U.S. Customs Official at the point where the waste leaves the U.S., and the transporter must refuse a waste for export if he knows the waste does not conform to the Acknowledgement of Consent. These requirements are indicated in Revision Checklist 31 and are included in Consolidated Checklist C4.

Federal Authority: RCRA §3017; 40 CFR 263.20 as amended August 8, 1986 (51 FR 28664).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) State statutes and regulations exempt, from the land disposal requirements, transporters who store hazardous waste shipments at transfer facilities, meeting the requirements specified in 263.12, as indicated in Revision Checklist 34 and included in Consolidated Checklist C4.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 263.12 as amended November 7, 1986 (51 FR 40572).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

V. STANDARDS FOR FACILITIES

Federal Authority: RCRA §§3004, 3004(e); 40 CFR 271.12 and 271.13(a) as amended on April 1, 1983 (48 FR 14146) and September 22, 1986 (51 FR 33712).

A. State statutes and regulations provide standards for hazardous waste management facilities equivalent to 40 CFR Parts 264 and 266 including: 1) technical standards for tanks, containers, waste piles, incineration, chemical, physical and biological treatment facilities, surface impoundments, landfills and land treatment facilities, 2) financial responsibility during facility operation, 3) preparedness for and prevention of discharges or releases of hazardous waste, 4) contingency plans and emergency procedures, 5) closure and post-closure requirements, including financial requirements ensuring that money will be available during these periods for monitoring and maintenance, 6) ground-water monitoring, 7) security to prevent unauthorized access to the facility, 8) facility personnel training, 9) inspections, monitoring, recordkeeping and reporting; 10) manifest requirements, and 11) other requirements to the extent they are included in 40 CFR Parts 264 and 266. These standards for hazardous waste management facilities are as indicated in Consolidated Checklists C5 (formerly Checklist IV A) and C7 which include the changes made by Revision Checklists 1, 13, 14, 16, 17 D, 17 E, 17 F, 17 G, 17 H, 17 I, 17 J, 17 K, 17 L, 19, 24, 27, 28, 30, 34, 37, 39, 40, 43, 44 B, 45, 48, 50, 52, 54, 55, 64, 66, 74, 77, 78, and 79.

Federal Authority: RCRA §3004; 40 CFR Parts 264 and 266 as amended January 28, 1983 (48 FR 3977), January 4, 1985 (50 FR 614), January 14, 1985 (50 FR 1978), April 11, 1985 (50 FR 14216), April 30, 1985 (50 FR 18370), July 15, 1985 (50 FR 28702), August 20, 1985 (50 FR 33541), November 29, 1985 (50 FR 49164), May 2, 1986 (51 FR 16422), July 11, 1986 (51 FR 25350), July 14, 1986 (51 FR 25422), August 15, 1986 (51 FR 29430), August 8, 1986 (51 FR 28556), November 7, 1986 (51 FR 40572), November 19, 1986 (51 FR 41900), April 13, 1987 (52 FR 11819), June 4, 1987 (52 FR 21010), June 5, 1987 (52 FR 21306), July 8, 1987 (52 FR 25760), July 9, 1987 (52 FR 25942),

SPA 9

November 18, 1987 (52 FR 44314), December 1, 1987 (52 FR 45788), December 10, 1987 (52 FR 46946), July 19, 1988 (53 FR 27164), August 17, 1988 (53 FR 31138), September 2, 1988 (53 FR 34079), September 28, 1988 (53 FR 37912), October 11, 1988 (53 FR 39720), August 14, 1989 (54 FR 33376), September 6, 1989 (54 FR 36967), March 29, 1990 (55 FR 11798), May 9, 1990 (55 FR 19262), June 1, 1990 (55 FR 22520), and June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and AdoptionRemarks of the Attorney General

[Where a State provides for interim status for facilities, analysis of the State's authority should be included here. Model language is presented in Section B below.]

B. State statutes and regulations provide for interim status and include interim status standards for hazardous waste management facilities covered by 40 CFR Part 265 as indicated in Consolidated Checklist C6 (formerly Checklist IV B) which includes the changes made by Revision Checklists 1, 3, 10, 13, 14, 15, 16, 17 E, 17 F, 17 H, 19, 24, 25, 27, 28, 30, 34, 36, 39, 43, 44 C, 48, 50, 52, 54, 64, 74, 78, and 79. Specific requirements are as follows:

- (1) State statutes and regulations authorize owners and operators of hazardous waste management facilities which would qualify for interim status under the federal program to remain in operation until a final decision is made on the permit application;
- (2) State law and regulations authorize continued operation of hazardous waste management facilities provided that owners and operators of such facilities comply with standards at least as stringent as EPA's interim status standards at 40 CFR Part 265; and
- (3) State law and regulations assure that any facility qualifying for State interim status continues to qualify for Federal interim status.

Federal Authority: RCRA §3005(e); 40 CFR Part 265 as amended on January 28, 1983 (48 FR 3977), November 22, 1983 (48 FR 52718), November 21, 1984 (49 FR 46094), January 4, 1985 (50 FR 614), January 14, 1985 (50 FR 1978), April 23, 1985 (50 FR 16044), April 30, 1985 (50 FR 18370), July 15, 1985 (50 FR 28702), November 29, 1985 (50 FR 49164), November 19, 1986 (51 FR 41900), May 2, 1986 (51 FR 16422), May 28, 1986 (51 FR 19176), July 11, 1986 (51 FR 25350), July 14, 1986 (51 FR 25422), August 15, 1986 (51 FR 29430), August 8, 1986 (51 FR 28556), November 7, 1986 (51 FR 40572), March 19, 1987 (52 FR 8704), July 8, 1987 (52 FR 25760), November 18, 1987 (52 FR 44314), December 1, 1987 (52 FR 45788), July 19, 1988 (53 FR 27164), August 17, 1988 (53 FR 31138), September 2, 1988 (53 FR 34079), September 28, 1988 (53 FR 37912), August 14, 1989 (54 FR 33376), March 29, 1990 (55 FR 11798), June 1, 1990 (55 FR 22520), and June 21, 1990 (55 FR 25454).

C. Specific provisions amending 40 CFR Parts 264, 265 and 266 since January 1, 1983 which are included in State statutes and requirements are listed below. Also included are specific State statutes and regulations regarding 1) third party direct action

against insurers or guarantor of an owner/operator's financial responsibilities under certain circumstances, 2) criminal penalties for waste fuel and used oil fuel requirement violators, and 3) exceptions to burning and blending of hazardous waste as specified in RCRA §§3004(q)(2)(A) & 3004(r)(2) & (3). These latter provisions are not addressed by a Revision Checklist.

- (1) State statutes and requirements provide for the requirements regarding the biennial report, unmanifested waste report and additional reporting as indicated in Revision Checklist 1 and included in Consolidated Checklists C5 and C6. As also indicated in these same checklists, facilities must also submit groundwater monitoring data annually to the State Director as specified in 40 CFR 265.94.

