United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response

EPA

DIRECTIVE NUMBER: **9541.00-17**

TITLE: **State Program Advisory #11**

APPROVAL DATE: **September 23, 1993**

EFFECTIVE DATE: **September 23, 1993**

ORIGINATING OFFICE: **Office of Solid Waste**

[X] FINAL

[ ] DRAFT

STATUS: [ ] A - Pending OMB Approval
[ ] B - Pending AA-OSWER Approval

REFERENCE (Other Documents):

OSWER Directive #9540.00-09A

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EPA

United States Environmental Protection Agency
Washington, DC 20460

OSWER Directive Initiation Request

1. Directive Number: **9541.00-17**

2. Originator Information

Name of Contact Person	Mail Code	Office	Telephone Number
Keely Clifford	**5303W**	**OSW/PSPD/SRPB**	**703-308-8763**

3. Title

State Program Advisory #11

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

This Directive updates the State Authorization Manual (SAM), covering RCRA program changes for the period of January 1 - June 30, 1991. SPA 11 contains nine new revision checklists, Model Attorney General's Statement language for the changes covered in the SPA, a Consolidated Land Disposal Restrictions Checklist, and other revised materalis.

5. Keywords

State Authorization / RCRA / State Program / Guidance

6a. Does This Directive Supersede Previous Directive(s)? [X] No [ ] Yes What directive (number, title)

b. Does It Supplement Previous Directive(s)? [ ] No [X] Yes What directive (number, title)

Supplements OSWER Directive #9540.00-09A

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? [X] Yes [ ] No

This Request Meets OSWER Directives System Format Standards.

9. Signature of Lead Office Directives Coordinator Jennifer A Barker — Date: **9/25/93**

Jennifer A. Barker, OSW Policy Directives Coordinator

10. Name and Title of Approving Official — Date: **9/23/93**

Jeffrey Denit, Acting Director, OSW

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

OSWER DIRECTIVE OSWER DIRECTIVE OSWER DIRECTIVE OSWER DIRECTIVE

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

SEP 23 1993

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: State Program Advisory Number Eleven

FROM: Jeffrey Denit, Acting Director
Office of Solid Waste

TO: Regional Division Directors, Regions I-X

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

With this memorandum, I am transmitting SPA #11, which covers RCRA program changes for the period of January 1, 1991 to June 30, 1991. SPA #11 contains nine new revision checklists, Model Attorney General's Statement language for the changes covered in the SPA, a Consolidated Land Disposal Restrictions Checklist through June 30, 1991, and other revised materials. One of the revision checklists addresses the Boiler and Industrial Furnaces rule that was promulgated February 21, 1991. Another addresses the revisions to the Third Third Land Disposal Restrictions.

If you have any questions about any of these materials, please contact State and Regional Programs Branch Authorization Section Chief, Richard LaShier at 703-308-8766.

Attachments

cc: Dev Barnes, PSPD
Section Chiefs, Regions I-X
Branch Chiefs, Regions I-X
State Program Liasons

Summary for State Program Advisory Eleven

The following points briefly highlight the content of SPA 11. These points are organized by topic.

Checklists

a. New

- This SPA provides nine new Checklists (Numbers 83 through 91) covering RCRA regulatory changes for the period January 1, 1991 through June 30, 1991. These checklists address the following:

  - corrections to the land disposal restrictions,
  - suspension of the toxicity characteristic for certain used chlorofluorocarbon refrigerants,
  - corrections to the boilers and industrial furnace requirements,
  - removal of strontium sulfide from the lists of hazardous wastes,
  - corrections to the organic air emission standards for process vents and equipment leaks,
  - administrative stay for the K069 listing,
  - revision to the petroleum refining primary and secondary oil/water/solids separation sludge listings,
  - the third revision to the mining waste exclusion (Bevill), and
  - corrections to the wood preserving listings.

  All checklists are in RCRA Cluster I. Revision Checklists 83, 84, 87 and 89 contain HSWA provisions only. Revision Checklists 86, 88 and 90 contain non-HSWA provisions, and Revision Checklist 85 and 91 contain both.

- SPA 11 includes a Consolidated Land Disposal Checklist updated through June 30, 1991, including the January 31, 1991 amendments to the Third Third rule.

b. Existing

- No changes were made to existing checklists.

Cluster Information

- SPA 11 delineates timeframes by which States must obtain authorization for RCRA Cluster I. The checklists in SPA 11 close this cluster. The due date is July 1, 1992 (July 1, 1993 if a statutory change is necessary). For further information on the cluster rule, see September 26, 1986 (51 FR 33712), and the OSW memo of November 6, 1992.

SAM

- This SPA provides updated Tables G-1 and G-2, a Model Revision Attorney General's Statement, and a Checklist Linkage Table to insert into the SAM.

STATE PROGRAM ADVISORY #11

A. STATE PROGRAM CHANGES FOR JANUARY 1, 1991 - JUNE 30, 1991

1. Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments

Date: January 31, 1991 Reference: 56 FR 3864-3928[1]

Effective: January 31, 1991

Summary: On June 1, 1990, EPA published regulations promulgating congressionally-mandated prohibitions on land disposal of the Third Third scheduled wastes (55 FR 22520; Revision Checklist 78). The technical amendments addressed by this January 31, 1991 rule do not create any new regulatory requirements; rather, they restate and clarify existing requirements by correcting a number of errors in the June 1, 1990 final rule.

State Authorization: This is a HSWA rule and will be included in RCRA Cluster I. The State modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory change is necessary). All changes go into effect immediately. 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 83, 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 83 and its associated FR notice may be found in Attachment A.

2. Toxicity Characteristic; Chlorofluorocarbon Refrigerants

Date: February 13, 1991 Reference: 56 FR 5910-5915

Effective: February 5, 1991

Summary: This interim final rule suspends the Toxicity Characteristic (TC) rule for chlorofluorocarbon (CFC) refrigerants that are recycled and that were used as the heat transfer fluid in a refrigeration cycle in totally enclosed heat transfer equipment. These chlorofluorocarbons include CFC-11, CFC-113, and the other chlorofluorocarbon refrigerants, including HCFCs. Examples of the equipment in which these CFCs may be used include mobile air conditioning systems (e.g., those used in mass transit vehicles), mobile refrigeration (refrigerated trucks and rail cars), and commercial and industrial air conditioning and refrigeration systems. After promulgation of the TC rule (55 FR 11798; March 29, 1990; Revision Checklist 74), the Agency received information that the rule could

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[1] Note the volume number on this Federal Register incorrectly reads "Vol. 55." It should read "Vol. 56."

cause certain used CFCs to be subject to hazardous waste regulations because they exhibit the TC. The concern is that subjecting used CFC refrigerants to Subtitle C regulations will promote continued or increased venting, increasing the levels of ozone-depleting substances in the stratosphere. To allow time for gathering additional information and for giving all relevant facts careful consideration, the Agency is suspending the TC rule for used refrigerants which exhibit the toxicity characteristic and which are recycled. The exemption only applies if the refrigerants are reclaimed for reuse.

State Authorization: This is a HSWA rule and will be included in RCRA Cluster I. The standards promulgated in this rule are narrower in scope than would be imposed in the final Toxicity Characteristics rule. Therefore, States are not required to mandate the management of specified CFCs in order to retain their RCRA authorization. States may, however, impose requirements that are broader in scope or more stringent than those imposed under Federal regulations. As such, the checklist developed for this rule has been designated as optional. If a State chooses to adopt these provisions, it must include in its application a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 84 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 84 and its associated FR notice may be found in Attachment A.

3. Burning of Hazardous Waste in Boilers and Industrial Furnaces

Date: February 21, 1991 Reference: 56 FR 7134-7240

Effective: August 21, 1991 (except technical corrections to §270.73 are effective February 21, 1991)

Summary: This rule expands controls on hazardous waste combustion to regulate air emissions from the burning of hazardous waste in boilers and industrial furnaces. Emissions of toxic organic compounds, toxic metals, hydrogen chloride, chlorine gas and particulate matter are controlled under the rule. In addition, owners and operators of boilers and industrial furnaces are subject to the general facility standards applicable to hazardous waste treatment, storage and disposal facilities. Further, hazardous waste storage units at regulated burner facilities are subjected to Part 264 permit standards. The rule also takes final action on two pending petitions for rulemaking: 1) halogen acid furnaces are designated as industrial furnaces, and 2) coke and coal tar fuels produced by recycling coal tar decanter sludge, EPA Hazardous Waste No. K087, are classified as products rather than solid waste. Technical corrections to regulations dealing with loss of interim status for facilities that achieved interim status as of November 7, 1984 are also made. (Note: A July 17, 1991 (56 FR 32688; Revision Checklist 94) notice made numerous technical corrections to the February 21, 1991 rule. These technical corrections are addressed by SPA 12.)

State Authorization: The majority of this rule is promulgated pursuant to HSWA. Non-HSWA provisions include those for sludge dryers, carbon regeneration units, infrared incinerators, and plasma arc incinerators. However, this rule does not make distinction between the different types of incinerators; as such, this rule's provisions are non-HSWA as

they apply to the previously listed non-HSWA burning devices. As applied to all other regulated burning devices, the regulations are considered promulgated under HSWA. EPA will implement the HSWA provisions in authorized States until States modify their programs and such modifications are approved by EPA. The non-HSWA provisions are applicable in only those States which are unauthorized. In authorized States, the non-HSWA requirements will not be applicable until the States revise their programs to adopt equivalent requirements under State law.

Both the HSWA and non-HSWA provisions will be included in RCRA Cluster I. States may apply for either interim or final authorization for the HSWA provisions; only final authorization is available for the non-HSWA provisions. Interim authorizations expire January 1, 2003. The State modification deadline is July 1, 1992 (or July 1, 1993 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 85, 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 85 and its associated FR notice may be found in Attachment A.

4. Removal of Strontium Sulfide From the List of Hazardous Waste; Technical Amendment

Date: February 25, 1991 Reference: 56 FR 7567-7568

Effective: October 31, 1988

Summary: This technical amendment corrects the October 31, 1988 rule (53 FR 43881; Revision Checklist 57) in which EPA took regulatory action to remove strontium sulfide from the list of hazardous waste. Because of an error in the amendatory language in that 1988 rule, the chemical was not removed from 40 CFR 261.33 or Part 261, Appendix VIII in the most recent editions of the Code of Federal Regulations (CFR). This technical amendment corrects that error by removing strontium sulfide from the two lists.

State Authorization: This is a non-HSWA rule and will be included in RCRA Cluster I. The standards promulgated in this technical amendment reduce the scope of existing Federal regulations. Therefore, States are not required to modify their program to adopt these provisions unless a State has chosen to remove strontium sulfide from its lists of hazardous wastes (i.e., adopted the Revision Checklist 56 provisions). In this latter case, a State would need to adopt the Revision Checklist 86 provisions to assure that strontium sulfide has been properly removed from its lists. As such, Revision Checklist 86 is considered a conditionally optional checklist. The modification deadline for those States who choose to adopt these provisions is July 1, 1992. 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 86, 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 86 and its associated FR notice may be found in Attachment A.

5. Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment

Date: April 26, 1991 Reference: 56 FR 19290

Effective: December 21, 1990

Summary: This technical amendment corrects the June 21, 1990 rule (55 FR 25454; Revision Checklist 79), which promulgated final standards limiting organic air emissions as a class at hazardous waste treatment, storage, and disposal facilities that are subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA). This technical amendment corrects typographical errors and does not alter the requirements of the standards.

State Authorization: This is a HSWA rule and will be included in RCRA Cluster I. The State modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory amendment is necessary). The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate)(, Revision Checklist 87, 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 87 and its associated FR notice may be found in Attachment A.

6. Administrative Stay for K069 Listing

Date: May 1, 1991 Reference: 56 FR 19951

Effective: May 1, 1991

Summary: This notice administratively stays a portion of the K069 listing so that this listing does not apply to slurries generated from air pollution control devises that are intended to capture acid gases and are not dedicated chiefly to controlling particulate air emissions. The original listing of K069 was intended to apply to the lead-rich particulates captured by secondary smelting air pollution control devices utilized for controlling particulate matter. However, the literal language of the listing encompassed not only this residue, but sludges captured by other types of air emission control equipment. This latter group of sludges are unlike those EPA intended to list in terms of physical form, volume and toxicity. In the near future, EPA intends to amend the language of the K069 listing to clarify the scope of listing to exclude sludges generated by air pollution devices that are not a plant's chief means of controlling lead emissions. In the interim, however, the Agency has granted a limited administrative stay of the K069 listing pursuant to 5 U.S.C. 705 so that the listing does not apply to the slurry generated by the Exide (a company examined closely by the Agency as part of this administrative stay) acid gas scrubber or to any other similar waste.

The administrative stay will remain in effect until 30 days after completion of rulemaking dealing with the scope of the K069 listing.

State Authorization: This is a non-HSWA rule and will be included in RCRA Cluster I. As this administrative stay narrows the scope of existing regulations, States are not required to adopt this change. As such, this checklist has been designated as optional. for those States choosing to adopt this stay, the modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory change is required). The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 88, 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 88 and its associated FR notice may be found in Attachment A.

7. Revision to F037 and F038 Listings

Date: May 13, 1991 Reference: 56 FR 21955-21960

Effective: May 2, 1991

Summary: This interim final rule revises the definition of listed wastes that were made in regulations promulgated in a November 2, 1990 (55 FR 46354; Revision Checklist 81) final rule. These wastes, designated as F037 and F038, are generated in the separation of oil/water/solids from petroleum refinery process wastewaters and oily cooling wastewaters. The Agency is revising the definition of wastes subject to the F037 and F038 listings to state that sludges from non-contact, once-through cooling waters are not included. Also, the Agency is amending the definition of petroleum refinery secondary oil/water/solids separation sludge, F038, to clarify that floats generated in aggressive biological treatment units are not included in the listing description of that waste stream.

State Authorization: This is a HSWA rule and will be included in RCRA Cluster I. This interim final rule revises and narrows the scope of the existing listing for primary and secondary oil/water/solids separation sludge. Under RCRA 3009 States remain free to impose more stringent requirements than those imposed under Federal regulations, i.e. States may choose to regulate wastes from non-contact, once-through cooling wastes or aggressive biological treatment units or may require other more stringent conditions upon management of these wastes. As such, Revision Checklist 89 is designated as optional. For States choosing to adopt the Revision Checklist 89 provisions, the modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory change is necessary). The State revision application must include a revised program description, an AG Statement addendum, and addendum to the MOA (if appropriate), Revision checklist 89, 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 the SPA. A copy of Revision Checklist 89 and its associated FR notice may be found in Attachment A.

8. Mining Exclusions III

Date: June 13, 1991 Reference: 56 FR 27300

Effective: July 15, 1991

Summary: This final rule provides the Agency's final regulatory determination for 20 special wastes from the processing of ores and minerals, as required by RCRA §3001(b)(3)(C). The Agency has concluded that regulation of these wastes under RCRA, Subtitle C is inappropriate and will instead regulate 18 under Subtitle D and two (phosphogypsum and process waste from phosphoric acid production) under TSCA. EPA also plans to use existing RCRA §7003 or CERCLA §106 authorities to address any site specific ground water contamination problems that may pose imminent endangerment to human health or the environment. A ban on utilizing elemental phosphorous production slag in construction and/or land reclamation has been postponed.

The overall purpose of this notice is to present the rationale and salient facts EPA used in making the above outlined decisions.

State Authorization: This is a non-HSWA rule and will be included in RCRA Cluster I. Only final authorization is available. The modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory change is necessary). The State Revision application must include a program description, an AG Statement addendum, and addendum to the MOA (if appropriate), Revision Checklist 90, 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 90 and its associated FR notice may be found in Attachment A.

9. Administrative Stay for F032, F034 and F035 Listings

Date: June 13, 1991 Reference: 56 FR 27332-27336

Effective: June 5, 1991

Summary: This notice administratively stays the listing of F032, F034 and F035 in process areas at wood preserving plants. The primary effect of this stay is to conditionally extend the effective date for the drip pad management standards to February 6, 1992 for upgrading existing drip pads and to May 6, 1992 for installing new drip pads. Also administratively stayed are: 1) certain management standards for drip pads; 2) the inclusion of past users of chlorophenolic formulation in the listing description for certain F032 wastes; and 3) the scope of wastewaters that do not come into contact with preservative.

States cannot extend the stays of the F032 listing beyond the dates given in this rule, since these are HSWA compliance dates. Any State extensions beyond these dates are invalid. For F034 and F035 listings, States may adopt reasonable stays based on dates of State adoption.

State Authorization: EPA considers that both the F032 listing and the new Subpart W drip pad standards (when applied to the management of F032 wastes) are based on HSWA authority. This administrative stay defers EPA's implementation and enforcement of the HSWA-based requirements. On the other hand, the listings of F034 and F035, and the Subpart W drip pad standards that govern the management of these wastes, are considered to be based on pre-HSWA authority. For unauthorized States, the effect of this stay will also be to defer the EPA's implementation and enforcement of the F034 and F035 provisions. In authorized States, however, the non-HSWA requirements will not be applicable until the State modifies its program and obtains approval for the revisions from EPA.

Because this administrative stay makes existing regulations less stringent, States are not required to adopt these changes and, as such, Revision Checklist 91 is considered optional. However, the Agency strongly encourages States to adopt the deferred effective dates. For States choosing to do so, the modification deadline is July 1, 1992 (or July 1, 1993 if a State statutory change is necessary). The State revision application must include a revised program description, an AG Statement addendum, an addendum to the MOA (if appropriate), Revision Checklist 91, 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 91 and its associated FR notice may be found in Attachment A.

B. REVISIONS TO SAM

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

- The revised Tables G-1 and G-2 (pp.4-29) should replace pages 4 through 27 of SAM, Appendix G.

- The Revised Attorney General's Statement (pp. 9-53) should replace pages 9 through 50 of SAM, Appendix E. New entries were added at I A(20), (21)&(22); I R, S & T; II B; XV N; XVI X; and XX C. The following entries were revised I A(12)&(17); I J(2); XV L; and XXI F & G.

- The Revised Checklist Linkage Table (pp. 3-7) should replace pages 3 through 6 of SAM, Appendix H.

The technical amendments made to the Third Thirds Rule at 56 FR 3864 (January 31, 1991; Revision Checklist 83) necessitated the updating of the Consolidated Land Disposal Restrictions (LDR) checklist. This revised Checklist is also included in Attachment B and includes changes to the LDR regulations through June 30, 1991.

ATTACHMENT A

New Revision Checklists and Corresponding Federal Register Articles

SPA 11

RCRA REVISION CHECKLIST 83

Land Disposal Restrictions for Third Third
Scheduled Wastes; Technical Amendments
56 FR 3864-3928'
January 31, 1991
RCRA Cluster I

Note: On June 1, 1990, EPA published regulations promulgating prohibitions on land disposal of the Third Third scheduled hazardous wastes (see Revision Checklist 78; 55 FR 22520). The final rule addressed by this present checklist corrects errors and clarifies the language in the preamble and regulations of the June 1, 1990 final rule. States adopting the Revision Checklist 78 provisions are strongly encouraged to adopt these technical amendments simultaneously, particularly due to the many revisions to 268.41, 268.42, 268.43 and the Part 268 appendices.