Federal Authority: RCRA §3004; 40 CFR Parts 264 and 265 as amended January 28, 1983 (48 FR 3977).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (2) State statutes and regulations contain requirements in which interim status standards apply to facilities identified in 40 CFR 265.1(b) and as specified in 265.1(a) as indicated in Revision Checklists 3 and 10 and included in Consolidated Checklist C6.

Federal Authority: RCRA §3004; 40 CFR Part 265 as amended November 22, 1983 (48 FR 52718) and November 21, 1984 (49 FR 46095).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) State statutes and regulations define hazardous waste and impose management standards so as to control all the hazardous waste controlled under 40 CFR Parts 261, 264, 265 and 266 as indicated in Revision Checklists 13 and 37 and included in Consolidated Checklists C5, C6 and C7.

Federal Authority: RCRA §§3001, 3004; 40 CFR Parts 261, 264, 265 and 266 as amended January 4, 1985 (50 FR 614), April 11, 1985 (50 FR 14216), August 20, 1985 (50 FR 33541), and June 5, 1987 (52 FR 21306).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

- (4) State statutes and regulations contain special management standards for facilities managing dioxin wastes and prohibitions applicable to permitted and interim status facilities as provided in 40 CFR Parts 264 and 265 and indicated in Revision Checklist 14. These requirements are also included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §3004; 40 CFR Parts 264 and 265 as amended January 14, 1985 (50 FR 1978).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and regulations require that closure and post-closure requirements and special requirements for containers apply to interim status landfills as indicated in Revision Checklist 15 and included in Consolidated Checklist C6.

Federal Authority: RCRA §3004; 40 CFR 265.310 and 265.315 as amended April 23, 1985 (50 FR 16044).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow a variance to the two-foot freeboard requirement for surface impoundments, allow a variance for placement of ignitable or reactive wastes in surface impoundments and clarify the allowable treatment mechanisms at land treatment units as indicated in Revision Checklist 15 and included in Consolidated Checklist C6.

Federal Authority: RCRA §3004; 40 CFR 265.222, 265.229, and 265.272 as amended April 23, 1985 (50 FR 16044).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (7) State statutes and regulations require the use of a paint filter test to determine the absence or presence of free liquids in either a containerized or bulk waste as indicated in Revision Checklists 16, 17 F and 25 and included in Consolidated Checklists C5, C6 and C9.

Federal Authority: RCRA §§3004, 3005; 40 CFR Parts 264, 265, and 270 as amended April 30, 1985 (50 FR 18370), July 15, 1985 (50 FR 28702), and May 28, 1986 (51 FR 19176).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (8) State statutes and regulations require that the permittee, no less often than annually, certify in the operating record 1) the existence of a program to minimize the amount and toxicity of the generated wastes and 2) that the proposed method of treatment, storage, or disposal minimizes present and future threat to human health and the environment as indicated in Revision Checklist 17 D and included in Consolidated Checklist C5.

Federal Authority: RCRA §§3004, 3005(h); 40 CFR 264.70 and 264.73 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (9) State statutes and regulations prohibit the land disposal of hazardous waste prohibited under 40 CFR Parts 264 and 265 as indicated in Revision Checklist 17 E and included in Consolidated Checklists C5 and C6. Land disposal includes, but is not limited to, placement in landfills, surface impoundments, waste piles, deep injection wells, land treatment facilities, salt dome and bed formations and underground mines or caves. Deep injection well means a well used for the underground injection of hazardous wastes other than a well to which §7010(a) of RCRA applies.

Federal Authority: RCRA §§3004(b)-(q); 40 CFR 264.18, and 265.18 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (10) Effective on November 8, 1984 State statutes and regulations prohibit the placement of any non-containerized or bulk liquid hazardous waste in any salt dome or salt bed formation, any underground mine or cave except as provided in §264.18(c) and §265.18(c) as indicated in Revision Checklist 17 E and included in Consolidated Checklists C5 and C6. Furthermore, State statutes and regulations prohibit the placement of any other hazardous waste in such formations until a permit is issued.

SPA 9

Federal Authority: RCRA §3004(b); 40 CFR 264.18 and 265.18 as amended July 15, 1985 (50 FR 28702); 40 CFR 264.600 et seq., December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (11) State statutes and regulations contain the following requirements regarding liquids in landfills as indicated in Revision Checklists 17 F and 25.
 - (a) Effective May 8, 1985, there is a ban on the placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids in any landfill pursuant to 40 CFR 264.314 and 265.314 as amended July 15, 1985 and May 28, 1986.
 - (b) Effective November 8, 1985, there is a ban on the placement of non-hazardous liquids in landfills unless the owner or operator satisfies the criteria set forth in 40 CFR 264.314(e), 265.314(e), as amended July 15, 1985 and May 28, 1986.
 - (c) Bulk or non-containerized liquid wastes or wastes containing free liquids may be placed in a landfill prior to May 8, 1985, only if the requirements of 40 CFR 264.314(a) and 265.314(a) are met.

Federal Authority: RCRA §3004(c); 40 CFR 264.314, 265.314 and 270.21(h) as amended July 15, 1985 (50 FR 28702) and May 28, 1986 (51 FR 19176).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (12) State statutes and regulations prohibit the use of waste oil or other materials contaminated with hazardous wastes (except ignitable wastes) as a dust suppressant as indicated in Revision Checklist 17 G and as included in Consolidated Checklist C7.

Federal Authority: RCRA §3004(1); 40 CFR 266.23 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (13) State statutes and regulations require that new units, expansions, and replacements of interim status waste piles meet the requirements for a single liner and leachate collection system in regulations applicable to permitted waste piles as indicated in the Revision Checklist 17 H and included in Consolidated Checklist C6.

Federal Authority: RCRA §3015(a); CFR 265.254.

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (14) State statutes and regulations require that:
- (a) New units, expansions, and replacement units at interim status landfills and surface impoundments and permitted landfills and surface impoundments meet the requirements for double liners and leachate collection systems applicable to new permitted landfills and surface impoundments in 40 CFR 264.221 and 264.301 and in 40 CFR 265.221 and 265.301 as indicated in Revision Checklists 17 H and 77 and included in Consolidated Checklists C5 and C6.
 - (b) [OPTIONAL: This is a reduced requirement.] Facilities which comply in good faith need not retrofit at permit issuance unless the liner is leaking as provided in §§264.221, 264.301, 265.221 and 265.301 as indicated in Revision Checklist 17 H and included in Consolidated Checklist C6.
 - (c) [OPTIONAL: This is a reduced requirement.] Variances from the above requirements are optional. However, the availability of such variances is restricted as provided in §§264.221, 264.301, 265.221 and 265.301 as indicated in Revision Checklist 17 H and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §3015(b); 40 CFR 264.221, 264.301, 265.221 and 265.301 as amended July 15, 1985 (50 FR 28702) and May 9, 1990 (55 FR 19262).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (15) State statutes and regulations provide that the §3004 groundwater monitoring requirements applicable to surface impoundments, waste piles, land treatment units and landfills shall apply whether or not such units are located above the seasonal high water table, have two liners and a leachate collection system or have liners that are periodically inspected, as indicated in Revision Checklist 17 I and included in Consolidated Checklist C5.