	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					
	add parenthetical phrase regarding characteristic wastes, no longer exhibiting a characteristic, that still may be subject to 268 requirements	261.3(d)(1)				
	SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE					
	GENERAL					
	insert "used" after "This number must be"	261.20(b)				
	SUBPART D - LISTS OF HAZARDOUS WASTES					
	HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES					
2	revise description of F039	261.31(a)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (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					
replace "subpart D of this part" with "subpart D of 40 CFR Part 261"	262.11(c)				
SUBPART C - PRE-TRANSPORT REQUIREMENTS					
ACCUMULATION TIME					
replace "and" between "section" and "the requirements" with ";"; add "the requirements of 40 CFR 268.7(a)(4)"	262.34(d)(4)				
PART 268 - LAND DISPOSAL RESTRICTIONS					
SUBPART A - GENERAL					
DEFINITIONS APPLICABLE IN THIS PART					
replace "paragraph (g)(6)" with "paragraph (f)"	268.2(d)				
insert "wastewaters are" after "F005" at beginning of paragraph	268.2(f)(1)				
remove "(as generated) that" after "wastewaters"; add ", as generated." at end of paragraph	268.2(f)(2)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

	FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
	replace "Inorganic Solid Debris are" with "Inorganic Solid Debris means"; insert "contaminated with D004-D011 hazardous wastes" after "solids"; insert "; and" after "sieve"; remove the comma and insert "; and, are" after stabilization	268.2(g)				
3	replace periods at the end of each sub-paragraph with semicolons	268.2(g)(1)-(7)				
	WASTE ANALYSIS AND RECORDKEEPING					
	replace "or section 268.43 of the part" with "of this part, if a generator's waste is listed in 40 CFR Part 261, Subpart D"; delete "developed"; replace "Appendix I of this part" with "Part 261, Appendix II"; add sentence regarding 268 Appendix IX testing or knowledge of waste to determine if waste exhibiting one or more characteristics is restricted from land disposal	268.7(a)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
replace "may" with "must either be included, or"; revise the information that must be included on the notification to include the applicable wastewater or non-wastewater category and waste code sub-division; change "treatment standards appear" to "applicable treatment standard appears"	268.7(a)(1)(ii)				
replace "may" with "must either be included, or"; revise the information that must be included on the notification to include the applicable wastewater or non-wastewater category and waste code sub-division; change "treatment standards appear" to "applicable treatment standard appears"	268.7(a)(2)(i)(B)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
replace "may" with "must either be included, or"; revise the information that must be included on the notification to include the applicable wastewater or non-wastewater category and waste code sub-division; change "treatment standards appear" to "applicable treatment standard appears"	268.7(a)(3)(ii)				
redesignate 268.7(a)(6) as (a)(7); add new paragraph (a)(6) re-garding conditions under which a generator, managing a restricted waste ex-cluded from the definition of hazardous or solid waste, must place a one-time notice containing specified information in the facility's file	268.7(a)(6)				
redesignate old 268.7(a)(6) as 268.7(a)(7); add a sentence stating that the paragraph applies even when charac-teristic is removed prior to disposal or waste is excluded or exempted	268.7(a)(7)				
redesignate old 268.7(a)(7) as 268.8(a)(8)	268.7(a)(8)				

SPA

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
redesignate old 268.7(a)(8) as 268.7(a)(9)	268.7(a)(9)				
redesignate old 268.7(a)(9) as 268.7(a)(10)	268.7(a)(10)				
replace "may" with "must either be included, or"; revise the information that must be included on the notification to include the applicable wastewater or non-wastewater category and waste code sub-division; change "treatment standards appear" to "applicable treatment standard appears"	268.7(b)(4)(ii)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC					
replace "each waste code" with "each EPA Hazardous Waste Number (waste code)"; replace "carry a waste code designation" with "carry the waste code"; replace ", and also" with ". In addition, the waste will carry"; replace "waste code designations" with "of the waste codes"; replace "the relevant characteristic." with "a characteristic,"; add exception clause regarding the case when the treatment standard for the waste code in 261, Subpart D is used in lieu of that for 261, Subpart C	268.9(a)				
delete from the notification requirements the "treatability group(s)" and add requirements for the applicable wastewater or non-wastewater category and waste code sub-divisions	268.9(d)(1)(ii)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (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 - FIRST THIRD WASTES					
remove Hazardous Waste Nos. K048, K049, K050, K051, K052, and K061 (containing 15% zinc or greater); retain only K071 and revise grammar of paragraph to reflect a single waste	268.33(b)				
WASTE SPECIFIC PROHIBITIONS - THIRD THIRD WASTES					
add in alphanumeric order: "F002 (1,1,2-trichloroethane), F005 (benzene), F005 (2-ethoxy ethanol), F005 (2-nitro-propane)"; "F025"; "K015 (nonwaste-waters)"; ", reactive nonwastewaters)" after "K046 (wastewaters"; "and (high zinc sub-category > 15% zinc)" after "K061 (waste-waters)"; ", calcium sulfate nonwaste-waters)" after "K069 (wastewaters"; and "P026"; delete: "(wastewaters)" after "K083"; "(waste-waters)" after "P018"; "P109"; and "(waste-waters)" after "U120"	268.35(a)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
delete "(nonwaste-waters)" after "P087"; delete "and" after "U151 (nonwastewaters)"; change "inorganic solids debris" to "inorganic solid debris"; change "268.2(a)(7)" to "268.2(g)"	268.35(c)				
add "268.10, 268.11, and" before "268.12"; add language pertaining to soil or debris contaminated with mixed radioactive/ hazardous wastes	268.35(d)				
delete "or" before "vitrification"; insert "acid leaching followed by chemical precipitation, or thermal recovery of metals," after "vitrification"	268.35(e)				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (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					
	"Appendix I of this part" is replaced by "Appendix II of Part 261" in the first sentence; "These wastes" replaces the repetition of the waste code numbers; "Appendix I of this part or the test method in appendix II of part 261" is replaced by "40 CFR Part 261, Appendix II, or the test method in Appendix IX of this part" in the second sentence; "value shown in Table CCW" is replaced with "concentrations shown in Table CCWE"	268.40(a)				
	TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT					
1	Table CCWE is revised to read as shown at 56 FR 3880-3884, January 31, 1991; also see explanation of revisions at 56 FR 3868-3869	268.41(a)/ Table CCWE				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

	FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
	TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES					
	add "," after "264, subpart O"; change "part 268, subpart C" to "part 268, subpart D,"; insert "a" before "specific HOC."	268.42(a)(2)				
	add new paragraph (a)(3); mixture of wastewater (discharge of which is subject to Clean Water Act) and de minimis losses of materials that meet the criteria of D001 ignitable liquids with greater than 10% TOC is subject to Table 1 DEACT treatment standard; de minimis defined	268.42(a)(3)				
1	revise Table 1 as shown at 56 FR 3884-3885; also see explanation of changes at 56 FR 3869	268.42(a)/Table 1				
1	revise Table 2 as shown at 56 FR 3885-3891; also see explanation of changes at 56 FR 3869	268.42(a)/Table 2				
1	revise Table 3 as shown at 56 FR 3891-3892; also see explanation of changes at 56 FR 3869	268.42(a)/Table 3				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (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					
1	revise Table CCW as shown at 56 FR 3892-3911; also see explanation of changes at 56 FR 3869-3870	268.43(a)/Table CCW				
	insert "by a footnote in Table CCW" before "in this section"	268.43(c)				
	insert "standards" after "treatment"; insert comma after "Part 264, subpart O"; delete "40 CFR" before "part 265"	268.43(c)(1)				
	revise paragraph to refer to the treatment or disposal facility	268.43(c)(2)				
	revise last sentence so that "detection limits" for the "regulated" organic constituents are achieved	268.43(c)(3)				
	APPENDIX IV TO PART 268					
	ORGANOMETALLIC LAB PACKS					
1	revise Appendix IV as shown at 56 FR 3912; also see explanation of changes at 56 FR 3870	Appendix IV				

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
APPENDIX V TO PART 268					
ORGANIC LAB PACKS					
1 revise Appendix V as shown at 56 FR 3912; also see explanation of changes at 56 FR 3870	Appendix V				
APPENDIX VII TO PART 268					
TABLE 1. - EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRs - COMPREHENSIVE					
1 revise Appendix VII to reflect two tables rather than one table; Table 1 is shown at 56 FR 3912-3919; also see explanation of changes at 56 FR 3870	Appendix VII/Table 1				
TABLE 2. - SUMMARY OF EFFECTIVE DATES OF LAND DISPOSAL RESTRICTIONS FOR CONTAMINATED SOIL AND DEBRIS (CSD)					
1 revise Appendix VII to reflect two tables rather than one table; Table 2 is shown at 56 FR 3919-3920; also see explanation of changes at 56 FR 3870	Appendix VII/Table 2				

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (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					
1 revise Appendix VIII as shown at 56 FR 3920; also see explanation of changes at 56 FR 3870	Appendix VIII				
APPENDIX IX TO PART 268					
EXTRACTION PROCEDURE (EP) TOXICITY TEST METHOD AND STRUCTURAL INTEGRITY TEST (SW-846, METHOD 1310A)					
1 add new appendix which describes an interim method to determine whether a waste exhibits the characteristic of EP Toxicity as shown at 56 FR 3920-3927; also see discussion at 56 FR 3870-3871	Appendix IX				
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM					
SUBPART D - CHANGES TO PERMIT					
PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE					
add a footnote symbol to the Class 1 designation at B.1.b.	270.42/Appendix I				

[1] Note that the volume number on this Federal Register notice is incorrect. It should be 56 rather than 55; 55 was the volume corresponding to 1990.

SPA 11

RCRA REVISION CHECKLIST 83: Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments (cont'd)

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

2 The Federal Register (56 FR 3877) contains a typographical error in the revised description of F039. The reference to "F023" in the parenthetical phrase was inadvertently left out. States should not remove "F023" when revising their F039 description.

3 The Federal Register (56 FR 3877) incorrectly changes the period at the end of 268.2(g)(8) to a semicolon. States are advised to retain the period because 268.2(g)(8) is the last subparagraph in a series of eight pertaining to various inorganic or metal materials.

federal register

Thursday
January 31, 1991

Part II

Environmental Protection Agency

40 CFR Parts 148, et al.
Land Disposal Restrictions for Third
Third Scheduled Wastes; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 148, 261, 268, and 270

[FRL-3866-4]

Land Disposal Restrictions for Third Third Scheduled Wastes

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; technical amendment.

SUMMARY: On June 1, 1990, EPA published regulations promulgating congressionally-mandated prohibitions on land disposal of certain hazardous wastes. This notice corrects errors and clarifies the language in the preamble and regulations of the June 1, 1990 final rule.

EFFECTIVE DATE: This rule is effective on January 31, 1991.

ADDRESSES: The RCRA docket is open from 9:30 to 3:30, Monday through Friday, excluding Federal holidays, and is located at the following address: EPA RCRA Docket (OS-305), Room M-2427, 401 M Street, SW., Washington, DC 20460. The public must make an appointment to review docket materials by calling (202) 475-9327. Refer to Docket number F-90-L13A-FFFFF when making appointments to review any background documentation for this rulemaking. The public may copy a maximum of 100 pages of material from any one regulatory docket at no cost; additional copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline at (800) 424-9346 (toll-free) or (202) 382-3000 in the Washington, DC metropolitan area. For technical information contact Rhonda Craig, Office of Solid Waste (OS-320W), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (703) 308-8462.

SUPPLEMENTARY INFORMATION:

Outline

I. Reasons and Basis for Today's Amendment
II. Summary of Amendments to the Third Third Final Rule
A. Section 148.10
B. Section 148.16
C. Section 261.3
D. Section 261.20
E. Section 261.31
F. Section 262.10
G. Section 262.11
H. Section 262.34
I. Section 268.2
J. Section 268.7
K. Section 268.9
L. Section 268.10
M. Section 268.12
N. Section 268.33
O. Section 268.35
P. Section 268.40
Q. Section 268.41
R. Section 268.42
S. Section 268.43
T. Part 268, Appendices IV and V
U. Part 268, Appendices VII and VIII
V. Part 268, New Appendix IX
W. Section 270.42
III. Clarification of Certain Aspects of the Third Third Final Rule
A. Status of Wastes Listed Solely Because They Exhibit a Characteristic.
B. Applicability of Land Disposal Restrictions to Characteristic Used Oil.
C. Clarification of § 268.42(a)(2) as it Applies to Wastes Being Burned For Energy Recovery.
D. Clarification of the Inorganic Debris Classification.
E. Applicability of Criteria for Inorganic Debris to Flue Slag.
F. Applicability of Soil and Debris Capacity Variance.
G. Identification of Wastes as Either Listed or Characteristic.
H. Classification of Wastes on § 268.7 Notifications.
I. Treatment Standards For Newly Listed F002 and F005 Constituents.
J. Applicability of the National Capacity Variance For Radioactive Mixed Wastes to Mixed Radioactive/D002 Wastes.
K. Applicability of Treatment Standards to D001 High TOC Wastes That Have Undergone Phase Separation.
L. Clarification of MACRO Treatment Standard in § 268.42, Table 3.
M. Applicability of Mercury Wastewater Treatment Standards.
N. The Dilution Prohibition.
IV. Rationale for Immediate Effective Date
V. Regulatory Impact Analysis

I. Reasons and Basis for Today's Amendment

The Agency has received comments from the regulated community and State agencies requesting clarification on certain aspects of the June 1, 1990 Third Third final rule (55 FR 22520). Today's rule responds to these concerns.

Several typographical errors were identified in the preamble; however, the Agency did not correct them in this notice. The vast majority of errors identified in the preamble were not substantial and, thus, required no corrections since the context clearly provided the meaning of the misspelled word. The Agency decided not to provide corrections to the preamble because it is long, its organization is complex, and describing where the error was, what the correction should be, and why the correction was necessary would be cumbersome and would be difficult to understand. In fact, the Agency believes that such corrections would actually be of very limited value to the reader.

II. Summary of Amendments to the Third Third Final Rule

Several amendments have been made to the regulations in response to questions about the Third Third final rule and to correct inadvertent omissions. An explanation is provided below for each of the amendments made in today's rule.

A. *Section 148.10.* Treatment standards were established for certain newly listed constituents (i.e., benzene, 1,1,2-trichloroethane, 2-ethoxyethanol, and 2-nitropropane) in the F002 and F005 spent solvent wastes in the Third Third final rule. However, the Agency failed to include the prohibition effective date for these wastes when they are injected underground in hazardous waste injection wells. The Agency intended that such wastes be prohibited as of August 8, 1990 (off-site injection) or November 8, 1990 (on-site injection) (see 55 FR 22648 for a discussion of combustion of liquids). This inadvertent omission is being corrected in today's rule. Effective dates are established today for prohibitions on injection of these wastes in both off-site/commercial and on-site hazardous waste injection facilities that are consistent with the effective dates promulgated in the Third Third final rule.

B. *Section 148.16.* Two waste codes, U087 and U139, were inadvertently included in the Third Third final rule. Treatment standards and prohibition effective dates were established for U087 in the Second Third final rule (see 54 FR 26647 and § 148.16). Iron dextran, U139, was dropped from the hazardous waste listings in 1988 (53 FR 43381). These wastes were included in § 148.16 in the Third Third final rule by mistake; therefore, these two waste codes have been deleted from this section in today's rule.

C. *Section 261.3.* In the Third Third final rule, EPA discussed at length that treatment standards for characteristic wastes could permissibly be established below the characteristic level so long as the wastes were prohibited from land disposal—that is, (in most cases) provided they exhibited a hazardous waste characteristic at the point of generation. (See e.g., 55 FR 22651-22655; see also § 268.43 establishing treatment standards below characteristic levels for certain characteristic wastes.) Since the rule was promulgated, several persons have asked if § 268.1(b) of the regulations—which states that wastes which are excluded or exempted fr[om] regulation under part 261 are not s[ubject] to part 268—is inconsistent with regulation below characteristic levels.

Section 268.1(b) is consistent with EPA's regulatory approach. This is because although § 261.3 (c)(1) and (d)(1) indicate that wastes no longer exhibiting characteristics are not hazardous wastes, those provisions need not be read to create an outright exclusion or exemption. This distinction is subtle, however, and EPA has decided to place a clarifying cross reference in § 261.3(d) indicating that characteristic wastes no longer exhibiting a characteristic may nevertheless still be subject to the provisions of part 268.

D. *Section 261.20.* A typographical error in paragraph (b) has been corrected by inserting the word "used" after the word "be" in line 6.

E. *Section 261.31.* On page 22619 of the preamble, it is clear that F039, multi-source leachate, is defined as leachate that is derived from the treatment, storage, or disposal of more than one *listed* hazardous waste (see also 54 FR 8264, February 27, 1989). The Third Third regulatory language, however, failed to specify that multi-source leachate is only that leachate that is derived from more than one listed waste. Therefore, the listing description of F039 in § 261.31 is amended in today's rule to reflect this definition.

A question has also arisen as to whether more than one newly listed waste, for which treatment standards have not yet been promulgated, may constitute F039. As the basis for the F039 listing included in appendix VII of part 261 clarifies, the Agency did not intend the F039 listing to include listed wastes without promulgated treatment standards. (In addition, it is clear from the background document that EPA only examined leachates composed of wastes that currently are restricted from land disposal in developing the treatment standards for F039 leachate.) Therefore, the listing description of F039 in § 261.31 is amended in today's rule to specify that only listed wastes that are also restricted are included in F039.

In addition, in order to determine whether one has F039, it is necessary to first determine that the waste meets the definition of leachate. Once it is established that the waste is leachate, it is necessary to determine whether it is derived from one or more listed hazardous wastes in order to be considered F039. Confusion has arisen regarding the definition of *leachate* found at 40 CFR 260.10 as it applies to F039, multi-source leachate. The definition found in § 260.10 states that leachate is "any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste." The confusion primarily concerns the phrase "* * * or drained from * * *" since, if applied generally to all liquids that drained from hazardous wastes, wastewaters such as filtrate would be included in the definition of leachate. The Agency did not intend that such wastewaters be included in the definition of leachate; in order to determine if a waste is F039, only the liquids that have percolated through land disposed wastes ("land disposal" having the meaning of RCRA section 3004(k)) are considered to be leachate, not liquid treatment residues. Language has been added to the description of F039 in § 261.31 to clarify this point.

F. *Section 262.10.* Today's notice corrects an oversight in Note 2 of 40 CFR 262.10. This note is corrected to include part 268 in the standards and requirements that apply to generators who treat, store, or dispose of hazardous waste on-site.

G. *Section 262.11.* An inadvertent error is being corrected in § 262.11. A reference was made to waste listed in "subpart D of this part", which refers, of course, to part 262. Wastes are actually listed as hazardous in subpart D of part 261. The regulatory language is being changed to make the correct reference to part 261.

H. *Section 262.34.* On page 22670 of the preamble, the Agency specified that generators treating prohibited wastes in § 262.34 tanks and containers must prepare a plan justifying the frequency of testing their treatment residues to ascertain compliance with the treatment standards. The reason this requirement was imposed was to close a regulatory gap; these tanks and containers were not subject to a waste analysis plan requirement and, thus, there was no regulatory vehicle for determining the testing frequency in such circumstances. In contrast, under the requirements of § 268.7(b), treatment facilities treating prohibited waste must test their treatment residues according to a frequency determined in their waste analysis plan.

The Agency inadvertently omitted a discussion of how these new requirements apply to small quantity generators of greater than 100 kilograms but less than 1000 kilograms of hazardous waste in a calendar month that treat in § 262.34 tanks and containers. It was the Agency's intention that such small quantity generators be included under the new procedures since the procedures are being instituted to close a regulatory gap, and since the same regulatory gap exists for small quantity generators as for large quantity generators. In not distinguishing between types of generators, EPA believes that the rule expressed the Agency's intent that all regulated generators (i.e., those generating greater than 100 kg/mo. or greater than 1 kg/mo. acute hazardous waste) must comply with the new waste analysis requirements when so treating their restricted wastes. Today's rule further clarifies that small quantity generators (100–1,000 kg/mo.) treating in § 262.34 tanks and containers must follow the same § 268.7(a)(4) waste analysis procedures as large quantity generators. However, conditionally exempt small quantity generators as defined in 40 CFR 261.5, remain exempt from these and other part 268 requirements.

I. *Section 268.2.* Typographical errors are corrected in the definition of nonwastewaters, F001, F002, F003, F004, F005 wastewaters, and K011, K013, K014 wastewaters.

The definition of *inorganic solid debris* in 40 CFR 268.2(g) is corrected by clarifying that, in order to meet the definition of inorganic solid debris, the debris can be contaminated with only the hazardous wastes specified as D004–D011. This was clearly stated in the preamble on pages 22555–22556; the regulatory language has merely been changed to reflect the preamble language.

J. *Section 268.7.* It was explained on preamble page 22660, under the heading Newly Identified TC Wastes, that wastes exhibiting the toxicity characteristic by the Toxicity Characteristic Leaching Procedure (TCLP) but not the Extraction Procedure (EP) are newly identified wastes and, therefore, are not subject to the land disposal restrictions at this time.

(**Note:** The actual language of the preamble says that these wastes "are not presently prohibited * * *" This was an incorrect use of the term "prohibited." These wastes are not presently *restricted;* therefore, they are not subject to any of the requirements of the land disposal restrictions, including waste analysis and recordkeeping.)

Questions have arisen regarding the applicability of the EP for purposes of the land disposal restrictions once the TC rule becomes final (September 25, 1990 for large quantity generators, March 29, 1991 for small quantity generators) (55 FR 11798, March 29, 1990). Today's technical amendment addresses this issue.

There are two points under the land disposal restrictions when either the EP or the TCLP must be used: (1) When determining whether a generator has a restricted waste (waste characterization), and (2) when determining whether a treated waste complies with the concentration-based

treatment standards (measuring compliance). The confusion seems to stem from waste characterization rather than from measuring compliance.

Under the requirements of the Toxicity Characteristic (TC) rule, on September 25, 1990 (or March 29, 1991) the TCLP must be used initially to determine whether a waste is hazardous. If a waste, as generated, does not exhibit the amended toxicity characteristic (as measured by the TCLP), it is not subject to the land disposal restrictions nor to any other subtitle C regulation (assuming the waste is not listed and does not exhibit any other hazardous waste characteristic). This is the case even if the waste would have been identified as hazardous by the old Extraction Procedure. On the other hand, if the waste does exhibit the Toxicity Characteristic, then the next step is to determine if the Third Third prohibition applies to it. That prohibition applies to wastes that are hazardous and that exhibit EP toxicity at the point of generation. In other words, after the effective date of the TC rule, a waste must first exhibit the Toxicity Characteristic and, if it also exhibits EP toxicity, it is subject to the Third Third final rule. Section 268.7(a) has been changed in today's rule to clarify this point.

Additionally, since treatment standards were promulgated only for the EP toxic metals (D004–D011) and EP toxic pesticides (D012–D017), only these toxic characteristic constituents are presently subject to the land disposal restrictions; the additional 25 organic toxic constituents that were added in the March 29, 1990 final rule are considered newly identified wastes not yet subject to the land disposal restrictions (unless they are regulated constituents in listed hazardous wastes).

The second point, that of measuring compliance with treatment standards and when the EP or TCLP is to be used, is also addressed on preamble page 22660, under the heading Use of TCLP v. EP Analytical Methods for Compliance. See section II.O below discussing changes being made to § 268.40 to correct the regulatory language pertaining to use of the EP or the TCLP for measuring compliance.

In addition, on preamble page 22668, the Agency explained that it is satisfactory to reference the applicable regulatory provisions on notifications for all restricted wastes except spent solvents (F001–F005), multi-source leachate (F039), and the California list wastes, for which the treatment standards themselves (and not such a reference) must appear on the notification. (This is because a regulatory cross-reference would be ambiguous for these three types of wastes.) The intent of this provision is that either the applicable treatment standards must appear on the notification; or the reference to the applicable regulatory provision where the treatment standards are found. Some persons, however, have found the regulatory language in § 268.7(a)(i)(ii), (2)(i)(B), (3)(ii), and (b)(4)(ii) ambiguous, leading to the question of whether any treatment standard at all must appear on the notification. This regulatory language is being changed in today's rule to clarify that for spent solvents, multi-source leachate, and California list wastes, the applicable treatment standards must appear on the notification; for all restricted wastes other than spent solvents, multi-source leachate, and California list wastes, either the applicable treatment standard, or the reference to the applicable treatment standard, must appear on the notification.

Also on page 22668, the Agency set out what information should be included on the notification when applicable treatment standards were referenced. It was specified that, among other things, the waste's subcategory and treatability group must be identified. Questions have arisen about the difference between "treatability group" and "subcategory." The Agency intended for purposes of the notification that "treatability group" refer to the classification of the waste as either a wastewater or a nonwastewater as defined in § 268.2(d) and (f), and that "subcategory" refer to the subdivisions made within a treatability group based on additional waste-specific criteria (such as D003 reactive cyanides).

In past rulemakings and in other parts of the Third Third preamble, however, no such distinction is made between the terms "treatability group" and "subcategory"; rather, these terms are used interchangeably. This has resulted in confusion as to what is required on the notification when treatment standards are referenced. The Agency is clarifying this issue in today's rule by changing the language of § 268.7(a)(1)(ii), (a)(2)(i)(B), (a)(3)(ii), and (b)(4)(ii) to describe exactly what must be included on the notification, and omitting the terms "treatability group" and "subcategory." Therefore, when treatment standards are referenced on the notification, the following information should be included: The subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), whether the waste is a wastewater or a nonwastewater, and the CFR section(s) and paragraph(s) where the applicable treatment standard appears.

On preamble page 22662, the Agency explained that the tracking requirements of § 268.7 apply to restricted hazardous 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 § 261.2–§ 261.6 *subsequent to the point of generation*. Under this requirement, all generators of restricted hazardous wastes must have, at *minimum, a one-time record* (notification) in the facility files that indicates the generation of a restricted hazardous waste and its disposition. While this requirement was clearly stated in the preamble, it was not included in the regulatory language because it was believed that such information should already exist in the facility files to justify the absence of Subtitle C regulation. It has come to the attention of the Agency that some generators may not have been aware that such information should be placed in their files. To clarify, therefore, that a one-time notification must be placed in the facility's files, this requirement has been added to the regulatory language in today's notice. (This specific regulatory requirement will be applied prospectively.)

Questions have also arisen regarding the applicability of this requirement to wastes subject to a § 261.2–§ 261.6 exclusion, expressing concern that this requirement would impose recordkeeping requirements on nonhazardous wastes. The Agency maintains that such would not be the result of this requirement; only restricted hazardous wastes will be impacted. The key to understanding this requirement is to look at the point that the exclusion attaches to the waste. In the example and discussion provided on page 22662, it is clear that the § 261.4(a)(1) exclusion does not attach to the waste until it passes through the sewer system to a POTW. Since the land disposal restrictions apply *at the point of generation*, and the § 261.4(a)(1) exclusion attaches to the waste at a point subsequent to the point of generation, the waste is a restricted waste. A notice should be made of the generation of this restricted waste and the fact that it was discharged to a POTW. Additionally, even though the example given in the preamble discussed a characteristic waste, the same would be true for a listed waste under the same circumstances. For this reason, this tracking requirement has been added to § 268.7, which applies to

both listed and characteristic wastes, rather than to § 268.9, which applies only to characteristic wastes.

K. *Section 268.9.* Paragraph (a) is being revised in today's rule to clarify that the waste identification requirements of paragraph (a) are consistent with paragraph (b) of that section. Paragraph (a) specifies that for purposes of part 268, a waste will carry a waste code for any applicable listing, and also one or more waste codes when the waste exhibits a relevant characteristic. This seems to conflict with the requirements of paragraph (b) where it is stated that the treatment standard for the listed waste will operate in lieu of the characteristic treatment standard, provided that the treatment standard for the listed waste includes a treatment standard for the constituent that causes the waste to exhibit the characteristic. Questions have arisen about which waste codes should be included on notifications in a situation where the treatment standard for the listed waste operates in lieu of the characteristic treatment standard.

The Agency's intent was that when the listed waste treatment standard operated in lieu of the characteristic treatment standard, the listed waste code would be included on the notification in lieu of the characteristic waste code (see 55 FR 22659). Paragraph (a) of § 268.9 is therefore being amended in today's final rule to more clearly reflect the Agency's intent. Preamble section III. of today's rule discusses in detail how to identify a waste as either listed or characteristic on notifications.

A change is also being made in § 268.9(d)(1)(ii) to more clearly identify the information to be included on the notification for wastes that have been rendered nonhazardous through the removal of the characteristic. A question has arisen as to what is meant by the term "treatability group" (see the discussion above regarding changes being made to § 268.7(a)(1)(ii), (a)(2)(i)(B), (a)(3)(ii), and (b)(4)(ii) to clarify information to be included on notifications pursuant to § 268.7). This term is being omitted from § 268.9(d)(1)(ii), and is replaced by clarifying language that specifies that the following information should be included: The subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), whether the waste is a wastewater or a nonwastewater, and the CFR section(s) and paragraph(s) where the applicable treatment standard appears.

L. *Section 268.10.* On page 22594 of the Third Third preamble, the Agency stated that the wastes listed as K048, K049, K050, K051, and K052 were being rescheduled from the First Third to the Third Third. The Agency neglected to remove these waste codes from § 268.10; this oversight is being corrected in today's rule by removing these wastes.

M. *Section 268.12.* As explained in section L above, the wastes listed as K048, K049, K050, K051, and K052 were rescheduled from the First Third to the Third Third, and thus, they had a new prohibition effective date (May 8, 1990). The Agency neglected, however, to include this rescheduling in the regulatory language. Therefore, today's notice corrects that bookkeeping oversight by including these waste codes in § 268.12.

N. *Section 268.33.* Paragraph (b) set out the prohibition effective date for the wastes listed as K048, K049, K050, K051, and K052, K061 high zinc category, and K071 (no change is being made in today's rule to the K071 prohibition effective date). As explained in section II.L. above, K048, K049, K050, K051, and K052 were rescheduled from the First Third to the Third Third, and thus, they had a new prohibition effective date (May 8, 1990).

(Note: The Agency granted these wastes a six-month national capacity variance in the Third Third final rule that extends the effective date for these wastes from May 8, 1990 until November 8, 1990. The prohibition effective date for these waste codes is found at § 268.35(b).)

The Agency neglected, however, to remove the effective date that was set out in the First Third final rule (53 FR 31217) for K048, K049, K050, K051, and K052. Today's notice, therefore, corrects this oversight by removing these waste codes from § 268.33(b).

Additionally, on preamble page 22599, the Agency stated that it was appropriate to extend the interim K061 treatment standard (the treatment standard for low zinc K061 with less than 15% zinc) as an alternative to high temperature recovery for one additional year. The Agency failed in the Third Third final rule, however, to omit the prohibition effective date for K061 high zinc category from § 268.33; this oversight is corrected in today's rule. (Section 268.35(a) is also corrected in today's rule to clarify that effective August 8, 1990, K061 wastes containing 15% or greater zinc are prohibited from land disposal pursuant to the treatment standards specified in § 268.41 applicable to K061 wastes that contain less than 15% zinc. See section II.O. below.)

O. *Section 268.35.* Certain typographical errors were identified in the prohibition language of § 268.35 (a) and (c). Also, a few of the specified treatability groups (e.g., wastewater, nonwastewater) were inaccurate and did not correspond with the preamble. In some cases, the inaccuracy of the treatability groups was due to the fact that treatment standards for either the wastewater or nonwastewater form of certain wastes were promulgated in previous rulemakings but they were inadvertently included in the language at § 268.35. These errors are corrected in today's notice.

In addition, the prohibition effective date for the interim treatment standard for the K061 high zinc category was discussed in the preamble, but was inadvertently omitted from the regulatory language. On preamble page 22599, the Agency stated that it was appropriate to extend the interim K061 treatment standard (the treatment standard for low zinc K061 with less than 15% zinc) as an alternative to high temperature recovery for one additional year. Section 268.35(a) and the entry for K061 in § 268.41, Table CCWE, are corrected in today's rule to clarify that effective August 8, 1990, and continuing until August 7, 1991, K061 wastes containing 15% or greater zinc are prohibited from land disposal pursuant to the treatment standards specified in § 268.41 applicable to K061 wastes that contain less than 15% zinc.

The language of § 268.35(d) is also being changed to clarify that radioactive waste mixed with any scheduled hazardous waste is subject to a two-year national capacity variance. This capacity variance was in effect for mixed radioactive/scheduled wastes prior to today's notice because all First Third and Second Third mixed radioactive wastes were rescheduled to the Third Third in previous rulemakings. Today's correction merely clarifies that Third Third mixed radioactive wastes include those that were originally in the First and Second Third of the schedule. Note, however, that mixtures containing spent solvent wastes, listed dioxin wastes, or California list wastes are not subject to such capacity variances.

An additional clarification is being made to § 268.35(d). On preamble page 22650, it was stated that a national capacity variance was granted to soil and debris contaminated with mixed radioactive wastes. This particular subset of radioactive mixed/hazardous wastes was not set out in the regulatory language of § 268.35(d) because this subset was subject to the broader national capacity variance granted to all mixed radioactive/scheduled hazardous wastes. A question has arisen, however, about the applicability of this national

capacity variance to soil and debris. In response to this question and to avoid any future confusion, language has been added to § 268.35(d) specifying that the two year national capacity variance also applies to soil and debris contaminated with mixed radioactive/scheduled hazardous wastes (i.e., wastes listed in §§ 268.10, 268.11, 268.12).

The language of § 268.35(e) is being modified in today's rule to add two additional technologies (acid leaching followed by chemical precipitation, and thermal recovery of metals) to the two year national capacity variance for soil and debris contaminated with wastes that have treatment standards based on these technologies. While it was not directly addressed in the preamble that a two-year national capacity extension should be granted for soil and debris contaminated with wastes for which these technologies are BDAT, it was explained that the Agency believes there is inadequate capacity for the treatment of *any* wastes by these technologies (see 55 FR 22635). Process wastes for which BDAT was determined to be either of these technologies were granted a national capacity variance. By extension, it is only logical (and the result EPA intended) that these technologies be added to the technologies qualifying for a soil and debris national capacity variance.

P. *Section 268.40.* The language of § 268.40 is being amended to clarify that either the TCLP or the EP may be used when measuring compliance with the treatment standards for certain arsenic- and lead-containing hazardous wastes. On preamble page 22660, under the heading Use of TCLP v. EP Analytical Methods for Compliance, it was explained that most treatment standards for characteristic wastes were set based on data generated from use of the TCLP; thus, compliance with such standards must be measured using the TCLP. There were two exceptions, however, in the Third Third final rule: treatment standards for characteristic lead nonwastewater (D008), and for certain arsenic-containing nonwastewaters (D004, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136). For these wastes, the Agency specified that if a waste does not achieve the nonwastewater treatment 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 treatment standard. This action was taken because the data used to develop the treatment standards for these wastes were based on EP toxicity leachate data.

The regulatory language in § 268.40(a) of the Third Third final rule said that either the test method in appendix I of this part (268), or the test method in appendix II of part 261, could be used to measure compliance with the lead and arsenic nonwastewater treatment standards. (Until promulgation of the Toxicity Characteristic (TC) final rule (55 FR 11798) on March 29, 1990, appendix I of part 268 described the TCLP, and appendix II of part 261 described the EP.) In the TC final rule, however, the TCLP was removed from part 268, appendix I. Part 261, appendix II was also amended to include the procedures for the TCLP, not the EP. The Third Third regulatory language referred to the appendices as they existed before promulgation of the TC final rule. Therefore, the regulatory language in the Third Third final rule was incorrect. This language is amended in today's rule to clarify that either the procedure found in part 261, appendix II (TCLP), or the EP that is being added in today's rule to part 268 (Appendix IX), may be used for measuring compliance with the treatment standards for the specified arsenic and lead nonwastewaters.

Q. *Section 268.41.* A small number of typographical errors are corrected in Table CCWE. Changes are being made to the format of the table as well. In particular, the treatment standards for D-, F-, and K-coded wastes and the treatment standards for P- and U-coded wastes have been unified so they appear in one table. All footnotes have been moved to the end of the table. Also, all superscripted symbols that were used to designate footnotes have been changed to superscripted numbers, to comply with the style requirements of the United States Government Printing Office.

Also in Table CCWE, EPA promulgated a treatment standard of 0.021 mg/l (based on analysis of a TCLP leachate) for lead in nonwastewater forms of F024. Several commenters have since pointed out difficulties in achieving this standard, due primarily to their inability to achieve this level of detection. The Agency examined the data it used to develop this treatment standard and found a discrepancy in the data. This discrepancy, in the Agency's view, appears to substantiate commenters' claims. The promulgated treatment standard for lead thus appears to be unachievable based on detection limits. As a result, the Agency is amending the treatment standard for lead in F024 nonwastewaters to a reserved status, until such time that the Agency can propose and promulgate a revised treatment standard. The Agency has taken this action for several reasons: (1) The performance date utilized to establish the standard contain discrepancies in detection limits; (2) sufficient data have been submitted to raise questions about the achievability of the standard; (3) compliance with the existing standard appears to be unachievable; (4) facilities generating the wastes are already treating the wastes with the technologies identified by the Agency as BDAT and thus lead is being treated; (5) the treatment standards for other metals are being achieved; (6) while the treatment standard for lead is not being achieved, no lead is being detected in the TCLP leachate; (7) the length of time needed to establish a national treatability variance for these wastes would put all generators out of compliance even though they are using technologies considered to be BDAT; and, (8) additional treatment would not be expected to achieve compliance with the promulgated treatment standard of 0.021 mg/l.

The Agency is also amending Table CCWE to indicate that the treatment standard for high zinc K061 wastes is the existing interim treatment standard based on the performance of stabilization technology that EPA promulgated as part of the First Third rule and extended for one additional year as part of the Third Third final rule. The Agency is adopting this position in partial response to the Court's mandate in *American Petroleum Institute* v. *EPA*, 906 F.2d. 729 (D.C. Cir. 1990). In that case, the Court held that due to a misapprehension of the scope of its jurisdiction over hazardous wastes being recycled, the Agency had failed to establish a treatment standard for the slag residue resulting from processing high zinc K061 dusts by high temperature metal recovery. 906 F.2d at 742. The Court remanded the case to the Agency to determine whether to establish a treatment standard in light of the Court's clarification of the potentially broader scope of jurisdiction over recycling activities. *Id.*

EPA is of the view that unless and until it acts to promulgate a new treatment standard for high zinc K061 waste, those wastes can be land disposed if they meet the interim numerical standards based on the performance of stabilization technology. An alternative reading would be that the Court invalidated the treatment standard for high zinc K061 and left no treatment standard in its place, triggering the mandatory prohibition in RCRA section 3004(g)(6)(C). The Agency does not interpret the opinion in this

way. It would prevent land disposal of wastes treated by BDAT (see 55 FR 22598–22599, June 1, 1990; and 53 FR 31221, August 17, 1988, indicating that high temperature metal recovery is BDAT for high zinc K061). EPA is convinced that the Court did not intend to bar treatment residues from the best treatment for high zinc K061 from land disposal. Thus, the Agency is interpreting the opinion to mean that so long as the slag residues meet a treatment standard, they are not prohibited from land disposal. The only treatment standard for high zinc K061 at the present time is the interim standard based on performance of stabilization that the Agency left in place as part of the Third Third rule. Consequently, at the present time, if high zinc K061 is treated by high temperature metal recovery and meets these interim numerical treatment standards, it is not prohibited from land disposal. The Agency notes further that since this interim standard lapses on August 7, 1991, the Agency will have to take some action before that date to avoid the absolute prohibition of the statutory hard hammer in RCRA section 3004(g)(6)(C).

The Agency notes further that it is not addressing any other issue raised by the *API* opinion in this notice. The Agency is continuing to study the opinion and its implications, and hopes to address these issues in the relatively near future.

R. *Section 268.42.* Two typographical errors were corrected in paragraph (a)(2) in today's rule. A small number of typographical errors are also corrected in Table 2. In addition, all superscripted symbols that were used to designate footnotes have been changed to superscripted numbers, to comply with the style requirements of the United States Government Printing Office.

A clarification is also being made in § 268.42(a) by adding new paragraph (3). This clarification is necessary because the Agency inadvertently omitted the inclusion of an alternate treatment standard for *de minimis* leaks to wastewater treatment systems subject to Clean Water Act controls of certain in-process materials that only becomes wastes when they are "discarded" (as that term is used in § 261.33). The circumstances involved roughly parallel those described in the exemption to the mixture rule established in § 261.3(a)(2)(iv)(D) for *de minimis* losses of discarded commercial chemical products listed in § 261.33.

The potential problem arises for those characteristic wastes for which the Agency established a discrete method of treatment as the treatment standard—the example identified to the Agency being high TOC ignitable wastes for which some type of combustion is the prescribed method of treatment. *De minimis* leaks of chemical products (that are not P or U wastes listed in § 261.33) may display a characteristic of hazardous waste. In most cases, these leaks are collected in the facility's wastewater treatment system. If the leaking product displays a characteristic of corrosivity, reactivity, or low TOC ignitability, the treatment standard established in § 268.42 is DEACT (deactivation), under which treatment standard dilution of the waste in the wastewater treatment system, or other wastewater treatment, is permissible in order to remove the applicable characteristic. If, however, the leaking product displays the characteristic of ignitability and falls into the high TOC (greater than 10% TOC) subcategory, the treatment standard established in § 268.42 is incineration or fuel substitution, and wastewater treatment to meet the treatment standard is impermissible. This means that the mixture of wastewater and high TOC ignitable liquid waste product would be subject to the incineration or fuel substitution treatment standard.