SPA 9

Federal Authority: RCRA §3004(p); 40 CFR 264.222, 264.252, 264.253, and 264.302 as amended July 15, 1985 (50 FR 28702).³

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (16) [OPTIONAL: This is a reduced requirement.] State statutes and regulations may allow variances from the ground-water monitoring requirements as provided in §3004(p). However, those variances must be restricted as provided in RCRA §3004(p) as indicated in Revision Checklist 17 I and included in Consolidated Checklist C5.

Federal Authority: RCRA §3004(p); 40 CFR 264.90(b) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (17) State statutes and regulations provide the following requirements:
- (a) The burning of fuel containing hazardous waste in a cement kiln is prohibited except as specified in 40 CFR 266.31 and Revision Checklist 17 J and included in Consolidated Checklist C7.

Federal Authority: RCRA §3004(q); 40 CFR 266.31 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (b) Fuels containing hazardous waste and all persons who produce, distribute and market fuel containing hazardous wastes must be regulated as indicated in Revision Checklists 17 J and 17 K and included in Consolidated Checklist C7.

³ Note these sections of code were reserved by Revision Checklist 17 I. The cited sections of 40 CFR Part 264 contained a series of exemptions from Subpart F groundwater protection requirements.

Federal Authority: RCRA §§3004(q)-(s); 40 CFR 266.31, 266.34 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (18) [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide exceptions to the burning and blending of hazardous waste as specified in §§3004(q)(2)(A) and 3004(r)(2) and (3).

Federal Authority: RCRA §§3004(q)(2)(A) and 3004(r)(2) & (3).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (19) State statutes and regulations contain the following corrective action requirements as indicated in Revision Checklist 17 L:
- (a) Corrective action is required for releases of hazardous waste or constituents from any solid waste management unit at a facility seeking a permit, regardless of when the waste was placed in the unit, in all permits issued after November 8, 1984.

Federal Authority: RCRA §3004(u); 40 CFR 264.90 and 264.101 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (b) Corrective action is required beyond a facility's boundary, in accordance with RCRA §3004(v). (States now may impose these requirements through a permit or a corrective action order. Once EPA promulgates the regulations required by RCRA §3004(v), States will need authority to impose corrective action in a permit following the RCRA §3004(v) regulations.)

Federal Authority: RCRA §3004(v)(1).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (c) Corrective action is required beyond a facility's boundary in accordance with RCRA §3004(v) for all landfills, surface

SPA 9

impoundments and waste pile units (including any new units, replacements of existing units or lateral expansions of existing units) which receive hazardous waste after July 26, 1982.

Federal Authority: RCRA §3004(v)(2).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (d) There is evidence of financial responsibility for the completion of corrective action on- and off-site.

Federal Authority: RCRA §§3004(a)(6); (u); 40 CFR 264.90 and 264.101 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (20) State statutes and regulations require landfills, surface impoundments, land treatment units, and waste piles that received waste after July 26, 1982 and which qualify for interim status to comply with the groundwater monitoring, unsaturated zone monitoring, and corrective action requirements applicable to new units at the time of permitting as indicated in Revision Checklist 17 L.

Federal Authority: RCRA §3005(i); 40 CFR 264.90(a) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (21) State statutes and regulations contain special management standards for generators, transporters, marketers and burners of hazardous waste and used oil burned for energy, recovery in boilers, and industrial furnaces, as provided in 40 CFR 264.340, 265.340, 266.30-35 and 266.40-45 as indicated in Revision Checklist 19 and included in Consolidated Checklists C5, C6 and C7.

Federal Authority: RCRA §§3001, 3004, 3014(a); 40 CFR Parts 264, 265 and 266 as amended November 29, 1985 (50 FR 49164), November 19, 1986 (51 FR 41900), and April 13, 1987 (52 FR 11819).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (22) State statutes and regulations provide the authority to obtain criminal penalties for violations of the waste fuel and used oil fuel requirements, as provided in 40 CFR 266.40-45.

Federal Authority: RCRA §§3006(h), 3008(d), 3014; 40 CFR 271.16.

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (23) State statutes and regulations require compliance with closure/post-closure and financial responsibility requirements applicable to owners and operators of hazardous waste treatment, storage and disposal facilities, as indicated in Revision Checklists 24, 36, and 45 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §§3004 and 3005; 40 CFR Parts 264 and 265 as amended May 2, 1986 (51 FR 16422), March 19, 1987 (52 FR 8704), and December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (24) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow qualified companies that treat, store or dispose of hazardous waste to use a corporate guarantee to satisfy liability assurance requirements as indicated in Revision Checklists 27 and 43 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §§2002, 3004, and 3005; 40 CFR 264.147, 264.151, and 265.147 as amended July 11, 1986 (51 FR 25350) and November 18, 1987 (52 FR 44314).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (25) State statutes and regulations require owners/operators of facilities that generate, treat or store hazardous waste in tank systems to comply with tank system standards equivalent to those indicated in Revision Checklists 28 and 52 and included in Consolidated Checklists C5 and C6.

SPA 9

Federal Authority: RCRA §§1006, 2002, 3001-3007, 3010, 3014, 3017-3019 and 7004; 40 CFR Parts 264 and 265 as amended July 14, 1986 (51 FR 25422), August 15, 1986 (51 FR 29430), and September 2, 1988 (53 FR 34079).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (26) State statutes and regulations require facilities who generate waste to provide information in their biennial reports regarding efforts taken to minimize the amount and toxicity of wastes and the results of such efforts as specified in 40 CFR 264.75(h)-(j) and 265.75(h)-(j). These requirements are indicated in Revision Checklist 30 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §3004; 40 CFR 264.75 and 265.75 as amended August 8, 1986 (51 FR 28556).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (27) State statutes and regulations provide hazardous waste facility requirements regarding land disposal restrictions as indicated in Revision Checklists 34, 39, 50, 66, and 78 and included in Consolidated Checklists C5, C6 and C7.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Parts 264, 265 and 266 as amended on November 7, 1986 (51 FR 40572), June 4, 1987 (52 FR 21010), July 8, 1987 (52 FR 25760), August 17, 1988 (53 FR 31138), September 6, 1989 (54 FR 36967), and June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (28) State statutes and regulations provide that with regard to ground-water monitoring, all land based hazardous waste treatment, storage, and disposal facilities analyze for a specified core list (Part 264, Appendix IX) of chemicals plus those chemicals specified by the Regional Administrator on a site-specific basis as indicated in Revision Checklist 40 and included in Consolidated Checklists C5 and C9.