The Agency did not intend to apply this treatment standard to *de minimis* leaks of high TOC ignitable product mixtures when the treatment standard for high TOC ignitables was established. EPA established the high TOC ignitable waste subcategory because these wastes were amenable to combustion technologies, and ordinarily could be segregated from other wastes in order to be combusted (see 46 FR 56586, November 17, 1981). In addition, there is an economic incentive to avoid losses of these materials because they are still in the product stream. *Id.* The Agency did not intend, in the Third Third rule, that such losses must be captured and destroyed by combustion. Rather, provided such losses are *de minimis* and involve only materials that are not yet wastes up until the moment of inadvertent loss, deactivation is an appropriate treatment standard, as it is for other ignitable wastes.

The Agency is defining *de minimis* in much the same manner as that used in § 261.3, except that today's definition does not include discharges from safety showers and rinsing and cleaning of personal safety equipment, nor does it include rinsate from empty containers or from containers that are rendered empty by that rinsing (ie., the third rinse in triple rinsing). These activities, the Agency believes, would not (and certainly, should not) involve high TOC ignitable wastes. Segregation of rinsate also is possible. In addition, the Agency notes that to be considered *de minimis*, any losses of high TOC materials would have to be from "normal material handling operations", and thus, would not include constant leaks or large-scale spills. The amendment to the treatment standard adopted today is thus limited to small losses of high TOC product (or other material still in the manufacturing pipeline at the time of the *de minimis* loss) that are, for practical purposes, infeasible to capture for combustion at their point of generation. Finally, the leak must be to a wastewater system subject to regulation under the Clean Water Act, as provided in the existing regulation dealing with *de minimis* losses of commercial chemical products in § 261.3. This condition ordinarily assures that some treatment of the waste will occur (see 46 FR 56586, November 17, 1981).

Wastewater treatment standards for two wastes, P015 and P087, were inadvertently omitted from Table 2 in the Third Third final rule. On preamble page 22617 it is clearly stated that the treatment standards for *all forms* of P015 and P087 is metal recovery (RMETL) or thermal recovery (RTHRM). These wastewater treatment standards are added to Table 2 in today's rule.

An inadvertent error is corrected in Table 3. The treatment standard for D009—Hydraulic oil contaminated with mercury radioactive materials was specified as INCIN (incineration). The treatment standard should have been 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, with residues complying with the corresponding treatment standard). This treatment standard is being corrected in today's rule.

S. *Section 268.43.* Several typographical errors are corrected in Table CCW. Changes are being made to the format of the table as well. In particular, the treatment standards for D-, F-, and K-coded wastes and the treatment standards for P- and U-coded wastes have been unified so they appear in one table. All footnotes have been moved to the end of the table. Also, all superscripted symbols and numbers that were used to designate footnotes have been changed to superscripted numbers only, to comply with the style requirements of the United States Government Printing Office.

Additionally, a substantive correction is being made in footnote 3 to clarify inconsistencies between the preamble and the regulatory language. On page

22578 of the preamble, the Agency discussed new specifications on the sample size and distillation time required for cyanide analyses for the land disposal restrictions. The preamble discussed these changes in terms of the SW-846 test method 9012, and specified that the sample size must be 10 grams. The footnote on page 22710 in Table CCW refers to method 9010 and specifies a range of sample sizes from 0.5 to 10 grams. These inconsistencies were unintended and have caused confusion; the preamble discussion correctly stated EPA's position. Therefore, footnote 3 following Table CCW is being changed in today's notice to specify that either Method 9010 or 9012 must be used to analyze cyanide, the sample size is 10 grams (not a range), and the distillation time is one hour and fifteen minutes.

Additionally, a correction has been made in § 268.43(c) to clarify that only the organic constituents indicated in Table CCW with a footnote (1) qualify for the new procedures for certifying compliance with a treatment standard when a treater claims to have analytic detection problems or that are discussed on preamble pages 22541-22542. Slight changes are also being made to clarify that the procedures apply only to treaters and disposers (this is implicit in the discussion at 55 FR 22541 (3)), and to clarify that the good-faith analytic effort may be demonstrated by achieving a detection limit that does not exceed the treatment standard by an order of magnitude.

T. *Part 268. Appendices IV and V.* On page 22629 of the preamble, the Agency specified that for wastes placed in lab packs and included in Part 268 Appendix IV—Organometallic Lab Packs, an alternate treatment standard must be met: incineration as a required method, followed by treatment to meet the applicable EP toxic metals (D004-D006, and D010-D011). While appendix IV includes wastes containing other metals, the Agency believes that requiring compliance with the treatment standards for EP toxic metals will reasonably assure treatment of other metals, particularly when these wastes are stabilized.

The Agency also promulgated an alternate treatment of incineration as a required method for wastes contained in lab packs and included in Appendix V—Organic Lab Packs. There is no specific requirement to stabilize the residues from the incineration of these wastes. The Agency inadvertently included several metal-bearing wastes in the appendix V. The purpose of establishing two separate appendices was to distinguish the wastes that are organo-metallics from those that are just organic. The inclusion of these metals in appendix V contradicts the basis for the establishment of two lab pack categories. Therefore, the following metal-bearing wastes (or wastes with treatment standards for metals) are omitted from appendix V in today's rule: F024, K001, K015, K021, K022, K031, K046, K048, K049, K050, K051, K052, K083, K084, K086, K087, K101, K102, K115, P006, P013, P015, P036, P038, P065, P073, P074, P087, P092, P096, P099, P103, P104, P110, P113, P114, P115, P119, P120, P122, U051, U205, and U214.

Today's rule also corrects inconsistencies in both appendices for P-coded wastes containing cyanides. Data from the incineration of wastes containing cyanides indicate destruction of cyanide to detection limits (as measured in ash). Appendix IV included four cyanide wastes containing metals (P013, P074, P099, and P104) and two cyanide wastes without metals (P063 and P098). A mistake was made, however, in that several cyanide wastes (both with and without metals) were not included in the appendices. Cyanide in any of these wastes can be destroyed by incineration. Today's rule corrects these inconsistencies by adding two cyanide wastes with metals (P029 and P121) to appendix IV and four cyanide wastes without metals (P021, P030, P033, and P106) to both appendix IV and V.

The preamble also stated on page 22629 that mercury-bearing wastes are prohibited from disposal in appendix IV lab packs. In fact, all inorganic mercury wastes are prohibited from inclusion in an appendix IV lab pack (including D009, U151, K071 and K106). However, certain organo-mercury wastes (P065 and P092) were included in appendix IV. This was due to the fact that the promulgated treatment standards for P065 and P092 (when these wastes are not placed in lab packs) requires incineration as a pretreatment prior to recovery of mercury from the ash, provided the ash exceeds 260 mg/kg of total mercury. The Agency believes that these two wastes are generated very infrequently, are not expected to constitute a significant portion of any lab pack, and the organo-mercury compounds for which P065 and P092 were listed will no longer exist after passing through an incineration unit. Stabilization is not expected to provide significant treatment of the inorganic mercury that would result from incineration of these wastes. Furthermore, it is unlikely that the ash from incineration of the lab pack will exceed 260 mg/kg (thus ruling out recovery of mercury). For these reasons, the Agency is not withdrawing P065 and P092 from appendix IV at this time.

Furthermore, the Agency inadvertently omitted P046 and P111 (both of which are organic compounds) from Appendix IV—Organometallic Lab Packs. These wastes codes were included in Appendix V—Organic Lab Packs; therefore, these wastes should also be included in appendix IV. In a similar manner, U152 (another organic) was included in appendix IV, but not in appendix V. Also, listed wastes F022 and F025 (both organic wastes) were inadvertently omitted from both appendices and F039 (which is regulated for both metals and organics) was mistakenly omitted from appendix IV. Today's notice corrects these omissions.

The Agency also included several waste codes in both appendices that are currently not regulated under the land disposal restrictions because they are wastes that were listed after November, 1984. These waste codes were included in information supplied by the regulated community during the comment period, and the Agency inadvertently included them in the appendices. The following wastes are, therefore, omitted from both Appendix IV and V in today's rule: K054, K064, K065, K111, K112, K117, K118, K123, K124, K125, K126, K136, U328, U353, and U359. Similarly, P025 and U139 were inadvertently included in both Appendix IV and V; these wastes are no longer regulated under Part 261 of RCRA. These waste codes are removed from the appendices in today's rule.

Finally, today's notice corrects all typographical errors in appendices IV and V (e.g., U032, U136, U137, U144, U145, U146, U154, U214, U215, U216, and U217 were listed in Appendix IV more than once).

U. *Part 268. Appendices VII and VIII.* Appendix VII and appendix VIII are intended to be comprehensive lists of effective dates, arranged according to hazardous waste code, for all of the treatment standards promulgated under the land disposal restrictions. These appendices are included in part 268 for the convenience of the regulated community in determining effective dates for the entire universe of hazardous wastes. Several mistakes and omissions were identified in the appendices as they appeared in the Third Third final rule (55 FR 22715-22719). These mistakes and omissions have been corrected in today's notice.

V. *Part 268, New Appendix IX.* It was explained in section II.J. that the EP, or the generator's knowledge, must be used to determine whether a characteristic waste is restricted under the land

disposal restrictions. The methodology for performing the EP is being provided in Appendix IX for the convenience of the reader.

W. *Section 270.42.* The entry in appendix I to § 270.42 is corrected by adding a footnote symbol to the Class 1 designation that was inadvertently omitted in the Third Third final rule. This correction clarifies that the permit changes associated with F039 (multi-source leachate) sampling or analysis methods is a Class 1 permit modification with prior approval.

III. Clarification of Certain Aspects of the Third Third Final Rule

Several questions have arisen as a result of the Third Third final rule that require clarification in today's rule. These issues do not require regulatory amendments.

A. *Status of Wastes Listed Solely Because They Exhibit a Characteristic.* An issue requiring clarification is what requirements under the land disposal restrictions apply to wastes that were listed in part 261, subpart D, solely due to the presence of a characteristic (such as ignitability or reactivity), now that treatment standards have been promulgated for characteristic wastes.

An example of such a waste is F003, which is listed because of the characteristic of ignitability, and for which treatment standards were promulated on November 7, 1986 (51 FR 40572). Under existing rules, if the hazardous characteristic is removed from such a listed waste and the treatment standard for the listed waste is met, it is no longer considered a hazardous waste, and therefore, need not be disposed in a subtitle C facility.

The question has been asked of where to send the § 268.7 notification and certification following treatment and the removal of the characteristic for these listed wastes. The needed clarification stems from the fact that characteristic wastes that have been treated to remove the hazardous characteristic may also be sent to subtitle D facilities as nonhazardous wastes. The recordkeeping requirements for characteristic wastes state that in such a case, the required notifications and certifications should be sent to the EPA Regional office or authorized State agency rather than to the subtitle D landfill (see § 268.9(d)). The Agency is today clarifying that the § 268.7 notifications and certifications for wastes listed solely for a characteristic, that are treated to meet the treatment standard and for which the characteristic has been removed, and that are lawfully disposed in a subtitle D landfill, should be handled following the procedures of § 268.9(d).

Another related question is how the dilution prohibition should apply to such a listed waste. The issue stems from the fact that the dilution prohibition was modified in the Third Third final rule to address special issues related to characteristic wastes (see discussion on pages 22664–22667 and § 268.3(b)). Since these listed wastes are somewhat analogous to characteristic wastes, some have asked if the § 268.3(b) dilution prohibition for characteristic wastes applies to these listed wastes. The answer is no. The Agency is here clarifying that wastes that are listed under part 261, subpart D, solely for the presence of a characteristic, are subject to the dilution prohibition for listed wastes as stated in § 268.3(a).

B. *Applicability of Land Disposal Restrictions to Characteristic Used Oil.* Questions have arisen regarding the applicability of the land disposal restrictions to used oil displaying a characteristic of hazardous waste. Used oil that is recycled in a manner other than being burned for energy recovery is exempt from RCRA under 40 CFR 261.6(a)(3)(iii) even if the used oil exhibits a characteristic of hazardous waste. Thus, characteristic used oils that are recycled in this way are exempt from the part 268 treatment standards. This exemption should have little practical impact because most used oil exhibiting a characteristic is already banned from road oiling or use as a dust suppressant, the two principle types of used oil recycling involving land disposal (RCRA section 3004(1) and § 266.23).

The land disposal restrictions do apply, however, to characteristic used oils that are burned for energy recovery in boilers and industrial furnaces if that used oil contains greater than 1000 ppm total halogens. Under 40 CFR 266.40(c), such oils are presumed to have been mixed with the listed spent solvents in § 261.31 and are therefore presumed to be hazardous waste under the "mixture rule" of § 261.3. Unless this presumption can be rebutted successfully, these halogen-containing used oils are subject to the part 268 treatment standards for halcgenated solvents in addition to the special standards for hazardous waste fuel in part 266, subpart D.

Additionally, characteristic used oil that is disposed rather than recycled is subject to part 268. Such used oil thus must be treated to meet the applicable characteristic treatment standard prior to land disposal (unless exempt as a small quantity generator or as household waste).

C. *Clarification of § 268.42(a)(2) as it Applies to Wastes Being Burned for Energy Recovery.* The Agency removed industrial boilers and furnaces from the treatment standard for nonliquid California list halogenated organic compounds (HOCs) in the Third Third final rule (see preamble page 22675 and § 268.42(a)(2)), after receiving virtually no comment on its proposal to do so. The treatment standard, therefore, for nonliquid hazardous wastes containing California list HOCs and still subject to the California list treatment standard is expressed as a specified method of treatment: incineration. There appears to be very few wastes to which this standard would apply. EPA has consistently made clear that the California list prohibitions would gradually be superseded by the establishment of treatment standards for specific waste codes through the First, Second, and Third Third rulemakings (see 52 FR 25773, July 8, 1987; 52 FR 29993, August 12, 1987; 54 FR 48499, November 22, 1989; 55 FR 22675, June 1, 1990).

The Agency republished § 268.42(a)(2) in the Third Third final rule, and inadvertently left out the article "a" from the second sentence (55 FR 22683). The sentence is corrected today to read:

"These treatment standards do not apply where the waste is subject to a part 268, subpart C treatment standard for a specific HOC (such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a))."

Perhaps because of this typographical error, there has apparently been some confusion in the regulated community with respect to § 268.42(a)(2). Some parties may have believed—by focusing on the first sentence—that all wastes containing 1000 ppm or greater HOCs are precluded from being burned for energy recovery in boilers or furnaces. This is incorrect.

As the second sentence of § 268.42(a)(2) makes clear (especially as corrected), the incineration requirement does not apply to any waste that is now subject to a treatment standard for a specific HOC. As EPA has stated on numerous occasions, because there are now treatment standards for all HOCs, "there are virtually no wastes" to which the Subpart O requirement applies (54 FR 48499, November 22, 1989). (The California list standard would continue to apply, however, during the period of a national capacity variance for a more specific treatment standard (55 FR 22674).

D. *Clarification of the Inorganic Debris Classification.* Since promulgation of the final rule, EPA has

been asked whether material that separates from inorganic solid debris is still considered to be inorganic debris. For example, if dust separates from slag while the slag is being transported, can the dust still be considered to be inorganic solid debris, or must it be segregated and managed separately.

EPA intended that the determination of whether a waste is inorganic solid debris should be made at the point of generation of the material. If any of the nonfriable waste material does not completely pass through a 9.5 mm sieve, then the entire quantity of waste material qualifies as inorganic solid debris. In addition, if the waste material is friable (i.e., easily crumbled) but some of the pieces (after crumbling) will not pass through a 9.5 mm sieve, then the entire quantity of waste material is considered to be inorganic solid debris. EPA has discussed this issue at greater length in a letter from Sylvia Lowrance to G.A. Vogt, which letter is part of the record for this correction notice and is available from EPA's RCRA docket.

Additionally, wastes appearing to meet the definition of inorganic solids debris under § 268.2(g)(6) (metal cans, containers, drums, or tanks) and (g)(7) (metal nuts, bolts, pipes, pumps, valves, appliances or industrial equipment) often contain organic parts that are difficult to separate. This occurs particularly in cases such as: (1) Industrial process equipment being dismantled; (2) industrial valves comprised of composites of organic and inorganic materials; and (3) appliances containing multiple connected parts. Capacity for sizing and separation is also lacking for this type of inorganic solid debris, the key factor in EPA's determination to grant this type of waste a national capacity variance (55 FR 22650). Thus, the variance for inorganic solid debris will apply to these inseparable mixtures except in situations where, during the dismantling, the nonhazardous organic materials or a significant portion of the organic materials are manually separable or separable by simple mechanical means. Only the inorganic solid debris that are separated from the nonhazardous organics are subject to the national capacity variance.

E. *Applicability of Criteria for Inorganic Debris to Flue Slag.* A question has arisen about whether container glass flue slag generated by the glass manufacturing and packaging industry qualifies as inorganic solid debris. Since this material was once molten and is inorganic, it qualifies as inorganic solid debris because it is a slag, provided it also complies with all of the remaining criteria in § 268.2(g) as amended in today's rule. (See previous section of today's preamble on inorganic solid debris.)

F. *Applicability of Soil and Debris Capacity Variance.* A frequent question is whether the soil and debris capacity variance only applies to wastes that have a treatment standard expressed as a required method of treatment. As a point of clarification, the capacity variance for soil and debris applies to soil and debris contaminated with any waste for which the treatment standard, whether expressed as a required method of treatment or as a numerical performance standard, was based on incineration, mercury retorting, vitrification, acid leaching followed by chemical precipitation, or thermal recovery of metals (see 55 FR 22649).

G. *Identification of Wastes as Either Listed or Characteristic.* A question has arisen about a perceived inconsistency between amended 40 CFR 262.11, and amended 40 CFR part 261. The Agency is here clarifying that there is no actual inconsistency between these parts of the regulation. Amended § 262.11 states two circumstances in which the determination of hazardous characteristic must be made: (1) For purposes of compliance with 40 CFR part 268 (since no further conditions are specified, the determination must be made for all solid wastes regardless of whether or not they are listed hazardous wastes); or, (2) if the waste is not a listed hazardous waste (this includes wastes that are not subject to the land disposal restrictions, so the determination must be made only for solid wastes that are not also listed wastes).

H. *Classification of Wastes on § 268.7 Notifications.* Requests have been made for an explanation of how to classify wastes as either characteristic wastes or listed wastes (when the waste is considered both characteristic and listed) for purposes of notifications required under 40 CFR 268.7. The preamble explained that the most specific treatment standard must be met when a listed waste is also a characteristic waste (55 FR 22659). When a listed waste is also a characteristic waste, the EPA Hazardous Waste Number (waste code) for the most specific treatment standard should be included on the notification. A variation of this principle also exists. If the most specific treatment standard is subject to a national capacity variance or a case-by-case extension and thus is not yet in effect, then the treatment standard for the most specific waste code that *is in effect* must be met (see 55 FR 22660). This waste code should be included on the notification.

Scenario 1. If both the treatment standard for a listed waste and the treatment standard for a characteristic waste are in effect for common constituents, then the treatment standard for the listed waste applies because it is more specific (§ 268.9(b)). If the listed waste includes treatment standards for the same constituents that give the waste its characteristic (e.g., the overlap between the metal standards in F006 and the EP toxic metals), the waste code(s) for the characteristic(s) need not be included on the notification (see example 1 below). If, however, the treatment standard for the listed waste does not specifically address the characteristic, the waste code for both the listed waste and the characteristic waste should be included on the notification (see example 2 below).

Example 1. Listed waste F006 contains the EP toxic metal constituents cadmium (D006), chromium (D007), and lead (D008). Since the treatment standard for F006 is more specific and is currently in effect, the metal constituents are subject to the F006 treatment standard rather than the EP toxic treatment standards for those constituents. The question has been asked whether only the F006 waste code should be included on the generator's biennial report (assuming the waste is not both TC and EP toxic because of the presence of other constituents), notification, and manifest, or should F006, D006, D007, and D008 be included? Only the F006 waste code should be included on the biennial report because it is more specific. Only the F006 waste code should be included on the notification, for the same reason. Only the U.S. Department of Transportation (DOT) description is required on the manifest (see Form 8700-22 item 11); there is no Federal requirement to include the waste code. If the State requires the inclusion of waste codes, the F006 code should be used.

Example 2. Spent pickle liquor, K062, is an example of a listed waste that has a treatment standard currently in effect. This waste is listed for the characteristics of corrosivity as well as for toxicity and, thus, would also be identified as a D002 waste. The question arises whether it is necessary to put both the K062 and the D002 waste codes on the notification. Both the K062 and D002 waste codes should be included on the notification because the K062 treatment standard does not specifically address the characteristic of corrosivity.