Federal Authority: RCRA §§1006, 2002(a), 3001, 3004, and 3005; 40 CFR Parts 264.98, 264.99 and Appendix IX of Part 264, and 270.14 as amended July 9, 1987 (52 FR 25942).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (29) State statutes and regulations require that owners and operators of hazardous waste treatment, storage and disposal facilities (including permit-by-rule facilities subject to 264.101) institute corrective action beyond the facility boundary to protect human health and the environment, unless the owner/operator is denied access to adjacent lands despite the owner/operator's best efforts, as indicated in Revision Checklist 44 B and included in Consolidated Checklist C5.

Federal Authority: RCRA §3004(v); 40 CFR 264.100(e) and 264.101(c) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (30) State statutes and regulations do not exempt underground injection wells from interim status requirements if the only permit issued for these wells was a permit issued under either the Safe Drinking Water Act or the Underground Injection Control Program, as indicated in Revision Checklist 44 C and included in Consolidated Checklist C9.

Federal Authority: RCRA §3004(u); 40 CFR 265.1(c)(2) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (31) State statutes and regulations require that the following be recorded, as it becomes available, and maintained in the operating record until facility closure, as indicated in Revision Checklist 45: monitoring, testing or analytical data and corrective action where required by Subpart F and §§264.226, 264.253, 264.254, 264.276, 264.278, 264.280, 264.303, 264.309, 264.347, and 264.602. These requirements are also included in Consolidated Checklist C5.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.73(b) as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (32) State statutes and regulations require that miscellaneous units comply with Subpart F regulations regarding releases from solid waste management units when necessary to comply with §264.601 through 264.603 as indicated in Revision Checklist 45 and included in Consolidated Checklist C5.

SPA 9

Federal Authority: RCRA §3004(u); 40 CFR 264.90(d) as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (33) State statutes and regulations require environmental performance standards; monitoring, testing, analytical data, inspection, response and reporting procedures; and post-closure care for miscellaneous units as indicated in Revision Checklist 45 and included in Consolidated Checklist C5.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.600, 264.601, 264.602, and 264.603 as amended December 10, 1987 (52 FR 46946).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (34) [OPTIONAL: This is a reduced requirement.] State statutes and regulations include changes to facility requirements regarding permit modifications relative to the requirements specified in 264.54, 264.112(c), 264.118(a), 265.112(c) and 265.118(d) as indicated in Revision Checklist 54 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §§3004, 3005; 40 CFR 264.54, 264.112(c), 264.118(d), 265.112(c) and 265.118(d) as amended September 28, 1988 (53 FR 37912).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (35) State statutes and regulations specify statistical methods, sampling procedures, and performance standards that can be used in groundwater monitoring procedures to detect groundwater contamination at permitted hazardous waste facilities as indicated in Revision Checklist 55 and included in Consolidated Checklist C5.

Federal Authority: RCRA §§1006, 2002(a), 3004 and 3005; 40 CFR 264.91, 264.92, 264.97, 264.98 and 264.99 as amended October 11, 1988 (53 FR 39720).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (36) State statutes and regulations allow direct action by third parties against the insurer or guarantor of an owner/operator's financial responsibilities if an owner/operator is in bankruptcy reorganization or arrangement or where (with reasonable diligence) jurisdiction in any State or Federal Court cannot be obtained over an owner/operator likely to be solvent at time of judgment.

Federal Authority: RCRA §3004(t).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (37) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow owners and operators of landfills, surface impoundments, or land treatment units, under limited circumstances, to remain open after the final receipt of hazardous wastes in order to receive non-hazardous wastes in that unit as indicated in Revision Checklist 64 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §§1006, 2002(a), 3004, 3005, and 3006; 40 CFR 264.13, 264.112, 264.113, 264.142, 265.13, 265.112, 265.113, and 265.142 as amended August 14, 1989 (54 FR 33376).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (38) State statutes and regulations provide hazardous waste facility requirements regarding the Toxicity Characteristics provisions as indicated in Revision Checklist 74 and included in Consolidated Checklists C5 and C6.

Federal Authority: RCRA §§3004, 3005; 40 CFR 264.301, 265.221, and 265.273 as amended March 29, 1990 (55 FR 11798).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (39) State statutes and regulations require new and existing hazardous waste treatment, storage or disposal facilities to control organic air emissions from process vents and equipment leaks as indicated in Revision Checklist 79 and included in Consolidated Checklists C5 and C6.

SPA 9

Federal Authority: RCRA §§1006, 2002, 3004, 3005, 3010, 3014, and 7004; 40 CFR Parts 264 and 265 as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VI. LAND DISPOSAL RESTRICTIONS

Federal Authority: RCRA §§1006, 2002(a), 3001, 3004

A. State statutes and regulations restrict the land disposal of hazardous wastes as specified in 40 CFR Part 268 and indicated in Consolidated Checklist C8 which includes the provisions of Revision Checklists 34, 39, 50, 62, 63, 66, 74, and 78.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended November 7, 1986 (51 FR 40572), June 4, 1987 (52 FR 21010), July 8, 1987 (52 FR 25760), October 27, 1987 (52 FR 41295), August 17, 1988 (53 FR 31138), February 27, 1989 (54 FR 8264), May 2, 1989 (54 FR 18836), June 23, 1989 (54 FR 26594), September 6, 1989 (54 FR 36967), June 13, 1990 (55 FR 23935), March 29, 1990 (55 FR 11798), and June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. Specific provisions affecting 40 CFR Part 268 which are included in State statutes and regulations are listed below:

- (1) State statutes and regulations provide for the restrictions of the land disposal of certain spent solvents and dioxin-containing hazardous wastes as indicated in Revision Checklists 34, 39 and 50 and included in Consolidated Checklist C8.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended on November 7, 1986 (51 FR 40572), June 4, 1987 (52 FR 21010), July 8, 1987 (52 FR 25760), and August 17, 1988 (53 FR 31138).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (2) State statutes and regulations for restricting the disposal of certain California list wastes, including liquid hazardous waste containing polychlorinated biphenyls (PCBs) above specified concentrations, and hazardous waste containing halogenated organic compounds (HOCs) above specified

concentrations as indicated in Revision Checklists 39, 50, and 66 and included in Consolidated Checklist C8.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended on July 8, 1987 (52 FR 25760), October 27, 1987 (52 FR 41295), and August 17, 1988 (53 FR 31138), and September 6, 1989 (54 FR 36967).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) State statutes and regulations for specific treatment standards and effective dates for certain wastes from the "First Third" of the schedule of restricted wastes listed in 40 CFR 268.10 as well as land disposal restrictions for those First Third wastes for which a treatment standard is not established as indicated in Revision Checklists 50, 62, and 66 and included in Consolidated Checklist C8.

Federal Authority: RCRA §3004 (d)-(k) and (m); 40 CFR Part 268 as amended on August 17, 1988 (53 FR 31138), February 27, 1989 (54 FR 8264) and May 2, 1989 (54 FR 18836), September 6, 1989 (54 FR 36967), and June 13, 1990 (55 FR 23935).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (4) State statutes and regulations for certain treatment standards and prohibition effective dates for certain Second Third wastes and for imposing the "soft hammer" provisions of 40 CFR 268.8 on Second Third wastes for which the Agency is not establishing treatment standards as indicated in Revision Checklist 63 and included in Consolidated Checklist C8.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended June 23, 1989 (54 FR 26594).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and standards for treatment standards and effective dates for certain First Third "soft hammer" wastes⁴ as well as for certain wastes

⁴ "Soft hammer" wastes are those wastes for which EPA did not promulgate treatment standards by their respective effective dates. These wastes could continue to be disposed of in a landfill or surface impoundment until May 8, 1990 if certain demonstrations were made and the technology requirements of RCRA §3004(o) were met. Other types of land disposal (e.g., underground injection) were not

SPA 9

originally contained in the Third Third of the Schedule as indicated in Revision Checklist 63 and included in Consolidated Checklist C8.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 268 as amended June 23, 1989 (54 FR 26594).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) State statutes and regulations provide specific treatment standards and effective dates for the "Third Third" wastes, "soft hammer" First and Second Third wastes⁴, five newly listed wastes, four wastes that fall into the F002 and F005 (spent solvent) waste codes, F025, mixed radioactive/hazardous wastes, characteristic wastes, and multi-source leachate, as well as establish revised treatment standards for petroleum refining hazardous wastes (K048-K052) as indicated in Revision Checklist 78 and Consolidated Checklist C8.

Federal Authority: RCRA §§3001 and 3004 (d)-(k) and (m); 40 CFR 268 as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (7) [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide for alternate treatment standards for lab packs meeting certain criteria as indicated in Revision Checklist 78 and Consolidated Checklist C8.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 264.316(f), 265.316(f), 268.7(a)(7), 268.7(a)(8), 268.42(c), 268.42(c)(1)-(4), and 268 Appendices IV and V, as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VII. REQUIREMENTS FOR PERMITS

Federal Authority: RCRA §§3005, 7004; 40 CFR 271.13 and 271.14 as amended April 1, 1983 (48 FR 14146), June 30, 1983 (48 FR 30113), and September 22, 1986 (51 FR 33712).

similarly restricted. On May 6, 1990, wastes for which EPA had not established treatment standards became prohibited from all types of land disposal. This latter requirement is referred to as the "hard hammer" provision and ended the soft hammer provisions which were in effect prior to May 6, 1990.

A. State statutes and regulations provide permit requirements consistent with the specifications of 271.13 and 271.14 as indicated in Consolidated Checklist C9 (formerly Checklist V) which includes the amendments of Revision Checklists 1, 2, 6, 11, 14, 17 D, 17 F, 17 L, 17 M, 17 N, 17 O, 17 P, 17 Q, 17 S, 23, 24, 28, 34, 35, 38, 39, 40, 44 A, 44 C, 44 D, 44 E, 44 F, 44 G, 45, 48, 52, 54, 59, 60, 61, 64, 70, 78, and 79.

[Where there are no State regulations covering one or more of the procedural requirements designated in Consolidated Checklist C9, and the State has agreed in the MOA to follow equivalent requirements, the Attorney General's Statement must provide a discussion of the State's authority (1) to enter into such an agreement and (2) to carry out the agreement. This discussion should include an explanation of why (under any State administrative procedure act) the particular requirements the State has agreed to follow in the issuance of all hazardous waste permits need not be in the form of rules. Also, States need not use a two-part permit application process. The State application process must, however, require information in sufficient detail to satisfy the requirements of §§270.13 through 270.29.]

Federal Authority: RCRA §§3005, 7004; 40 CFR Parts 124 and 270 as amended January 28, 1983 (48 FR 3977), April 1, 1983 (48 FR 14146), June 30, 1983 (48 FR 30113), September 1, 1983 (48 FR 39611), April 24, 1984 (49 FR 17716), December 4, 1984 (49 FR 47390), January 14, 1985 (50 FR 1978), July 15, 1985 (50 FR 28702), March 24, 1986 (51 FR 10146), May 2, 1986 (51 FR 16422), July 14, 1986 (51 FR 25422), August 15, 1986 (51 FR 29430), November 7, 1986 (51 FR 40572), March 16, 1987 (52 FR 8072), June 22, 1987 (52 FR 23447), September 9, 1987 (52 FR 33936), July 8, 1987 (52 FR 25760), July 9, 1987 (52 FR 25942), December 1, 1987 (52 FR 45788), December 10, 1987 (52 FR 46946), July 19, 1988 (53 FR 27164), July 26, 1988 (53 FR 28118), September 2, 1988 (53 FR 34079), September 26, 1988 (53 FR 37396), September 28, 1988 (53 FR 37912), October 24, 1988 (53 FR 41649), January 4, 1989 (54 FR 246), January 9, 1989 (54 FR 615), January 30, 1989 (54 FR 4286), March 7, 1989 (54 FR 9596), August 14, 1989 (54 FR 33376), June 1, 1990 (55 FR 22520), and June 21, 1990 (55 FR 25454).

B. Specific provisions amending 40 CFR Parts 124 and 270 since January 1, 1983 that are included in State statutes and requirements as indicated below. Also included are requirements for surface impoundments regarding RCRA 3005(j)(6)(A), 3005(j)(2)-(9) and 3005(j)(11). These latter requirements are not covered by a checklist.

- (1) State statutes and regulations requiring 1) the Director to prepare on a biennial basis summary information on the quantities and types of hazardous waste generated, transported, treated, stored and disposed during the preceding odd numbered year, and 2) that the biennial report must be submitted as specified in the permit and must cover facility activities during odd-numbered calendar years. These requirements are indicated in Revision Checklist 1 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3002, 3004; 40 CFR 270.5 and 270.30 as amended January 28, 1983 (48 FR 3977).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

- (2) State statutes and regulations require the permittee to take steps to minimize releases to the environment in accordance with 40 CFR Part 270.30(d) as indicated in Revision Checklist 2 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c); 40 CFR Part 270 as amended September 1, 1983 (48 FR 39611).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (3) [OPTIONAL: This is a reduced requirement.] Facility owners or operators are given the opportunity to cure deficient Part A applications in accordance with 40 CFR 270.70(b) before failing to qualify for interim status as indicated in Revision Checklist 6 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR Part 270 as amended April 24, 1984 (49 FR 17716).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (4) State statutes and regulations incorporating corrections to the EPA manual "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" as indicated by Revision Checklists 11 and 35 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§2002, 3001; 40 CFR 270.6(a) as amended December 4, 1984 (49 FR 47390) and March 16, 1987 (52 FR 8072).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (5) State statutes and regulations require special permitting standards for facilities managing dioxin wastes as indicated in Revision Checklist 14 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3001, 3005; 40 CFR 270.14, 270.16, 270.18, and 270.21 as amended January 14, 1985 (50 FR 1978).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (6) State statutes and regulations 1) address record retention, 2) treat as having interim status those existing facilities that become subject to RCRA due to a statutory or regulatory change, and 3) restrict interim status from any facilities previously denied a hazardous waste permit or that had their authority to operate a facility under RCRA terminated as indicated in Revision Checklist 17 D and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR 270.30(j)(2) and 270.70(a) & (c) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (7) State statutes and regulations require that if bulk or non-containerized waste or wastes containing free liquids is to be landfilled prior to May 8, 1985, an explanation of how the requirements of 264.314(a) will be complied with will be submitted with the Part B information as indicated in Revision Checklist 17 F and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3004, 3005; 40 CFR 270.21(h) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (8) State statutes and regulations require that in regard to permits by rules UIC and NPDES permits issued after November 8, 1984, must comply with the requirements specified in 264.101 as specified in Revision Checklist 17 L and included in Consolidated Checklist C9.