Scenario 2. If the treatment standard for the listed waste is subject to an

extension of the effective date (through a national capacity variance or case-by-case extension), and the treatment standard for the characteristic waste is in effect, then the treatment standard for the characteristic waste applies because it is the treatment standard that is currently in effect.

Example. An example is the listed waste K048, which contains chromium (D007) and lead (D008). K048 is subject to a six-month national capacity variance; consequently, the treatment standard is not in effect until November 8, 1990. The treatment standards for EP toxic chromium and lead became effective on August 8, 1990 (due to a national capacity variance granted to all Third Third wastes).

During the period from May 8 1990 until August 8, 1990, the waste was subject to the three-month national capacity variance. K048 was rescheduled (as was K049, K050, K051, and K052) from the First Third to the Third Third, and as already mentioned, a three-month national capacity variance of the May 8, 1990 statutory effective date was granted that extended the effective date to August 8, 1990. The notification for K048 during the three-month capacity variance should have included the K048 waste code and the date upon which the waste was subject to this listed waste prohibition, November 8, 1990. The notification also should have included the D007 and D008 waste codes and the date upon which the waste was subject to these characteristic waste prohibitions, August 8, 1990.

During the period from August 8, 1990 until November 9, 1990, the waste is subject to the treatment standard for EP toxic chromium and lead, since the effective date for these wastes has passed (the K048 treatment standard is not yet in effect). The notification should include the K048 waste code and the date upon which the waste is subject to this prohibition (November 8, 1990), as well as the D007 and D008 waste codes. The waste must be treated to meet the D007 and D008 treatment standards prior to land disposal. See *API* v. *EPA*, 906 F.2d 723, 735–36 (D.C. Cir. 1990).

When the effective date for K048 has passed (November 8, 1990), the waste will be governed by the listed waste code and must meet the treatment standard for K048, since this treatment standard is more specific for the EP constituents. The D007 and D008 waste codes may be omitted from the notification at that time.

Scenario 3. When a waste is listed only for toxicity and displays a characteristic at the point of generation that is not addressed as a constituent of concern in the treatment standard, the notification must include both the listed waste code and the characteristic waste code. The treatment standards for both the listed waste and the characteristic waste must be met (55 FR 22659 and § 268.9(b)).

An example of such a scenario would be that of the listed waste K061 (listed for toxicity only) that also contains greater than 5.0 mg/kg of arsenic (D004). Arsenic is not a constituent of concern in K061. In this case, the D004 waste code should be included on the notification along with the K061 waste code, and the arsenic treatment standard as well as the K061 treatment standard must be met prior to land disposal.

Scenario 4. EPA also prohibits the land disposal of characteristic wastes when the characteristic is identified at the point of disposal (55 FR 22659 and § 268.9(c)). If, after treatment, a hazardous waste displays a characteristic for the first time, the characteristic code should be added to the notification (and to the facility records). The waste must be treated again in order to meet the characteristic treatment standard prior to land disposal.

I. *Treatment Standards For Newly Listed F002 and F005 Constituents.* The question has arisen of whether the technology standards for F002 and F005 are triggered by the presence of 2-nitropropane and 2-ethoxyethanol, or whether the waste has to be listed for those components. The first step in determining what treatment standard applies is proper waste identification. If a waste is identified as F002 and/or as F005, then the applicable treatment standard for that waste must be met prior to land disposal. Treatment standards for 2-nitropropane and 2-ethoxyethanol apply to only wastes listed as F005 with those constituents.

J. *Applicability of the National Capacity Variance For Radioactive Mixed Wastes to Mixed Radioactive/D002 Wastes.* The Agency discussed in detail on preamble page 22674 the issue of applying the California list prohibitions to Third Third wastes that are granted a national capacity variance. The Agency is here reemphasizing that the two-year national capacity variance granted to mixed radioactive/scheduled wastes (see 40 CFR 268.35(d)) does not apply to mixed radioactive/D002 wastes meeting the definition of a California list corrosive waste in § 268.32(a)(1). The California list requirements apply to this mixed radioactive waste.

K. *Applicability of Treatment Standards to D001 High TOC Wastes That Have Undergone Phase Separation.* The treatment standard for the high TOC subcategory of D001 wastes is a required method of treatment, incineration or fuel substitution. It has been brought to the attention of the Agency that this waste may be pretreated and thus separated into solid and liquid phases. In some cases, the solid phase of this waste does not exhibit the characteristic of ignitability. The question has been asked as to what treatment standards and recordkeeping procedures apply to the solid portion of this D001 waste.

As discussed in the preamble at pages 22544, the noncharacteristic solid phase of this waste would no longer be regulated under the hazardous waste regulations, but be subject instead to the solid waste regulations. The Agency considers pretreatment processes that separate phases of a waste to be acceptable provided that the remaining material that exhibits the characteristic is treated by the required technology.

Since the notification requirements attach to hazardous waste at the point of generation, this is the proper point to evaluate whether such notification is necessary for the solid waste portion of the waste. The § 268.7 notification requirements would not attach to the solid portion of this waste because, at the point of generation of this category of waste, it does not display the characteristic of ignitability, and is thus nonhazardous. (As explained on preamble page 22544, each new treatability group is a new point of generation for characteristic wastes.) The treatment residue from the use of the required technology may be sent to a nonhazardous landfill (provided it displays no characteristic of hazardous waste). The generator notification that accompanied the waste to pretreatment, however, must follow the hazardous liquid portion of this high TOC D001 waste to the hazardous waste treatment facility.

L. *Clarification of MACRO Treatment Standard in § 268.42, Table 3.* The treatment standard for radioactive lead (D008) solids is a required method of treatment: Macroencapsulation (MACRO). A question has come up about the applicability of this treatment standard to mixed hazardous wastes inside containers made of elemental lead. The Agency's intent when developing this treatment standard was that the mixed hazardous waste inside the container should be removed and treated to meet applicable treatment standards. Only the radioactive elemental lead container (and not necessarily its contents) is subject to the

treatment standard specified as MACRO.

M. *Applicability of Mercury Wastewater Treatment Standards.* Clarification of how to apply treatment standards to wastes containing mercury in its elemental form is necessary, and is here included in today's rule. Concentrated elemental mercury is an inorganic liquid that is relatively insoluble in water. Significantly quantities of elemental mercury can be suspended in a mixture with aqueous wastes, however, such that the elemental mercury would not be considered a suspended "solid". Because of this, aqueous wastes with suspensions of elemental mercury, and waste elemental mercury itself, seem to qualify as wastewaters under the definitions in § 268.2(f) because they contain less than 1% total organic carbon and less than 1% total suspended solids.

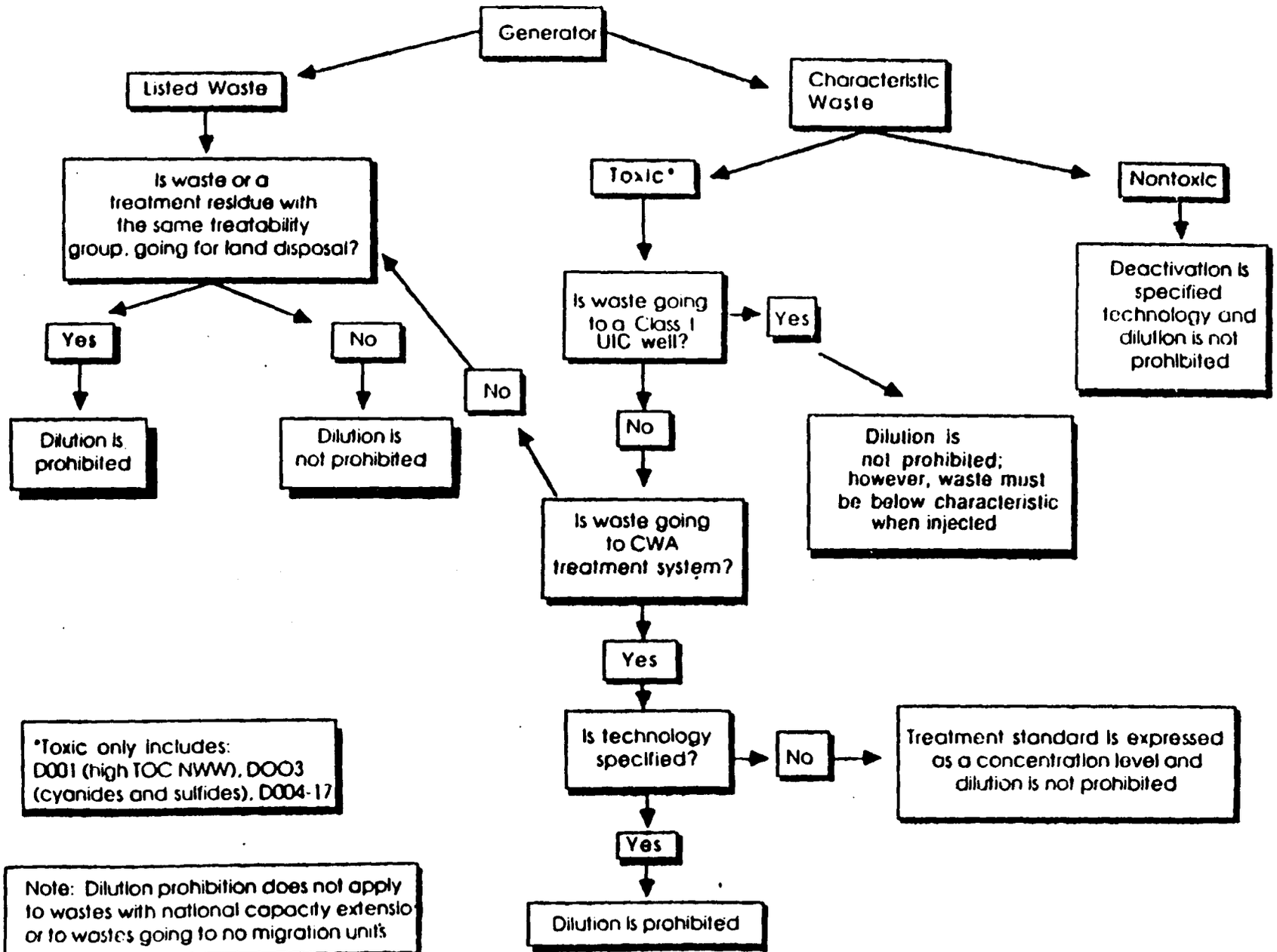
In the Third Third final rule, EPA established recovery (i.e., roasting or retorting) as BDAT for nonwastewater forms of mercury wastes that contain greater than 260 mg/kg of mercury. The primary purpose of these processes is the recovery of mercury in its elemental form. It is often difficult to distinguish between the mercury present in wastes in its elemental form versus in its soluble ionic form. The Agency, therefore, is clarifying that any wastes that contain greater than 260 mg/kg of total mercury, but that otherwise appear to meet the definition of wastewaters, are, in fact, classified as nonwastewaters that must be recovered. This is consistent with the fact that the 260 mg/kg level far exceeds the solubility of elemental mercury in water. Aqueous suspensions of elemental mercury that contain this much mercury should be treated by simple physical separation technologies such as filtration, decantation, and centrifugation, with subsequent recovery of the elemental mercury.

Any wastes containing less than 260 mg/kg total mercury and that otherwise meet the definition of wastewaters in § 268.2(f) are considered to be mercury wastewaters and, as such, require wastewater treatment to the applicable mercury wastewater levels. The residues from these treatment processes would need to be evaluated for applicability of the wastewater or nonwastewater standards for mercury. It is likely that some residues will contain sufficient total suspended "solids" to be clearly classified as nonwastewaters.

N. *The Dilution Prohibition.* The Agency has received a number of questions regarding different aspects of the dilution prohibition. In response, a chart has been developed that should help those in the regulated community to understand when this prohibition could apply. It is being included in today's rule as a convenience to the reader.

BILLING CODE 6560-50-M

DILUTION


Generator
Listed Waste
Characteristic Waste
Is waste or a treatment residue with the same treatability group, going for land disposal?
Yes
No
Dilution is prohibited
Dilution is not prohibited
No
Toxic*
Nontoxic
Deactivation is specified technology and dilution is not prohibited
Is waste going to a Class I UIC well?
Yes
Dilution is not prohibited; however, waste must be below characteristic when injected
No
Is waste going to CWA treatment system?
Yes
Is technology specified?
No
Treatment standard is expressed as a concentration level and dilution is not prohibited
Yes
Dilution is prohibited
*Toxic only includes: D001 (high TOC NWW), D003 (cyanides and sulfides), D004-17
Note: Dilution prohibition does not apply to wastes with national capacity extensio or to wastes going to no migration units

IV. Rationale for Immediate Effective Date

Today's notice does not create any new regulatory requirements; rather, it restates and clarifies existing requirements by correcting a number of errors in the June 1, 1990 final rule (55 FR 22520). For these reasons, EPA finds that good cause exists under section 3010(b)(3) of RCRA, 42 U.S.C. 9903(b)(3), to provide for an immediate effective date. In addition, there already was full opportunity to comment on all of these issues during the rulemaking so that further comment is unnecessary. For the same reasons, EPA finds that there is good cause under 5 U.S.C. 553(b)(3)(B) to promulgate today's corrections in final form and that there is good cause under 5 U.S.C. 533(d)(3) to waive the requirement that regulations be published at least 30 days before they become effective. Finally, EPA notes that although it is not withdrawing any existing regulatory language, all of today's revisions operate prospectively.

V. 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 amendment), it is not "major"; therefore, no Regulatory Impact Analysis is required.

List of Subjects in Parts 148, 261, 262, 268, and 270

Administrative practice and procedure, Confidential business information, Designated facility, Environmental protection, Hazardous materials, Hazardous materials transporting, Hazardous waste, Intergovernmental relations, Labeling, Manifests, Packaging and containers, Recycling, Reportable quantities, Reporting and recordkeeping requirements, Waste treatment and disposal, Water pollution control, Water supply.

Dated: November 27, 1990.

Mary A. Gade,

Acting Assistant Administrator for Solid Waste and Emergency Response.

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 148.10 is amended by redesignating paragraph (c) as (e), and adding new paragraphs (c) and (d), and Tables A and B to the end of the section to read as follows:

§ 148.10 Waste specific prohibitions—solvent wastes.

* * * * *

(c) Effective August 8, 1990, all spent F002 and F005 wastes containing solvent constituents listed in Table B of this section are prohibited from underground injection at off-site injection facilities.

(d) Effective November 8, 1990, the wastes specified in paragraph (c) of this section are prohibited from underground injection at on-site injection facilities.

(e) * * *

Table A

Acetone
n-Butyl alcohol
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Cresols and cresylic acid
Cyclohexanone
1,2-dichlorobenzene
Ethyl acetate
Ethyl benzene
Isobutanol
Methanol
Methylene chloride
Methylene chloride (from the pharmaceutical industry)
Methyl ethyl ketone
Nitrobenzene
Pyridine
Tetrachloroethylene
Toulene
1,1,1-Trichloroethane
1,2,2-Trichloro-1,2,2-trifluoroethane
Trichloroethylene
Trichlorofluoromethane
Xylene

Table B

Benzene
2-Ethoxyethanol
2-Nitropropane
1,1,2-Trichloroethane

3. In § 148.16 paragraph (c) is revised 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 F039 (nonwastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K002, K003, K005 (wastewaters), K006, K007 (wastewaters), K026, K032, K033, K034, and K100 (wastewaters); the wastes specified in 40 CFR 261.33 as P008, 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, P101, P[redacted] P116, P118, P119, U001, U004, U006, U017, U024, U027, U030, U033, U034, U038, U039, U042, U045, U048, U052, U055, U056, U068, U071, U072, U075, U076, U079, U081, U082, U084, U085, U090, U091, U096, U112, U113, U117, U118, U120, U121, U123, U125, U126, U132, U136, U141, U145, U148, U152, U153, U156, U160, U166, U167, U181, U182, U183, U184, U188, U187, U191, U194, U197, U201, U202, U204, U207, U222, U225, U234, U236, U240, U243, U246, 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, and newly listed waste F025 are prohibited from underground injection at off-site injection facilities.

* * * * *

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. Section 261.3 is amended by revising paragraph (d)(1) to read as follows:

§ 261.3 Definition of hazardous waste.

* * * * *

(d) * * *

(1) In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in Subpart C. (However, wastes that exhibit a characteristic at the point of generation may still be subject to the requirements of Part 268, even if they no longer exhibit a characteristic at the point of land disposal.)

* * * * *

3. Section 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 used in co[redacted]rin[redacted] with the notification requireme[redacted] section 3010 of the Act and all

applicable recordkeeping and reporting requirements under Parts 262 through 265, 268, and 270 of this chapter.

* * * * *

4. Section 261.31(a), the table is amended by revising the entry for F039 to read as follows:

§ 261.31 Hazardous wastes from non-specific sources.

(a) * * *

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under Subpart D of this Part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.)	(T)

* * * * *

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.

2. Note 2 in § 262.10 is revised to read as follows:

§ 262.10 Purpose, scope, and applicability.

* * * * *

Note 2: A generator who treats, stores, or disposes of hazardous waste on-site must comply with the applicable standards and permit requirements set forth in 40 CFR parts 264, 265, 266, 268, and 270.

3. Section 262.11 is amended by revising the introductory text of paragraph (c) 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 40 CFR part 261, the generator must then determine whether the waste is identified in subpart C of 40 CFR part 261 by either:

* * * * *

4. Section 262.34 is amended by revising paragraph (d)(4) to read as follows:

§ 262.34 Accumulation time.

* * * * *

(d) * * *

(4) The generator complies with the requirements of paragraphs (a)(2) and (a)(3) of this section, the requirements of subpart C of part 265, the requirements of 40 CFR 268.7(a)(4); and

* * * * *

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.

2. Section 268.2 is amended by revising paragraphs (d), (f)(1), (f)(2), and (g) to read as follows:

§ 268.2 Definitions applicable in this part.

* * * * *

(d) *Nonwastewaters* are wastes that do not meet the criteria for wastewaters in paragraph (f) of this section.

* * * * *

(f) * * *

(1) *F001, F002, F003, F004, F005, wastewaters* are 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* contain less than 5% by weight TOC and less than 1% by weight TSS, as generated.

* * * * *

(g) *Inorganic Solid Debris* means nonfriable inorganic solids contaminated with D004–D011 hazardous wastes that are incapable of passing through a 9.5 mm standard sieve; and that require cutting, or crushing and grinding in mechanical sizing equipment prior to stabilization; and, are 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);

3. Section 268.7 is amended by redesignating paragraphs (a)(6) through (a)(9) as paragraphs (a)(7) through (a)(10); by revising paragraphs (a) introductory text, (a)(1)(ii), (a)(2)(i)(B), (a)(3)(ii), (a)(7), (b)(4)(ii), and the section heading; and by adding paragraph (a)(6) to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) Except as specified in § 268.32 of this part, if a generator's waste is listed in 40 CFR part 261, subpart D, the generator must test his waste, or test an extract using the test method described in part 261, appendix II, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part. Except as specified in § 268.32 of this part, if a generator's waste exhibits one or more of the characteristics set out at 40 CFR part 261, subpart C, the generator must test an extract using the test method described in appendix IX of this part, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this Part.

(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 must either be included, or be referenced by including on the notification the applicable wastewater (as defined in § 268.2(f)) or nonwastewater (as defined in § 268.2(d)) category, the applicable subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), and the CFR section(s) and paragraph(s) where the applicable treatment standard appears. 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 must either be included, or be referenced by including on the notification the applicable wastewater (as defined in § 268.2(f)) or nonwastewater (as defined in § 268.2(d)) category, the applicable subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), and the CFR section(s) and paragraph(s) where the applicable treatment standard appears. 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 must either be included, or be referenced by including on the notification the applicable wastewater (as defined in § 268.2(f)) or nonwastewater (as defined in § 268.2(d)) category, the applicable subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), and the CFR section(s) and paragraph(s) where the applicable treatment standard appears. 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.

* * * * *

(6) If a generator determines that he is managing a restricted waste that is excluded from the definition of hazardous or solid waste or exempt from Subtitle C regulation, under 40 CFR 261.2–261.6 subsequent to the point of generation, he must place a one-time notice stating such generation, subsequent exclusion from the definition of hazardous or solid waste or exemption from Subtitle C regulation, and the disposition of the waste, in the facility's file.

(7) Generators must retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to this section for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site treatment, storage, or disposal. The five 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. The requirements of this paragraph apply to solid 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 261.2–261.6, or exempted from Subtitle C regulation, subsequent to the point of generation.

* * * * *

(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 must either be included, or be referenced by including on the notification the applicable wastewater (as defined in § 268.2(f)) or nonwastewater (as defined in § 268.2(d)) category, the applicable subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*), and the CFR section(s) and paragraph(s) where the applicable treatment standard appears. 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 included on the notification.

* * * * *

4. Section 268.9 is amended by revising paragraphs (a) and (d)(1)(ii) 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 EPA Hazardous Waste Number (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 the waste code for any applicable listing under 40 CFR part 261, subpart D. In addition, the waste will carry one or more of the waste codes under 40 CFR part 261, subpart C, where the waste exhibits a characteristic, except in the case when the treatment standard for the waste code listed in 40 CFR part 261, subpart D operates in lieu of the standard for the waste code under 40 CFR part 261, subpart C, as specified in paragraph (b) of this section.

* * * * *

(d) * * *

(1) * * *

(ii) A description of the waste as initially generated, including the applicable EPA Hazardous Waste Number(s), the applicable wastewater (as defined in § 268.2(f)) or nonwastewater (as defined in § 268.2(d)) category, and the subdivisions made within a waste code based on waste-specific criteria (such as D003 *reactive cyanides*).

* * * * *

§ 268.10 [Amended]

5. Section 268.10 is amended by removing the entries for the following hazardous wastes: K048, K049, K050, K051, and K052.

6. Section 268.12(a) is amended by adding the following hazardous wastes in alphanumeric order:

§ 268.12 Identification of wastes to be evaluated by May 8, 1990.

(a) * * *

§ 261.32 Wastes.

* * * * *

K048—Dissolved air flotation (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 (leaded) from the petroleum refining industry.

* * * * *

Subpart C—Prohibitions on Land Disposal

7. Section 268.33 is amended by revising paragraph (b) to read as follows:

§ 268.33 Waste specific prohibitions—First Third wastes.

* * * * *

(b) Effective August 8, 1990, the waste specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K071 is prohibited from land disposal.

* * * * *

8. Section 268.35 is amended by revising paragraphs (a), (c), (d), and (e) 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 F002 (1,1,2-trichloroethane), F005 (benzene), F005 (2-ethoxy ethanol) F005 (2-nitropropane), F006 (wastewaters), F019, F025, 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); K015 (nonwastewaters); K017; K021 (wastewaters); K022 (wastewaters); K025 (wastewaters); K026; K029 (wastewaters); K031 (wastewaters); K032; K033; K034; K035; K041; K042; K046 (wastewaters, reactive nonwastewaters); K048 (wastewaters); K049 (wastewaters); K050 (wastewaters); K051 (wastewaters); K052 (wastewaters); K060 (wastewaters); K061 (wastewaters) and (high zinc subcategory > 15% zinc); K069 (wastewaters, calcium sulfate nonwastewaters); K073, K083; 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; P020; P022; P023; P024; P026; 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; 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; 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; U208; 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.

* * * * *

(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); K106 (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); P067; and P092 (nonwastewaters); the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Numbers U136 (nonwastewaters); and U151 (nonwastewaters); the following wastes identified as hazardous based on a characteristic alone: D004 (nonwastewaters); D008 (lead materials stored before secondary smelting); and D009 (nonwastewaters); inorganic solid debris as defined in 40 CFR 268.2(g) (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 268.10, 268.11, and 268.12 that are mixed radioactive/hazardous wastes, and soil or debris contaminated with hazardous wastes listed in 40 CFR 268.10, 268.11, and 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, vitrification, acid leaching followed by chemical precipitation, or thermal recovery of metals, and which are contaminated soil or debris, are prohibited from land disposal.

* * * * *

Subpart D—Treatment Standards

9. Section 268.40 is amended by revising paragraph (a) 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 II of part 261 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. These wastes 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 40 CFR part 261, appendix II, or the test method in appendix IX of this part, does not exceed the concentrations shown in Table CCWE of § 268.41 for any hazardous constituent listed in Table CCWE for that waste.

* * * * *

10. Table CCWE in § 268.41(a) is revised to read as follows:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) * * *

268.41 TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/l)	Notes
D004	NA	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.0	(1)
D005	NA	Table CCW in 268.43.	Barium	7440-39-3	NA		100	
D006	NA	Table CCW in 268.43.	Cadmium	7440-43-9	NA		1.0	
D007	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		5.0	
D008	NA	Table CCW in 268.43.	Lead	7439-92-1	NA		5.0	(1)
D009 (Low Mercury Subcategory—less than 260 mg/kg Mercury).	NA	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.20	
D010	NA	Table CCW in 268.43.	Selenium	7782-49-2	NA		5.7	
D011	NA	Table CCW in 268.43.	Silver	7440-22-4	NA		5.0	
F001-F005 spent solvents.	NA	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-Trifluoroethane	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	NA	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	NA	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	NA	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	NA	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	NA	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	NA	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	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		5.2	

268.41 TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/l)	Notes
F020–F023 and F026–F028 dioxin containing wastes [2]	NA	NA	HxCDD-All Hexachloro-dibenzo-p-dioxins.		< 1 ppb		< 1 ppb	
			HxCDF-All Hexachloro-dibenzofurans.		< 1 ppb		< 1 ppb	
			PeCDD-All Pentachloro-dibenzo p-dioxins.		< 1 ppb		< 1 ppb	
			PeCDF-All Pentachloro-dibenzofurans.		< 1 ppb		< 1 ppb	
			TCDD-All Tetrachloro-dibenzo-p-dioxins.		< 1 ppb		< 1 ppb	
			TCDF-All Tetrachloro-dibenzofurans		< 1 ppb		< 1 ppb	
			2,4,5-Trichlorophenol	95-95-4	< 0.05	ppm	< 0.05	ppm
			2,4,6-Trichlorophenol	88-06-2	< 0.05 ppm		< 0.05 ppm	
			2,3,4,6-Tetrachlorophenol	58-90-2	< 0.05 ppm		< 0.05 ppm	
			Pentachlorophenol	87-86-5	< 0.01 ppm		< 0.01 ppm	
F024	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.073	
			Lead	7439-92-1	NA		[Reserved]	
			Nickel	7440-02-0	NA		0.088	
F039	NA	Table CCW in 268.43.	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		0.066	
			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		0.32	
			Selenium	7782-49-2	NA		5.7	
			Silver	7440-22-4	NA		0.072	
K001	NA	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
K002	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K003	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K004	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K005	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K006 (anhydrous).	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K006 (hydrated)	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		5.2	
K007	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K008	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K015	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.2	
K021	NA	Table CCW in 268.43.	Antimony	7440-36-0	NA		0.23	
K022	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		5.2	
			Nickel	7440-02-0	NA		0.32	
K028	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.073	
			Lead	7439-92-1	NA		0.021	
			Nickel	7440-02-0	NA		0.088	
K031	NA	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
K046	NA	Table CCW in 268.43.	Lead	7439-92-1	NA		0.18	
K048	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.20	
K049	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.20	
K050	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.20	
K051	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.20	
K052	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		1.7	
			Nickel	7440-02-0	NA		0.20	
K061 (Low Zinc Subcategory—less than 15% Total Zinc).	NA	Table CCW in 268.43.	Cadmium	7440-43-9	NA		0.14	
			Chromium (Total)	7440-47-32	NA		5.2	
			Lead	7439-92-1	NA		0.24	
			Nickel	7440-02-0	NA		0.32	

268.41 TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/l)	
K061 (High Zinc Subcategory—greater than 15% Total Zinc)—Effective until August 7th 1991).	NA	Table CCW in 268.43.	Cadmium	7440-43-9	NA		0.14	
			Chromium (Total)	7440-47-32	NA		5.2	
			Lead	7439-92-1	NA		0.24	
			Nickel	7440-02-0	NA		0.32	
K062	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		0.37	
K069 (Calcium Sulfate Subcategory).	NA	Table 2 in 268.42 and Table CCW in 268.43.	Cadmium	7440-43-9	NA		0.14	
			Lead	7439-92-1	NA		0.24	
K071	NA	Table CCW in 268.43.	Mercury	7439-97-6	NA		0.025	
K083	NA	Table CCW in 268.43.	Nickel	7440-02-2	NA		0.088	
K084	NA	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
K086	NA	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
			Lead	7439-92-1	NA		037 0.37	
K087	NA	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
K100	NA	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	
K101	NA	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
K102	NA	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC).	NA	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.020	
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC).	NA	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.025	
K115	NA	Table CCW in 268.43.	Nickel	7440-02-0	NA		0.32	
P010	Arsenic acid	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
P011	Arsenic pentoxide.	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
P012	Arsenic trioxide	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
P013	Barium cyanide	Table CCW in 268.43.	Barium	7440-39-3	NA		52	
P036	Dichlorophenylarsine.	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
P038	Diethylarsine	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.6	(1)
P065 (Low Mercury Subcategory—Less than 260 mg/kg Mercury—residues from RMERC).	Mercury fulminate.	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.20	

268.41 TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/l)	Notes
P065 (Low Mercury Subcategory—Less than 260 mg/kg Mercury—incinerator residues (and are not residues from RMERC)).	Mercury fulminate.	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.025	
P073	Nickel carbonyl	Table CCW in 268.43.	Nickel	7440-02-0	NA		0.32	
P074	Nickel cyanide	Table CCW in 268.43.	Nickel	7440-02-0	NA		0.32	
P092 (Low Mercury Subcategory—Less than 260 mg/kg Mercury—residues from RMERC).	Phenyl mercury acetate.	Table 2 in 268.42 and Table CCW in 268.43.	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)).	Phenyl mercury acetate.	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA		0.025	
P099	Potassium silver cyanide.	Table CCW in 268.43.	Silver	7440-22-4	NA		0.072	
P103	Selenourea	Table CCW in 268.43.	Selenium	7782-49-2	NA		5.7	
P104	Silver cyanide	Table CCW in 268.43.	Silver	7440-22-4	NA		0.072	
P110	Tetraethyl lead	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
P114	Thallium selenite	Table CCW in 268.43.	Selenium	7782-49-2	NA		5.7	
U032	Calcium chromate.	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA		0.094	
U051	Creosote	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
U136	Cacodylic acid	Table CCW in 268.43.	Arsenic	7440-38-2	NA		5.8	(1)
U144	Lead acetate	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
U145	Lead phosphate	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
U146	Lead subacetate	Table CCW in 268.43.	Lead	7439-92-1	NA		0.51	
U151 (Low Mercury Subcategory—Less than 260 mg/kg Mercury—residues from RMERC).	Mercury	Table CCW in 268.43 and Table 2 in 268.42.	Mercury	7439-97-6	NA		0.20	
U151 (Low Mercury Subcategory—Less than 260 mg/kg Mercury—that are not residues from RMERC.	Mercury	Table CCW in 268.43 and Table 2 in 268.42.	Mercury	7439-97-6	NA		0.025	
U204	Selenium dioxide	Table CCW in 268.43.	Selenium	7782-49-2	NA		5.7	

268.41 TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/l)	Notes
U205	Selenium sulfide	Table CCW in 268.43.	Selenium	7782-49-2	NA		5.7	

[1] These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.
[2] These waste codes are not subcategorized into wastewaters and nonwastewaters.
Note: NA means Not Applicable.

* * * * *

11. In § 268.42 paragraph (a)(2), Table 1, Table 2, and Table 3 in paragraph (a) are revised, and paragraph (a)(3) is added preceding Tables 1–3 to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) * * *

(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 D, treatment standard for a specific HOC (such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a)).

(3) A mixture consisting of wastewater, the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act, and *de minimis* losses of materials from manufacturing operations in which these materials are used as raw materials or are produced as products in the manufacturing process, and that meet the criteria of the D001 ignitable liquids containing greater than 10% total organic constituents (TOC) subcategory, is subject to the DEACT treatment standard described in Table 1 of this section. For purposes of this paragraph, *de minimis* losses include those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks from process equipment, storage tanks, or containers; leaks from well-maintained pump packings and seals; sample purgings; and relief device discharges.

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS

Technology code	Description of technology-based standards
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 detonation.
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).
CARBN:	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 or sulfites, bisulfites, 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 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 part 265 subpart O.
LLEXT:	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.

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS—Continued

Technology code	Description of technology-based standards
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, flourides, 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; remixing for direct reuse or 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 (7) simple precipitation (i.e., crystalization)—*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.
RORGS:	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/crystalization (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 a decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRM:	Thermal recovery of metals or inorganics from nonwastewaters in units identified as industrial furnaces according to 40 CFR 260.10 (1), (6), (7), (11), and (12) under the definition of "industrial furnaces".
RZINC:	Reclaiming in high temperature metal recovery units for the purpose of recovery of zinc.
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.

268.42 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	NA	Ignitable Liquids based on 261.21(a)(1)—Wastewaters.	NA	DEACT	NA.
D001	NA	Ignitable Liquids based on 261.21(a)(1)—Low TOC Ingitable Liquids Subcategory—Less than 10% total organic carbon.	NA	NA	DEACT.
D001	NA	Ignitable Liquids based on 261.21(a)(1)—High TOC Ingitable Liquids Subcategory—Greater than or equal to 10% total organic carbon.	NA	NA	FSUBS; RORGS; or INCIN.
D001	NA	Ignitable compressed gases based on 261.21(a)(3).	NA	NA	DEACT.[1]
D001	NA	Ignitable reactives based on 261.21(a)(2).	NA	NA	DEACT.
D001	NA	Oxidizers based on 261.21(a)(4)	NA	DEACT	DEACT.

268.42 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
D002	NA	Acid subcategory based on 261.22(a)(1).	NA	DEACT	DEACT.
D002	NA	Alkaline subcategory based on 261.22(a)(1).	NA	DEACT	DEACT.
D002	NA	Other corrosives based on 261.22(a)(2).	NA	DEACT	DEACT.
D003	NA	Reactive sulfides based on 261.23(a)(5).	NA	DEACT (may not be diluted)	DEACT (may not be diluted).
D003	NA	Explosives based on 261.23(a)(6), (7), and (8).	NA	DEACT	DEACT.
D003	NA	Water reactives based on 261.23(a)(2), (3), and (4).	NA	NA	DEACT.
D003	NA	Other reactives based on 261.23(a)(1).	NA	DEACT	DEACT.
D006	NA	Cadmium containing batteries	7440-43-9	NA	RTHRM.
D008	NA	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 266.80.).	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
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	NA	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	NA	LLEXT fb SSTRP fb CARBN; or INCIN.	INCIN.
K026	NA	Stripping still tails from the production of methyl ethyl pyridines.	NA	INCIN	INCIN.
K027	NA	Centrifuge and distillation residues from toluene diisocyanate production.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K039	NA	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	NA	CARBN; or INCIN	FSUBS, or INCIN.
K044	NA	Wastewater treatment sludges from the manufacturing and processing of explosives.	NA	DEACT	DEACT.
K045	NA	Spent carbon from the treatment of wastewater containing explosives.	NA	DEACT	DEACT.
K047	NA	Pink/red water from TNT operations.	NA	DEACT	DEACT.
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.

268.42 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
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	NA	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	NA	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K115	NA	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K116	NA	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	NA	Warfarin (>0.3%)	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
P002	NA	1-Acetyl-2-thiourea	591-08-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P003	NA	Acrolein	107-02-8	NA	FSUBS; or INCIN.
P005	NA	Allyl alcohol	107-18-6	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN
P006	NA	Aluminum phosphide	20859-73-8	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
P007	NA	5-Aminoethyl 3-isoxazolol	2763-96-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P008	NA	4-Aminopyridine	504-24-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P009	NA	Ammonium picrate	131-74-8	CHOXD; CHRED, CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
P014	NA	Thiophenol (Benzene thiol)	108-98-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P015	NA	Beryllium dust	7440-41-7	RMETL; or RTHRM	RMETL; or RTHRM.
P016	NA	Bis(chloromethyl)ether	542-88-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P017	NA	Bromoacetone	598-31-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P018	NA	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	NA	Chloroacetaldehyde	107-20-0	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P026	NA	1-(o-Chlorophenyl) thiourea	5344-82-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P027	NA	3-Chloropropionitrile	542-76-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P028	NA	Benzyl chloride	100-44-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P031	NA	Cyanogen	460-19-5	CHOXD; WETOX or INCIN	CHOXD; WETOX; or INCIN.
P033	NA	Cyanogen chloride	506-77-4	CHOXD; WETOX or INCIN	CHOXD; WETOX; or INCIN.
P034	NA	2-Cyclohexyl-4,6-dinitrophenol	131-89-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P040	NA	O,O-Diethyl O-pyrazinyl phosphorothioate.	297-97-2	CARBN; or INCIN	FSUBS; or INCIN.
P041	NA	Diethyl-p-nitrophenyl phosphate	311-45-5	CARBN; or INCIN	FSUBS; or INCIN.
P042	NA	Epinephrine	51-43-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P043	NA	Diisopropyl fluorophosphate (DFP).	55-91-4	CARBN; or INCIN	FSUBS; or INCIN.
P044	NA	Dimethoate	60-51-5	CARBN; or INCIN	FSUBS or INCIN.
P045	NA	Thiofanox	39196-18-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P046	NA	alpha, alpha-Dimethylphenethylamine.	122-09-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P047	NA	4,6-Dinitro-o-cresol salts	534-52-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P049	NA	2,4-Dithiobiuret	541-53-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.

268.42 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
P054	NA	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	NA	Fluoroacetamide	640-19-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P058	NA	Fluoroacetic acid, sodium salt	62-74-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P062	NA	Hexaethyltetraphosphate	757-58-4	CARBN; or INCIN	FSUBS; or INCIN.
P064	NA	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 or are not residues from RMERC; regardless of Mercury Content).	628-86-4	NA	IMERC.
P066	NA	Methomyl	16752-77-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P067	NA	2-Methylaziridine	75-55-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P068	NA	Methyl hydrazine	60-34-4	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
P069	NA	Methylactonitrile	75-86-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P070	NA	Aldicarb	116-06-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P072	NA	1-Naphthyl-2-thiourea	86-88-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P075	NA	Nicotine and salts	[1] 54-11-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P076	NA	Nitric oxide	10102-43-9	ADGAS	ADGAS.
P078	NA	Nitrogen dioxide	10102-44-0	ADGAS	ADGAS.
P081	NA	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	NA	N-Nitrosomethylvinylamine	4549-40-0	(WETOX or CHOXD) fb CARBN; OR INCIN.	INCIN.
P085	NA	Octamethylpyrophosphoramide	152-16-9	CARBN; or INCIN	FSUBS; or INCIN.
P087	NA	Osmium tetroxide	20816-12-0	RMETL; or RTHRM	RMETL; or RTHRM.
P088	NA	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	NA	N-Phenylthiourea	103-85-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P095	NA	Phosgene	75-44-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P096	NA	Phosphine	7803-51-2	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
P102	NA	Propargyl alcohol	107-19-7	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
P105	NA	Sodium azide	26628-22-8	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
P108	NA	Strychnine and salts	[1] 57-24-9	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P109	NA	Tetraethyldithiopyrophosphate	3689-24-5	CARBN; or INCIN	FSUBS; or INCIN.
P112	NA	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	RTHRM; or STABL.
P115	Table CCW in 268.43	Thallium (I) sulfate	7446-18-6	NA	RTHRM; or STABL.
P116	NA	Thiosemicarbazide	79-19-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
P118	NA	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.