Federal Authority: RCRA §3004; 40 CFR 270.60 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (9) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow a facility (1) to construct an approved TSCA facility for burning PCBs without first obtaining a RCRA permit and (2) to subsequently apply for a RCRA permit in accordance with Revision Checklist 17 M and included in Consolidated Checklist C9.

SPA 9

Federal Authority: RCRA §3005(a); 40 CFR 270.10(f)(3) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (10) State statutes and regulations require review of land disposal permits every five years and modification of such permits as necessary to assure compliance with the requirements in Parts 124, 260 through 266, and 270, as indicated in Revision Checklist 17 N and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.41, 270.50 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (11) State statutes and regulations require permits to contain any conditions necessary to protect human health and the environment in addition to any conditions required by regulations as indicated in Revision Checklist 17 O and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.32(b) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (12) State statutes and regulations require that:
- (a) For land disposal facilities granted interim status prior to 11/8/84, interim status terminates 11/8/85 unless a Part B application and certification of compliance with applicable groundwater monitoring and financial responsibility requirements are submitted by 11/8/85, as indicated in Revision Checklist 17 P and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(e); 40 CFR 270.73(c) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (b) For land disposal facilities in existence on the effective date of statutory or regulatory changes under this Act that render the facility subject to the requirement to have a permit and which is granted interim status, interim status terminates 12 months after the date the facility first becomes subject to such permit requirement unless a Part B application and certification of compliance with applicable groundwater monitoring and financial responsibility requirements are submitted by that date as indicated in Revision Checklist 17 P and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(e); 40 CFR 270.73(d) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (c) Interim status terminates for incinerator facilities by 11/8/89 unless the owner/operator submits a Part B application by 11/8/86 as indicated in Revision Checklist 17 P and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c)(2)(C); 40 CFR 270.73(e) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (d) Interim status terminates for any facility other than a land disposal or an incineration facility by 11/8/92 unless the owner/operator submits a Part B application by 11/8/88 as indicated in Revision Checklist 17 P and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c)(2)(C); 40 CFR 270.73(f) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (13) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow facilities to qualify for interim status if they (1) are in existence on the effective date of statutory or regulatory changes that render the facility subject to the requirement to have a permit and (2) comply with §270.70(a) as indicated in Revision Checklist 17 P and included in Consolidated Checklist C9.

SPA 9

Federal Authority: RCRA §3005(e); 40 CFR 270.70(a) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (14) State statutes and regulations provide that facilities may not qualify for interim status under the State's analogue to Section 3005(e) if they were previously denied a Section 3005(c) permit or if authority to operate the facility has been terminated as indicated in Revision Checklist 17 P and Consolidated Checklist C9. (Also see Subsection VII B6.)

Federal Authority: RCRA §3005(c)(3); 40 CFR 270.70(c) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (15) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow the issuance of a one-year research, development, and demonstration permit (renewable 3 times) for any hazardous waste treatment facility which proposes an innovative and experimental hazardous waste treatment technology or process not yet regulated as indicated in Revision Checklist 17 Q and included in Consolidated Checklist C9. If adopted, however, the State must require the facility to meet RCRA's financial responsibility and public participation requirements and retain authority to terminate experimental activity if necessary to protect health or the environment.

Federal Authority: RCRA §3005(g); 40 CFR 270.65 as amended July 15, 1985 (50 FR 28702)

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (16) State statutes and regulations require:
- (a) Surface impoundments in existence on November 8, 1984 [or subsequently becoming subject to RCRA pursuant to §3005(j)(6)(A) or (B)] to comply with the double liner, leachate collection, and groundwater monitoring requirements applicable to new units by November 8, 1988 [or the date specified in §3005(j)(6)(A) or (B)] or to stop treating, receiving, or storing hazardous waste, unless the surface impoundment qualifies for a special exemption under §3005(j).

Federal Authority: RCRA §3005(j)(6)(A).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (b) Surface impoundments to comply with the double liner, leachate collection and ground-water monitoring requirements if the Agency allows a hazardous waste prohibited from land disposal under §3004(d), (e) or (g) to be placed in such impoundments.

Federal Authority: RCRA §3005(j)(11).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (c) [OPTIONAL: This is a reduced requirement.] State statutes and regulations may allow variances from the above requirements as provided in RCRA §3005(j)(2-9) and (13). However, the availability of such variances must be restricted as provided in RCRA §3005(j).

Federal Authority: RCRA §3005(j)(2-9).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (17) State statutes and regulations require permit applicants for landfills or surface impoundments to submit exposure information as indicated in Revision Checklist 17 S and included in Consolidated Checklist C9.

Federal Authority: RCRA §3019(a); 40 CFR 270.10(j) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (18) State statutes and regulations require that generators, generating greater than 100 kg but less than 1000 kg of hazardous waste in a calendar month, who treat, store or dispose of these wastes on-site must submit their Part A application no later than March 24, 1987, as indicated in Revision Checklist 23 and included in Consolidated Checklist C9.

SPA 9

Federal Authority: RCRA §3001(d); 40 CFR Part 270 as amended March 24, 1986 (51 FR 10146).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (19) State statutes and regulations require the following as indicated in Revision Checklist 24 and included in Consolidated Checklist C9. (Also see Subsection VII B(35) and (36).)
- (a) Documentation in the Part B application that the notice in the deed required under §264.119 has been filed for facilities with hazardous waste disposal units closed prior to the submission of the application.
 - (b) Demonstration of financial assurance must be included with the submission of the Part B application, or at least 60 days prior to the initial receipt of hazardous waste, whichever is later.
 - (c) When there is a change in ownership or control of a facility, the new owner or operator must demonstrate financial assurance within six months of the ownership transfer. The old owner or operator is responsible for financial assurance obligations if the new owner or operator fails to meet his obligations.

Federal Authority: RCRA §3005; 40 CFR 270.14(b)(14), (15) & (16), 270.42(d) and 270.72(a)(4) as amended May 2, 1986 (51 FR 16422).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (20) State statutes and regulations require general and specific Part B information requirements as indicated in Revision Checklist 28 and included in Consolidated Checklist C9. Additionally, as indicated in these checklists, changes, made solely to comply with 265.193 for tanks and containers during interim status, do not constitute reconstruction as specified in 270.72(e). (Also see Subsection VII B (35) and (36)).