268.42 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
P120	Table CCW in 268.43	Vanadium pentoxide	1314-62-1	NA	STABL
P122	NA	Zinc Phosphide (> 10%)	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U001	NA	Acetaldehyde	75-07-0	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN— FSUBS; or INCIN
U003	Table CCW in 268.43	Acetonitrile	75-05-8	NA	INCIN.
U006	NA	Acetyl Chloride	75-36-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U007	NA	Acrylamide	79-06-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U008	NA	Acrylic acid	79-10-7	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U010	NA	Mitomycin C	50-07-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U011	NA	Amitrole	61-82-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U014	NA	Auramine	492-80-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U015	NA	Azaserine	115-02-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U016	NA	Benz(c)acridine	225-51-4	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U017	NA	Benzal chloride	98-87-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U020	NA	Benzenesulfonyl chloride	98-09-9	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U021	NA	Benzidine	92-87-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U023	NA	Benzotrichloride	98-07-7	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U026	NA	Chlornaphazin	494-03-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U033	NA	Carbonyl fluoride	353-50-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U034	NA	Trichloroacetaldehyde (Chloral)	75-87-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U035	NA	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	NA	1-Chloro-2,3-epoxypropane (Epichlorohydrin).	106-89-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN. (WETOX or CHOXD) fb CARBN; or INCIN
U042	Table CCW in 268.43	2-Chloroethyl vinyl ether	110-75-8	NA	INCIN.
U046	NA	Chloromethyl methyl ether	107-30-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U049	NA	4-Chloro-o-toluidine hydrochloride	3165-93-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U053	NA	Crotonaldehyde	4170-30-3	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U055	NA	Cumene	98-82-8	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U056	NA	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	NA	Cyclophosphamide	50-18-0	CARBN; or INCIN	FSUBS; or INCIN.
U059	NA	Daunomycin	20830-81-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U062	NA	Diallate	2303-16-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U064	NA	1,2,7,8-Dibenzopyrene	189-55-9	(WETOX or CHOXD) fb CARBN or INCIN.	FSUBS; or INCIN.
U073	NA	3,3'-Dichlorobenzidine	91-94-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U074	NA	cis-1,4-Dichloro-2-butylene	1476-11-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
		trans-1,4-Dichloro-2-butylene		WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U085	NA	1,2:3,4-Diepoxybutane	1464-53-5	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U086	NA	N,N-Diethylhydrazine	1615—80—1	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U087	NA	0,0-Diethyl S-methyldithiophosphate.	3288-58-2	CARBN; or INCIN	FSUBS; or INCIN.
U089	NA	Diethyl stilbestrol	56-53-1	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U090	NA	Dihydrosafrole	94-58-6	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U091	NA	3,3'-Dimethoxybenzidine	119-90-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.

268.42 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
U092	NA	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	NA	7,12-Dimethyl benz(a)anthracene	57-97-6	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U095	NA	3,3'-Dimethylbenzidine	119-93-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U096	NA	a,a-Dimethyl benzyl hydroperoxide.	80-15-9	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U097	NA	Dimethylcarbomyl chloride	79-44-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U098	NA	1,1-Dimethylhydrazine	57-14-7	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U099	NA	1,2-Dimethylhydrazine	540-73-8	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U103	NA	Dimethyl sulfate	77-78-1	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U109	NA	1,2-Diphenylhydrazine	122-66-7	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U110	NA	Dipropylamine	142-84-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U113	NA	Ethyl acrylate	140-88-5	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U114	NA	Ethylene bis-dithiocarbamic acid	111-54-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U115	NA	Ethylene oxide	75-21-8	(WETOX or CHOXD) fb CARBN; or INCIN.	CHOXD; or INCIN.
U116	NA	Ethylene thiourea	96-45-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U119	NA	Ethyl methane sulfonate	62-50-0	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U122	NA	Formaldehyde	50-00-0	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U123	NA	Formic acid	64-18-6	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U124	NA	Furan	110-00-9	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U125	NA	Furfural	98-01-1	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U126	NA	Glycidaldehyde	765-34-4	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U132	NA	Hexachlorophenene	70-30-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U133	NA	Hydrazine	302-01-2	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U134	Table CCW in 268.43	Hydrogen Flounde	7664-39-3	NA	ADGAS fb NEUTR; or NEUTR.
U135	NA	Hydrogen Sulfide	7783-06-4	CHOXD; CHRED; or INCIN.	CHOXD; CHRED; or INCIN.
U143	NA	Lasiocarpine	303-34-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U147	NA	Maleic anhydride	108-31-6	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U148	NA	Maleic hydrazide	123-33-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U149	NA	Malononitrile	109-77-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U150	NA	Melphalan	148-82-3	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
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).	7439-97-6	NA	RMERC.
U153	NA	Methane thiol	74-93-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U154	NA Table CCW in 268.43	Methanol	67-56-1	~~(WETOX or CHOXD) fb CARBN; or INCIN.~~ N4	FSUBS; or INCIN.
U156	NA	Methyl chlorocarbonate	79-22-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U160	NA	Methyl ethyl ketone peroxide	1338-23-4	CHOXD; CHRED; CARBN; BIODG; or INCIN.	FSUBS; CHOXD; CHRED; or INCIN.
U163	NA	N-Methyl N'-nitro N-Nitrosoguanidine.	70-25-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U164	NA	Methylthiouracil	56-04-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U166	NA	1,4-Naphthoquinone	130-15-4	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U167	NA	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.

268.42 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
U171	NA	2-Nitropropane	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U173	NA	N-Nitroso-di-n-ethanolamine	1116-54-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U176	NA	N-Nitroso-N-ethylurea	759-73-9	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U177	NA	N-Nitroso-N-methylurea	684-93-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U178	NA	N-Nitroso-N-methylurethane	615-53-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U182	NA	Paraldehyde	123-63-7	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U184	NA	Pentachloroethane	76-01-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U186	NA	1,3-Pentadiene	504-60-9	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U189	NA	Phosphorus sulfide	1314-80-3	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U191	NA	2-Picoline	109-06-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U193	NA	1,3-Propane sultone	1120-71-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U194	NA	n-Propylamine	107-10-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U197	NA	p-Benzoquinone	106-51-4	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U200	NA	Reserpine	50-55-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U201	NA	Resorcinol	108-46-3	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U202	NA	Saccharin and salts	[1] 81-07-2	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U206	NA	Streptozotocin	18883-66-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U213	NA	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	NA	Thioacetamide	62-55-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U219	NA	Thiourea	62-56-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U221	NA	Toluenediamine	25376-45-8	CARBN; or INCIN	FSUBS; or INCIN.
U222	NA	o-Toluidine hydrochloride	636-21-5	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U223	NA	Toluene diisocyanate	26471-62-5	CARBN; or INCIN	FSUBS; or INCIN.
U234	NA	sym-Trinitrobenzene	99-35-4	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U236	NA	Trypan Blue	72-57-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U237	NA	Uracil mustard	66-75-1	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U238	NA	Ethyl carbamate	51-79-6	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U240	NA	2,4-Dichlorophenoxyacetic (salts and esters).	[1] 94-75-7	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U244	NA	Thiram	137-26-8	(WETOX or CHOXD) fb CARBN; or INCIN.	INCIN.
U246	NA	Cyanogen bromide	506-68-3	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
U248	NA	Warfarin (.3% or less).	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN.	FSUBS; or INCIN.
U249	NA	Zinc Phosphide (<10%)	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.

[1] CAS Number given for parent compound only.
[2] This waste code exists in gaseous form and is not categorized as wastewater or nonwastewater forms.
Note: NA means Not Applicable.

268.42 TABLE 3.—TECHNOLOGY-BASED STANDARDS FOR SPECIFIC RADIOACTIVE HAZARDOUS MIXED WASTE

Waste code	Waste descriptions and/or treatment category	CAS No.	Technology code	
			Wastewaters	Non-wastewaters
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.

268.42 TABLE 3.—TECHNOLOGY-BASED STANDARDS FOR SPECIFIC RADIOACTIVE HAZARDOUS MIXED WASTE—Continued

Waste code	Waste descriptions and/or treatment category	CAS No.	Technology code	
			Wastewaters	Non-wastewaters
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 organolead materials that can be incinerated and stabilized as ash.).	7439-92-1	NA	MACRO.
D008	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	IMERC.
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.

Note: NA means Not Applicable.

* * * * *

12. In § 268.43, Table CCW in paragraph (a), and paragraph (c) are revised to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) * * *

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
D003 (Reactive Cyanides Subcategory based on 261.23(a)(5)).	NA	NA	Cyanides (Total)	57-12-5	(4)		590	(7)
			Cyanides (Amenable).	57-12-5	0.86		30	
D004	NA	Table CCWE in 268.41.	Arsenic	7440-38-2	5.0		NA	
D005	NA	Table CCWE in 268.41.	Barium	7440-39-3	100		NA	
D006	NA	Table CCWE in 268.41.	Cadmium	7440-43-9	1.0		NA	
D007	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	5.0		NA	
D008	NA	Table CCWE in 268.41.	Lead	7439-92-1	5.0		NA	
D009	NA	Table CCWE in 268.41.	Mercury	7439-97-6	0.20		NA	
D010	NA	Table CCWE in 268.41.	Selenium	7782-49-2	1.0		NA	
D011	NA	Table CCWE in 268.41.	Silver	7440-22-4	5.0		NA	
D012	NA	Table 2 in 268.42	Endrin	720-20-8	NA		0.13	(1)
D013	NA	Table 2 in 268.42	Lindane	58-89-9	NA		0.066	(1)
D014	NA	Table 2 in 268.42	Methoxychlor	72-43-5	NA		0.18	(1)
D015	NA	Table 2 in 268.42	Toxaphene	8001-35-1	NA		1.3	(1)
D016	NA	Table 2 in 268.42	2,4-D	94-75-7	NA		10.0	(1)
D017	NA	Table 2 in 268.42	2,4,5-TP (Silvex)	93-76-5	NA		7.9	(1)
F001-F005 spent solvents.	NA	Table CCWE in 268.41 and Table 2 in 268.42.	1,1,2-Trichloroethane.	71-55-6	0.030		7.6	(1)
			Benzene	71-43-2	0.070		3.7	(1)
F001-F005 spent solvents (Pharmaceutical Industry-Wastewater Subcategory).	NA	NA	Methylene chloride.	75-09-2	0.44		NA	
F006	NA	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	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
F007	NA	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	
F008	NA	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	
F009	NA	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	NA	NA	Cyanides (Total)	57-12-5	1.9		1.5	
			Cyanides (Amenable).	57-12-5	0.1		NA	
F011	NA	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	NA	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	NA	Table CCWE in 268.41.	Cyanides (Total)	57-12-5	1.2		590	(3)
			Cyanides (Amenable).	57-12-5	0.86		30	(3)
			Chromium (Total)	7440-47-32	0.32		NA	
F024	NA	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	0.28	(1)	0.28	(1)
			3-Chloropropene	107-05-	0.28	(1)	0.28	(1)
			1,1-Dichloroethane.	75-34-3	0.014	(1)	0.014	(1)
			1,2-Dichloroethane.	107-06-2	0.014	(1)	0.014	(1)
			1,2-Dichloropropane.	78-87-5	0.014	(1)	0.014	(1)
			cis-1,3-Dichloropropene.	10061-01-5	0.014	(1)	0.014	(1)
			trans-1,3-Dichloropropene.	10061-02-8	0.014	(1)	0.014	(1)
			Bis(2-ethylhexyl)-phthalate.	117-81-7	0.036	(1)	1.8	(1)
			Hexachloroethane	67-72-1	0.036	(1)	1.8	(1)
			Chromium (Total)	7440-47-32	0.35		NA	
			Nickel	7440-02-0	0.47		NA	
F025 (Light Ends Subcategory).	NA	NA	Chloroform	67-66-3	0.046	(2)	6.2	(1)
			1,2-Dichloroethane.	107-06-2	0.21	(2)	6.2	(1)
			1,1-Dichloroethylene.	75-35-4	0.025	(2)	6.2	(1)
			Methylene chloride.	75-9-2	0.089	(2)	31	(1)
			Carbon tetrachloride.	56-23-5	0.057	(2)	6.2	(1)
			1,1,2-Trichloroethane.	79-00-5	0.054	(2)	6.2	(1)
			Trichloroethylene	79-01-6	0.054	(2)	5.6	(1)
			Vinyl chloride	75-01-4	0.27	(2)	33	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
F025 (Spent Filters or Aids and Desiccants Subcategory).	NA	NA	Chloroform	67-66-3	0.046	(2)	6.2	(1)
			Methylene chloride.	75-9-2	0.089	(2)	31	(1)
			Carbon tetrachloride.	56-23-5	0.057	(2)	6.2	(1)
			1,1,2-Trichloroethane.	79-00-5	0.054	(2)	6.2	(1)
			Trichloroethylene	79-01-6	0.054	(2)	5.6	(1)
			Vinyl chloride	75-01-4	0.27	(2)	33	(1)
			Hexachlorobenzene.	118-74-1	0.055	(2)	37	(1)
			Hexachlorobutadiene.	87-68-3	0.055	(2)	28	(1)
			Hexachloroethane	67-72-1	0.055	(2)	30	(1)
F039	NA	Table CCWE in 268.41.	Acetone	67-64-1	0.28	(2)	160	(1)
			Acenaphthalene	208-96-8	0.059	(2)	3.4	(1)
			Acenaphthene	83-32-9	0.059	(2)	4.0	(1)
			Acetonitrile	75-05-8	0.17	(2)	NA	
			Acetophenone	96-86-2	0.010	(2)	9.7	(1)
			2-Acetylaminofluorene	53-96-3	0.059	(2)	140	(1)
			Acrolein	107-02-8	0.29	(2)	NA	
			Acrylonitrile	107-13-1	0.24	(2)	84	(1)
			Aldrin	309-00-2	0.021	(2)	0.066	(1)
			4-Aminobiphenyl	92-67-1	0.13	(2)	NA	
			Aniline	62-53-3	0.81	(2)	14	(1)
			Anthracene	120-12-7	0.059	(2)	4.0	(1)
			Aramite	140-57-8	0.36	(2)	NA	
			Aroclor 1016	12674-11-2	0.013	(2)	0.92	(1)
			Aroclor 1221	11104-28-2	0.014	(2)	0.92	(1)
			Aroclor 1232	11141-16-5	0.013	(2)	0.92	(1)
			Aroclor 1242	53469-21-9	0.017	(2)	0.92	(1)
			Aroclor 1248	12672-29-6	0.013	(2)	0.92	(1)
			Aroclor 1254	11097-69-1	0.014	(2)	1.8	(1)
			Aroclor 1260	11096-82-5	0.014	(2)	1.8	(1)
			alpha-BHC	319-84-6	0.00014	(2)	0.066	(1)
			beta-BHC	319-85-7	0.00014	(2)	0.066	(1)
			delta-BHC	319-86-8	0.023	(2)	0.066	(1)
			gamma-BHC	58-89-9	0.0017	(2)	0.066	(1)
			Benzene	71-43-2	0.14	(2)	36	(1)
			Benz(a)anthracene	56-55-3	0.059	(2)	8.2	(1)
			Benzo(b)-fluoranthene.	205-99-2	0.055	(2)	3.4	(1)
			Benzo(k)-fluoranthene.	207-08-9	0.059	(2)	3.4	(1)
			Benzo(g,h,i)-perylene.	191-24-2	0.0055	(2)	1.5	(1)
			Benzo(a)pyrene	50-32-8	0.061	(2)	8.2	(1)
			Bromodichloromethane.	75-27-4	0.35	(2)	15	(1)
			Bromoform (Tribromomethane).	75-25-2	0.63	(2)	15	(1)
			Bromomethane (methyl bromide).	74-83-9	0.11	(2)	15	(1)
			4-Bromophenyl phenyl ether.	101-55-3	0.055	(2)	15	(1)
			n-Butyl alcohol	71-36-3	5.6	(2)	2.6	(1)
			Butyl benzyl phthalate.	85-68-7	0.017	(2)	7.9	(1)
			2-sec-Butyl-4,6-dinitrophenol.	88-85-7	0.066	(2)	2.5	(1)
			Carbon tetrachloride.	56-23-5	0.057	(2)	5.6	(1)
			Carbon disulfide	75-15-0	0.014	(2)	NA	
			Chlordane	57-74-9	0.0033	(2)	0.13	(1)
			p-Chloroaniline	106-47-8	0.46	(2)	16	(1)
			Chlorobenzene	108-90-7	0.057	(2)	5.7	(1)
			Chlorobenzilate	510-15-6	0.10	(2)	NA	
			2-Chloro-1,3-butadiene.	126-99-8	0.057	(2)	NA	
			Chlorodibromomethane.	124-48-1	0.057	(2)	15	(1)
			Chloroethane	75-00-3	0.27	(2)	6.0	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			bis(2-Chloroethoxy) methane.	111-91-1	0.036	(2)	7.2	(1)
			bis(2-Chloroethyl) ether.	111-44-4	0.033	(2)	7.2	(1)
			Chloroform	67-66-3	0.046	(2)	5.6	(1)
			bis(2-Chloroisopropyl) ether.	39638-32-9	0.055	(2)	7.2	(1)
			p-Chloro-m-cresol	59-50-7	0.018	(2)	14	(1)
			Chloromethane (Methyl chloride).	74-87-3	0.19	(2)	33	(1)
			2-Chloronaphthalene.	91-8-7	0.055	(2)	5.6	(1)
			2-Chlorophenol	95-57-8	0.044	(2)	5.7	(1)
			3-Chloropropylene.	107-05-1	0.036	(2)	28	(1)
			Chrysene	218-01-9	0.059	(2)	8.2	(1)
			o-Cresol	95-48-7	0.11	(2)	5.6	(1)
			Cresol (m- and p- isomers).		0.77	(2)	3.2	(1)
			Cyclohexanone	108-94-1	0.36	(2)	NA	
			1,2-Dibromo-3-chloropropane.	96-12-8	0.11	(2)	15	(1)
			1,2-Dibromoethane (Ethylene dibromide).	106-93-4	0.028	(2)	15	(1)
			Dibromomethane	74-95-3	0.11	(2)	15	(1)
			2,4-Dichlorophenoxyacetic acid (2, 4-D).	94-75-7	0.72	(2)	10	(1)
			o,p'-DDD	53-19-0	0.023	(2)	0.087	(1)
			p,p'-DDD	72-54-8	0.023	(2)	0.087	(1)
			o,p'-DDE	3424-82-6	0.031	(2)	0.087	(1)
			p,p'-DDE	72-55-9	0.031	(2)	0.087	(1)
			o,p'-DDT	789-02-6	0.0039	(2)	0.087	(1)
			p,p'-DDT	50-29-3	0.0039	(2)	0.087	(1)
			Dibenz(a,h) anthracene.	53-70-3	0.055	(2)	8.2	(1)
			Dibenzo(a,e) pyrene.	192-65-4	0.061	(2)	NA	
			m-Dichlorobenzene.	541-73-1	0.036	(2)	6.2	(1)
			o-Dichlorobenzene.	95-50-1	0.088	(2)	6.2	(1)
			p-Dichlorobenzene.	106-46-7	0.090	(2)	6.2	(1)
			Dichlorodifluoromethane.	75-71-8	0.23	(2)	7.2	(1)
			1,1-Dichloroethane.	75-34-3	0.059	(2)	7.2	(1)
			1,2-Dichloroethane.	107-06-2	0.21	(2)	7.2	(1)
			1,1-Dichloroethylene.	75-35-4	0.025	(2)	33	(1)
			trans-1,2-Dichloroethylene.		0.054	(2)	33	(1)
			2,4-Dichlorophenol.	120-83-2	0.044	(2)	14	(1)
			2,6-Dichlorophenol.	87-65-0	0.044	(2)	14	(1)
			1,2-Dichloropropane.	78-87-5	0.85	(2)	18	(1)
			cis-1,3-Dichloropropene.	10061-01-5	0.036	(2)	18	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			trans-1,3-Dichloropropene.	10061-02-6	0.036	[3]	18	[1]
			Dieldrin	60-57-1	0.017	[3]	0.13	[1]
			Diethyl phthalate	84-66-2	0.20	[3]	28	[1]
			2,4-Dimethyl phenol.	105-67-9	0.036	[3]	14	[1]
			Dimethyl phthalate.	131-11-3	0.047	[3]	28	[1]
			Di-n-butyl phthalate.	84-74-2	0.057	[3]	28	[1]
			1,4-Dinitrobenzene.	100-25-4	0.32	[3]	2.3	[1]
			4,6-Dinitro-o-cresol.	534-52-1	0.28	[3]	160	[1]
			2,4-Dinitrophenol	51-28-5	0.12	[3]	160	[1]
			2,4-Dinitrotoluene	121-14-2	0.32	[3]	140	[1]
			2,6-Dinitrotoluene	606-20-2	0.55	[3]	28	[1]
			Di-n-octyl phthalate.	117-84-0	0.017	[3]	28	[1]
			Di-n-propylnitrosamine.	621-64-7	0.40	[3]	14	[1]
			Diphenylamine	122-39-4	0.52	[3]	NA	
			1,2-Diphenyl hydrazine.	122-66-7	0.087	[3]	NA	
			Diphenyl nitrosamine.	621-64-7	0.40	[3]	NA	
			1, 4-Dioxane	123-91-1	0.12	[3]	170	[1]
			Disulfoton	298-04-4	0.017	[3]	6.2	[1]
			Endosulfan I	939-98-8	0.023	[3]	0.066	[1]
			Endosulfan II	33213-6-5	0.029	[3]	0.13	[1]
			Endosulfan sulfate.	1031-07-8	0.029	[3]	0.13	[1]
			Endrin	72-20-8	0.0028	[3]	0.13	
			Endrin aldehyde	7421-93-4	0.025	[3]	0.13	
			Ethyl acetate	141-78-6	0.34	[3]	33	[1]
			Ethyl cyanide	107-12-0	0.24	[3]	360	[1]
			Ethyl benzene	100-41-4	0.057	[3]	6.0	[1]
			Ethyl ether	60-29-7	0.12	[3]	160	[1]
			bis(2-Ethylhexyl) phthalate.	117-81-7	0.28	[3]	28	[1]
			Ethyl methacrylate.	97-63-2	0.14	[3]	160	[1]
			Ethylene oxide	75-21-8	0.12	[3]	NA	
			Famphur	52-85-7	0.017	[3]	15	[1]
			Fluoranthene	206-44-0	0.068	[3]	8.2	[1]
			Fluorene	86-73-7	0.059	[3]	4.0	[1]
			Fluorotrichloromethane.	75-69-4	0.020	[3]	33	[1]
			Heptachlor	76-44-8	0.0012	[3]	0.066	[1]
			Heptachlor epoxide.	1024-57-3	0.016	[3]	0.066	[1]
			Hexachlorobenzene.	118-74-1	0.055	[3]	37	[1]
			Hexachlorobutadiene.	87-68-3	0.055	[3]	28	[1]
			Hexachlorocyclopentadiene.	77-47-4	0.057	[3]	3.6	[1]
			Hexachlorodibenzo-furans.		0.000063	[3]	0.001	[1]
			Hexachlorodibenzo-p-dioxins.		0.000063	[3]	0.001	[1]
			Hexachloroethane	67-72-1	0.055	[3]	28	[1]
			Hexachloropropene.	1888-71-7	0.035	[3]	28	[1]
			Indeno(1,2,3-c,d)pyrene.	193-39-5	0.0055	[3]	8.2	[1]
			Iodomethane	74-88-4	0.19	[3]	65	[1]
			Isobutanol	78-83-1	5.6	[3]	170	[1]
			Isodrin	465-73-6	0.021	[3]	0.066	[1]
			Isosafrole	120-58-1	0.081	[3]	2.6	[1]
			Kepone	143-50-0	0.0011	[3]	0.13	[1]
			Methacrylonitrile	126-98-7	0.24	[3]	84	[1]
			Methanol	67-56-1	5.6	[3]	NA	
			Methapyrilene	91-80-5	0.081	[3]	1.5	[1]
			Methoxychlor	72-43-5	0.25	[3]	0.18	[1]