Federal Authority: RCRA §3005; 40 CFR 270.14, 270.16 and 270.72 as amended July 14, 1986 (51 FR 25422) and August 15, 1986 (51 FR 29430).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (21) State statutes and regulations make the following requirements: 1) a copy of the notice of approval must be submitted in the Part B application for

disposal facilities subject to a case-by-case extension under 268.5 or a petition has been approved under 268.6, and 2) allow, as a minor permit modification, treatment of hazardous wastes not previously specified in the permit under four specified situations. These requirements are indicated in Revision Checklist 34 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR Part 270 as amended November 7, 1986 (51 FR 40572).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (22) State statutes and regulations provide for additional information and engineering feasibility plan requirements regarding groundwater contamination detected at the time of Part B permit application as indicated in Checklist 38 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3004, 3005; 40 CFR 270.14 as amended June 22, 1987 (52 FR 23447) and September 9, 1987 (52 FR 33936).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (23) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow owners or operators to use the minor modification process for changes made to treat or store restricted wastes in tanks or containers to comply with the 40 CFR Part 268 land disposal restrictions provided the requirements of 270.42(o) and (p) are met as indicated in Revision Checklist 39 and included in Checklist C9.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 270.42(o) & (p) as amended July 8, 1987 (52 FR 25760).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (24) State statutes and regulations provide for changes during interim status to treat or store in containers or tanks hazardous waste subject to land disposal restrictions when specified conditions are met as indicated in Revision Checklist 39 and included in Consolidated Checklist C9.

SPA 9

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 270.72(e) as amended July 8, 1987 (52 FR 25760).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (25) State statutes and regulations require owners and operators of facilities seeking permits to provide descriptive information on the solid waste management units and all available information pertaining to any releases from the units as indicated in Revision Checklist 44 A and included in Consolidated Checklist C9.

Federal Authority: RCRA §3004(u); 40 CFR 270.14 as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (26) State statutes and regulations require UIC facility owners/operators to submit information related to corrective action with their UIC applications as indicated in Revision Checklist 44 C and included in Consolidated Checklist C9.

Federal Authority: RCRA §3004(u); 40 CFR 270.60(b)(3) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (27) State statutes and regulations allow the permit granting agency to initiate modifications to a permit without first receiving a request from the permittee, in cases where statutory changes or new or amended regulatory standards or judicial decisions affect the basis of the permit as indicated in Revision Checklists 44 D and 54 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c); 40 CFR 270.41(a)(3) as amended December 1, 1987 (52 FR 45788) and September 28, 1988 (53 FR 37912).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (28) State statutes and regulations require that permittees must comply with new requirements imposed by the land disposal restrictions promulgated under

Part 268 even when there are contrary permit conditions, as indicated in Revision Checklist 44 E and included in Consolidated Checklist C9.

Federal Authority: RCRA §3006(g); 40 CFR 270.4(a) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (29) State statutes and regulations require information from permit applicants concerning permit conditions necessary to protect human health and the environment as indicated in Revision Checklist 44 F and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(c); 40 CFR 270.10(k) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (30) State statutes and regulations require post-closure permits for all landfills, surface impoundments, waste piles and land treatment units receiving hazardous waste after July 26, 1982, unless closure by removal as provided under 270.1(c)(5) and (6) can be demonstrated as indicated in Revision Checklist 44 G and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005(i); 40 CFR 270.1(c) as amended December 1, 1987 (52 FR 45788).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (31) State statutes and regulations require that all owners and operators of units that treat, store, or dispose of hazardous waste in miscellaneous units must comply with the general application requirements (including Part A permit requirements), the Part B general application requirements of §270.14, and specific Part B information requirements for miscellaneous units as indicated in Revision Checklists 45 and 59 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3004 and 3005; 40 CFR 264.600, 270.14 and 270.23 as amended December 10, 1987 (52 FR 46946) and January 9, 1989 (54 FR 615).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

- (32) State statutes and regulations incorporate the revisions to the definition of "elementary neutralization unit" and "wastewater treatment unit" as indicated in Revision Checklist 52 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR 270.2 as amended September 2, 1988 (53 FR 34079).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (33) [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide owners and operators more flexibility to change specified permit conditions, to expand public notification and participation opportunities, and to allow for expedited approval if no public concern exists for a proposed permit modification. Owner/operator requested permit modifications are categorized into three classes with administrative procedures for approving modifications established in each class. These changes are as indicated in Revision Checklists 54 and 78 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR Parts 124 and 270 as amended September 28, 1988 (53 FR 37912), October 24, 1988 (53 FR 41649), and June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (34) State statutes and regulations require that existing incinerator facilities must either conduct a trial burn or submit other information as specified in 270.19(a) or (c) before a permit can be issued for that facility as indicated in Revision Checklist 60 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR Part 270 as amended January 30, 1989 [54 FR 4286).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (35) [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow greater flexibility to interim status facilities to make changes during interim status following Director approval, as indicated in Revision Checklist 61 and included in Consolidated Checklist C9.



Federal Authority: RCRA §§2002(a), 3004, 3005, 3006; 40 CFR 270.72 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (36) [OPTIONAL: This is a reduced requirement.] State statutes and regulations lift the reconstruction limit for changes to certain interim status units 1) necessary to comply with Federal, State, or local requirements, 2) necessary to allow continued handling of newly listed or identified hazardous waste, 3) made in accordance with an approved closure plan, and 4) made pursuant to a corrective action order as indicated in Revision Checklist 61 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR 270.72 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (37) [OPTIONAL: This is a reduced requirement.] State statutes and regulations provide that a permit can be denied for the active life of a facility while a decision on post-closure permitting is pending as indicated in Revision Checklist 61 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§2002(a), 3004, 3005, and 3006; 40 CFR 124.1, 124.15, 124.19, 270.1, 270.10 and 270.29 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (38) [OPTIONAL: This is a reduced requirement.] State statutes and regulations classify as Class 1 certain permit modifications requested by the owner/operator necessary to enable permitted facilities to comply with the land disposal restrictions as indicated in Revision Checklist 61 and included in Consolidated Checklist C9. Specifically these modifications include 1) adding restricted wastes treated to meet applicable 40 CFR Part 268 treatment standards or adding residues from treating "soft hammer" wastes, 2) adding certain wastewater treatment residues and incinerator ash, 3) adding new wastes for treatment in tanks or containers under certain limited conditions, and 4) adding new treatment processes that are necessary to treat restricted wastes to meet treatment standards as long as the treatment processes are to take place in tanks or containers.

SPA 9

Federal Authority: RCRA §§2002(a), 3004, 3005 and 3006; 40 CFR 270.42 as amended March 7, 1989 (54 FR 9596).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (39) [OPTIONAL: This is a reduced requirement.] State statutes and regulations include in the Permit Modification List as a Class 2 modification the extension of the closure period to allow a landfill, surface impoundment or land treatment unit to receive nonhazardous wastes after final receipt of hazardous wastes as indicated in Revision Checklist 64 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR 270.42, Appendix I as amended August 14, 1989 (54 FR 33376).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (40) State statutes and regulations incorporate updates to 40 CFR Part 124 as indicated in Revision Checklist 70 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§6901 and 6902; 40 CFR 124.3, 124.5, 124.6, 124.10 and 124.12 as amended April 1, 1983 (48 FR 14146), June 30, 1983 (48 FR 30113), July 26, 1988 (53 FR 28118), September 26, 1988 (53 FR 37396), and January 4, 1989 (54 FR 246).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (41) State statutes and regulations include changes to the Permit Modification List necessitated by the Third Third Land Disposal Restrictions as indicated in Revision Checklist 78 and included in Consolidated Checklist C9.

Federal Authority: RCRA §§3004(d)-(k) and (m) and 3005; 40 CFR 270.42, Appendix I as amended June 1, 1990 (55 FR 22520).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

- (42) State statutes and regulations provide for Part B general content requirements and specific Part B information requirements for process vents

and equipment as indicated in Revision Checklist 79 and included in Consolidated Checklist C9.

Federal Authority: RCRA §3005; 40 CFR 270.14(b), 270.24, and 270.25 as amended June 21, 1990 (55 FR 25454).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

VIII. INSPECTIONS

State law provides authority for officers engaged in compliance evaluation activities to enter any conveyance, vehicle, facility or premises subject to regulation or in which records relevant to program operation are kept in order to inspect, monitor, or otherwise investigate compliance with the State program including compliance with permit terms and conditions and other program requirements. (States whose law requires a search warrant prior to entry conform with this requirement.)

Federal Authority: RCRA §3007; 40 CFR 271.15.

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

IX. ENFORCEMENT REMEDIES

State statutes and regulations provide the following:

A. Authority to restrain immediately by order or by suit in State court any person from engaging in any unauthorized activity which is endangering or causing damage to public health or the environment.

Federal Authority: RCRA §3006; 40 CFR 271.16(a)(1).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B. Authority to sue in courts of competent jurisdiction to enjoin any threatened or continuing violation of any program requirement, including permit conditions, without the necessity of a prior revocation of the permit.

Federal Authority: RCRA §3006; 40 CFR 271.16(a)(2).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

SPA 9

C. Authority to assess or sue to recover in court civil penalties in at least the amount of \$10,000 per day for any program violation.

Federal Authority: RCRA §3006; 40 CFR 271.16(a)(3)(i).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

D. Authority to obtain criminal penalties in at least the amount of \$10,000 per day for each violation, and imprisonment for at least six months against any person who knowingly transports any hazardous waste to an unpermitted facility; who treats, stores, or disposes of hazardous waste without a permit; or who makes any false statement or representation in any application, label, manifest, record, report, permit, or other document filed, maintained, or used for the purposes of program compliance.

Federal Authority: RCRA §3006; 40 CFR 271.16(a)(3)(ii).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

X. PUBLIC PARTICIPATION IN THE STATE ENFORCEMENT PROCESS

State laws and regulations provide for public participation in the State enforcement process by providing either:

A. Authority to allow intervention as of right in any civil or administrative action to obtain the remedies specified in Section VII A, B and C above by any citizen having an interest which is or may be adversely affected; or

B. Assurances that the State agency or enforcement authority will:

- (1) Investigate and provide written response to all citizen complaints duly submitted;
- (2) Not oppose intervention by any citizen where permissive intervention may be authorized by statute, rule, or regulations; and
- (3) Publish and provide at least 30 days for public comment on any proposed settlement of a State enforcement action.

Federal Authority: RCRA §7004; 40 CFR 271.16(d).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XI. AUTHORITY TO SHARE INFORMATION WITH EPA

State statutes and regulations provide authority for any information obtained or used in the administration of the State program to be available to EPA upon request without restriction.

Federal Authority: RCRA §3007(b); 40 CFR 271.17.

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XII. AUTHORITY OVER INDIAN LANDS

[Where a State seeks authority over Indian lands, appropriate analysis of the State's authority should be included here.]

Federal Authority: 40 CFR 271.7(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XIII. EXPOSURE ASSESSMENTS

A. State laws and regulations allow the State to make assessment information available to the Agency for Toxic Substances and Disease Registry. (See CERCLA §104(i).)

Federal Authority: RCRA §3019(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XIV. RADIOACTIVE MIXED WASTES

A. State statutes and regulations define solid wastes to include the hazardous components of radioactive mixed wastes, July 3, 1986 [51 FR 24504]. See State Program Advisory (SPA) #2.

Federal Authority: RCRA §§1004(27) and 3001(b).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

XV. AVAILABILITY OF INFORMATION

A. State statutes and regulations provide that:

- (1) All records shall be available to the public unless they are exempt from the disclosure requirements of the Federal FOIA, 5 U.S.C. 552;
- (2) All nonexempt records will be available to the public upon request regardless of whether any justification or need for such records has been shown by the requestor;
- (3) The same types of records would be available to the public from the State as would be available from EPA. [In making this certification, the Attorney General should be aware of the types of documents EPA generally releases under the FOIA, subject to claims of business confidentiality: permit applications; biennial reports from facilities; closure plans; notification of a facility closure; contingency plan incident reports; delisting petitions; financial responsibility instruments; ground-water monitoring data (note that exemptions 5 U.S.C. 552(b)(9) of the FOIA applies to such wells as oil and gas, rather than to ground-water wells); transporter spill reports; international shipment reports; manifest exception, discrepancy and unmanifested waste reports; facility EPA identification numbers; withdrawal requests; enforcement orders; and inspection reports]; and,
- (4) Information is provided to the public in substantially the same manner as EPA as indicated in 40 CFR Part 2 and the Revision Checklist in Appendix N of the State Authorization Manual. OPTIONAL: Where the State agrees to implement selected provisions through the use of a Memorandum of Agreement (MOA) the Attorney General must certify that: "The State has the authority to enter into and carry out the MOA provisions and there are no State statutes (e.g., State Administrative Procedures Acts) which require notice and comment or promulgation of regulations for the MOA procedures to be binding.]
- (5) OPTIONAL: The State statutes and regulations protect Confidential Business Information (CBI) to the same degree as indicated in 40 CFR 2 and the Revision Checklist in Appendix N of the State Authorization Manual. Note that States do not have to protect CBI to satisfy 3006(f). However, if a State does extend protection to CBI, then it cannot restrict the release of information that EPA would require to be disclosed.]

Federal Authority: RCRA §3006(f); 40 CFR §271.17(c).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

B31
6

XVI. MEMORANDUM OF AGREEMENT (MOA)

[If the State uses the MOA to satisfy Federal procedural requirements, the Attorney General must certify the following:

- (1) The State has the authority to enter into the agreement,
- (2) The State has the authority to carry out the agreement, and
- (3) No applicable State statute (including the State Administrative Procedure Act) requires that the procedure be promulgated as a rule in order to be binding.]

Seal of Office

Signature

Name (Type or Print)

Title

Date



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