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			3-Methylcholanthrene.	56-49-5	0.0055	(2)	15	(1)
			4,4-Methylene-bis-(2-chloroaniline).	101-14-4	0.50	(2)	35	(1)
			Methylene chloride.	75-09-2	0.089	(2)	33	(1)
			Methyl ethyl ketone.	78-93-3	0.28	(2)	36	(1)
			Methyl isobutyl ketone.	108-10-1	0.14	(2)	33	(1)
			Methyl methacrylate.	80-62-6	0.14	(2)	160	(1)
			Methyl methansulfonate.	66-27-3	0.018	(2)	NA	
			Methyl parathion	298-00-0	0.014	(2)	4.6	(1)
			Naphthalene	91-20-3	0.059	(2)	3.1	(1)
			2-Naphthylamine	91-59-8	0.52	(2)	NA	
			p-Nitroaniline	100-01-6	0.028	(2)	28	(1)
			Nitrobenzene	98-95-3	0.068	(2)	14	(1)
			5-Nitro-o-toluidine	99-55-8	0.32	(2)	28	(1)
			4-Nitrophenol	100-02-7	0.12	(2)	29	(1)
			N-Nitrosodiethylamine.	55-18-5	0.40	(2)	28	(1)
			N-Nitrosodimethylamine.	62-75-9	0.40	(2)	NA	
			N-Nitroso-di-n-butylamine.	924-16-3	0.40	(2)	17	(1)
			N-Nitrosomethylethylamine.	10595-95-6	0.40	(2)	2.3	(1)
			N-Nitrosomorpholine.	59-89-2	0.40	(2)	2.3	(1)
			N-Nitrosopiperidine.	100-75-4	0.013	(2)	35	(1)
			N-Nitrosopyrrolidine.	930-55-2	0.013	(2)	35	(1)
			Parathion	56-38-2	0.014	(2)	4.6	(1)
			Pentachlorobenzene.	608-93-5	0.055	(2)	37	(1)
			Pentachlorodibenzo-furans.		0.000063	(2)	0.001	(1)
			Pentachlorodibenzo-p-dioxins.		0.000063	(2)	0.001	(1)
			Pentachloronitrobenzene.	82-68-8	0.055	(2)	4.8	(1)
			Pentachlorophenol.	87-86-5	0.089	(2)	7.4	(1)
			Phenacetin	62-44-2	0.081	(2)	16	(1)
			Phenanthrene	85-01-8	0.059	(2)	3.1	(1)
			Phenol	108-95-2	0.039	(2)	6.2	(1)
			Phorate	298-02-2	0.021	(2)	4.6	(1)
			Phthalic anhydride.	85-44-9	0.069	(2)	NA	
			Pronamide	23950-58-5	0.093	(2)	1.5	(1)
			Pyrene	129-00-0	0.067	(2)	8.2	(1)
			Pyridine	110-86-1	0.014	(2)	16	(1)
			Safrole	94-59-7	0.081	(2)	22	(1)
			Silvex (2,4,5-TP)	93-72-1	0.72	(2)	7.9	(1)
			2,4,5-T	93-76-5	0.72	(2)	7.9	(1)
			1,2,4,5,-Tetrachlorobenzene.	95-94-3	0.055	(2)	19	(1)
			Tetrachlorodibenzo-furans.		0.000063	(2)	0.001	(1)
			Tetrachlorodibenzo-p-dioxins.		0.000063	(2)	0.001	(1)
			1,1,1,2-Tetrachloroethane.	630-20-6	0.057	(2)	42	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			1,1,2,2-Tetrachloroethane.	79-34-6	0.057	(2)	42	(1)
			Tetrachloroethylene.	127-18-4	0.056	(2)	5.6	(1)
			2,3,4,6-Tetrachlorophenol.	58-90-2	0.030	(2)	37	(1)
			Toluene	108-88-3	0.080	(2)	28	(1)
			Toxaphene	8001-35-1	0.0095	(2)	1.3	(1)
			1,2,4-Trichlorobenzene.	120-82-1	0.055	(2)	19	(1)
			1,1,1-Trichloroethane.	71-55-6	0.054	(2)	5.6	(1)
			1,1,2-Trichloroethane.	79-00-5	0.054	(2)	5.6	(1)
			Trichloroethylene	79-01-6	0.054	(2)	5.6	(1)
			2,4,5-Trichlorophenol.	95-95-4	0.18	(2)	37	(1)
			2,4,6-Trichlorophenol.	88-06-2	0.035	(2)	37	(1)
			1,2,3-Trichloropropane.	96-18-4	0.85	(2)	28	(1)
			1,1,2-Trichloro-1,2,2-trifluoroethane.	76-13-1	0.057	(2)	28	(1)
			Tris(2,3-dibromopropyl) phosphate.	126-72-7	0.11	(2)	NA	
			Vinyl chloride	75-01-4	0.27	(2)	33	(1)
			Xylene(s)		0.32	(2)	28	(1)
			Cyanides (Total)	57-12-5	1.2	(2)	1.8	(1)
			Fluoride	16984-48-8	35	(2)	NA	
			Sulfide	8496-25-8	14	(2)	NA	
			Antimony	7440-36-0	1.9	(2)	NA	
			Arsenic	7440-38-2	1.4	(2)	NA	
			Barium	7440-39-3	1.2	(2)	NA	
			Beryllium	7440-41-7	0.82	(2)	NA	
			Cadmium	7440-43-9	0.20	(2)	NA	
			Chromium (Total)	7440-47-32	0.37	(2)	NA	
			Copper	7440-50-8	1.3	(2)	NA	
			Lead	7439-92-1	0.28	(2)	NA	
			Mercury	7439-97-6	0.15	(2)	NA	
			Nickel	7440-02-0	0.55	(2)	NA	
			Selenium	7782-49-2	0.82	(2)	NA	
			Silver	7440-22-4	0.29	(2)	NA	
			Thallium	7440-28-0	1.4	(2)	NA	
			Vanadium	7440-62-2	0.042	(2)	NA	
			Zinc	7440-66-6	1.0	(2)	NA	
K001	NA	Table CCWE in 268.41.	Naphthalene	91-20-3	0.031	(1)	1.5	(1)
			Pentachlorophenol.	87-86-5	0.18	(1)	7.4	(1)
			Phenanthrene	85-01-8	0.031	(1)	1.5	(1)
			Pyrene	129-00-0	0.028	(1)	1.5	(1)
			Toluene	108-88-3	0.028	(1)	28	(1)
			Xylenes (Total)		0.032	(1)	33	(1)
			Lead	7439-92-1	0.037		NA	
K002	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	
K003	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	
K004	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	@
K005	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	
			Cyanides (Total)	57-12-5	0.74	(2)	(4)	
K006	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	3.4	(3)	NA
			Lead	7439-92-1			(3)	NA
K007	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	
			Cyanides (Total)	57-12-5	0.74	(2)	(4)	
K008	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.9	(2)	NA	
			Lead	7439-92-1	3.4	(2)	NA	
K009	NA	NA	Chloroform	67-66-3	0.1		6.0	(1)
K010	NA	NA	Chloroform	67-66-3	0.1		6.0	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
K011	NA	NA	Acetonitrile	75-05-8	38		1.8	(1)
			Acrylonitrile	107-13-1	0.06		1.4	(1)
			Acrylamide	79-06-1	19		23	(1)
			Benzene	71-43-2	0.02		0.03	(1)
			Cyanide (Total)	57-12-5	21		57	
K013	NA	NA	Acetonitrile	75-05-8	38		1.8	(1)
			Acrylonitrile	107-13-1	0.06		1.4	(1)
			Acrylamide	79-06-1	19		23	(1)
			Benzene	71-43-2	0.02		0.03	(1)
			Cyanide (Total)	57-12-5	21		57	
K014	NA	NA	Acetonitrile	75-05-8	38		1.8	(1)
			Acrylonitrile	107-13-1	0.06		1.4	(1)
			Acrylamide	79-06-1	19		23	(1)
			Benzene	71-43-2	0.02		0.03	(1)
			Cyanide (Total)	57-12-5	21		57	
K015	NA	Table CCWE in 268.41.	Anthracene	120-12-7	1.0		3.4	(1)
			Benzal Chloride	98-87-3	0.28		6.2	(1)
			Sum of Benzo(b) fluoranthene and Benzo(k) fluoranthene.	205-99-2 207-08-9	0.29		3.4	(1)
			Phenanthrene	85-01-8	0.27		3.4	(1)
			Toluene	108-88-3	0.15		6.0	(1)
			Chromium (Total)	7440-47-32	0.32		NA	
			Nickel	7440-02-0	0.44		NA	
K016	NA	NA	Hexachlorobenzene.	118-74-1	0.033	(1)	28	(1)
			Hexachlorobutadiene.	87-68-3	0.007	(1)	5.6	(1)
			Hexachlorocyclopentadiene.	77-47-4	0.007	(1)	5.6	(1)
			Hexachloroethane	67-72-1	0.033	(1)	28	(1)
			Tetrachloroethene.	127-18-4	0.007	(1)	6.0	(1)
K017	NA	NA	1,2-Dichloropropane.	78-87-5	0.85	(1)	18	(1)
			1,2,3-Trichloropropane.	96-18-4	0.85	(1)	28	(1)
			Bis(2-chloroethyl)ether.	111-44-4	0.033	(1)	7.2	(1)
K018	NA	NA	Chloroethane	75-00-3	0.007	(1)	6.0	(1)
			Chloromethane	74-87-3	0.007	(1)	NA	
			1,1-Dichloroethane.	75-34-3	0.007	(1)	6.0	(1)
			1,2-Dichloroethane.	107-06-2	0.007	(1)	6.0	(1)
			Hexachlorobenzene.	118-74-1	0.033	(1)	28	(1)
			Hexachlorobutadiene.	87-68-3	0.007	(1)	5.6	(1)
			Hexachloroethane	67-72-1	NA		28	(1)
			Pentachloroethane.	76-01-7	0.007	(1)	5.6	(1)
			1,1,1-Trichloroethane.	71-55-6	0.007	(1)	6.0	(1)
K019	NA	NA	Bis(2-chloroethyl)ether.	111-44-4	0.007	(1)	5.6	(1)
			Chlorobenzene	108-90-7	0.006	(1)	6.0	(1)
			Chloroform	67-66-3	0.007	(1)	6.0	(1)
			p-Dichlorobenzene.	106-46-7	0.008	(1)	NA	
			1,2-Dichloroethane.	107-06-2	0.007	(1)	6.0	(1)
			Fluorene	86-73-7	0.007	(1)	NA	
			Hexachloroethane	67-72-1	0.033	(1)	28	(1)
			Naphthalene	91-20-3	0.007	(1)	5.6	(1)
			Phenanthrene	85-01-8	0.007	(1)	5.6	(1)
			1,2,4,5-Tetrachlorobenzene.	95-94-3	0.017	(1)	NA	
			Tetrachloroethene.	127-18-4	0.007	(1)	6.0	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			1,2,4-Trichlorobenzene.	120-82-1	0.023	(1)	19	(1)
			1,1,1-Trichloroethane.	71-55-6	0.007	(1)	6.0	(1)
K020	NA	NA	1,2-Dichloroethane.	107-06-2	0.007	(1)	6.0	(1)
			1,1,2,2-Tetrachloroethane.	79-34-6	0.007	(1)	5.6	(1)
			Tetrachloroethene.	127-18-4	0.007	(1)	6.0	(1)
K021	NA	Table CCWE in 268.41.	Chloroform	67-66-3	0.046	(2)	6.2	(1)
			Carbon tetrachloride.	56-23-5	0.057	(2)	6.2	(1)
			Antimony	7440-36-0	0.60	(2)	NA	(1)
K022	NA	Table CCWE in 268.41.	Toluene	108-88-3	0.080	(2)	0.034	(1)
			Acetophenone	96-86-2	0.010		19	(1)
			Diphenylamine	22-39-4	0.52	(2)	NA	
			Diphenylnitrosamine.	86-30-6	0.40	(2)	NA	
			Sum of Diphenylamine and Diphenylnitrosamine.		NA		13	(1)
			Phenol	108-95-2	0.039		12	(1)
			Chromium (Total)	7440-47-32	0.35		NA	
			Nickel	7440-02-0	0.47		NA	
K023	NA	NA	Phthalic anhydride (measured as Phthalic acid).	85-44-9	0.54	(1)	28	(1)
K024	NA	NA	Phthalic anhydride (measured as Phthalic acid).	85-44-9	0.54	(1)	28	(1)
K026	NA	Table CCWE in 268.41.	1,1-Dichloroethane.	75-34-3	0.007	(1)	6.0	(1)
			trans-1,2-Dichloroethane.		0.033	(1)	6.0	(1)
			Hexachlorobutadiene.	87-68-3	0.007	(1)	5.6	(1)
			Hexachloroethane	67-72-1	0.033	(1)	28	(1)
			Pentachloroethane.	76-01-7	0.033	(1)	5.6	(1)
			1,1,1,2-Tetrachloroethane.	630-20-6	0.007	(1)	5.6	(1)
			1,1,2,2-Tetrachloroethane.	79-34-6	0.007	(1)	5.6	(1)
			1,1,1-Trichloroethane.	71-55-6	0.007	(1)	6.0	(1)
			1,1,2-Trichloroethane.	79-00-5	0.007	(1)	6.0	(1)
			Tetrachloroethylene.	127-18-4	0.007	(1)	6.0	(1)
			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	
K029	NA	NA	Chloroform	67-66-3	0.046		6.0	(1)
			1,2-Dichloroethane.	107-06-2	0.21		6.0	(1)
			1,1-Dichloroethylene.	75-35-4	0.025		6.0	(1)
			1,1,1-Trichloroethane.	71-55-6	0.054		6.0	(1)
			Vinyl chloride	75-01-4	0.27		6.0	(1)
K030	NA	NA	o-Dichlorobenzene.	95-50-1	0.008	(1)	NA	
			p-Dichlorobenzene.	106-46-7	0.008	(1)	NA	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			Hexachlorobutadiene.	87-68-3	0.007	(1)	5.6	(1)
			Hexachloroethane	67-72-1	0.033	(1)	28	(1)
			Hexachloropropene.	1888-71-7	NA		19	(1)
			Pentachlorobenzene.	608-93-5	NA		28	(1)
			Pentachloroethane.	76-01-7	0.007	(1)	5.6	(1)
			1,2,4,5-Tetrachlorobenzene.	95-94-3	0.017	(1)	14	(1)
			Tetrachloroethene.	127-18-4	0.007	(1)	6.0	(1)
			1,2,4-Trichlorobenzene.	120-82-1	0.023	(1)	19	(1)
K031	NA	Table CCWE in 268.41.	Arsenic	7440-38-2	0.79		NA	(1)
K032	NA	NA	Hexachlorocyclopentadiene.	77-47-4	0.057	(2)	2.4	(2)
			Chlordane	57-74-9	0.0033	(2)	0.26	(1)
			Heptachlor	76-44-8	0.0012	(2)	0.066	(1)
			Heptachlor epoxide.	1024-57-3	0.016	(2)	0.066	(1)
K033	NA	NA	Hexachlorocyclopentadiene.	77-47-4	0.057	(2)	2.4	(1)
K034	NA	NA	Hexachlorocyclopentadiene.	77-47-4	0.057	(2)	2.4	(1)
K035	NA	NA	Acenaphthene	83-32-9	NA		3.4	(1)
			Anthracene	120-12-7	NA		3.4	(1)
			Benz(a)anthracene	56-55-3	0.059	(2)	3.4	(1)
			Benzo(a)pyrene	50-32-8	NA		3.4	(1)
			Chrysene	218-01-9	0.059	(2)	3.4	(1)
			Dibenz(a,h)anthracene.	53-70-3	NA		3.4	(1)
			Fluoranthene	206-44-0	0.068	(2)	3.4	(1)
			Fluorene	86-73-7	NA		3.4	(1)
			Indeno(1,2,3-cd)pyrene.	193-39-5	NA		3.4	(1)
			Cresols (m- and p- isomers).		0.77	(2)	NA	
			Naphthalene	91-20-3	0.059	(2)	3.4	(1)
			o-cresol	95-48-7	0.11	(2)	NA	
			Phenanthrene	85-01-8	0.059	(2)	3.4	(1)
			Phenol	108-95-2	0.039		NA	
			Pyrene	129-00-0	0.067	(2)	8.2	(1)
K036	NA	NA	Disulfoton	298-04-4	0.025	(2)	0.1	(1)
K037	NA	NA	Disulfoton	298-04-4	0.025	(2)	0.1	(2)
			Toluene	108-88-3	0.080	(2)	28	(1)
K038	NA	NA	Phorate	298-02-2	0.025	(2)	0.1	(1)
K040	NA	NA	Phorate	298-02-2	0.025	(2)	0.1	(1)
K041	NA	NA	Toxaphene	8001-35-1	0.0095	(2)	2.6	(1)
K042	NA	NA	1,2,4,5-Tetrachlorobenzene.	95-94-3	0.055	(2)	4.4	(1)
			o-Dichlorobenzene.	95-50-1	0.088	(2)	4.4	(1)
			p-Dichlorobenzene.	106-46-7	0.090	(2)	4.4	(1)
			Pentachlorobenzene.	608-93-5	0.055	(2)	4.4	(1)
			1,2,4-Trichlorobenzene.	120-82-1	0.055	(2)	4.4	(1)
K043	NA	NA	2,4-Dichlorophenol.	120-83-2	0.049	(1)	0.38	(1)
			2,6-Dichlorophenol.	87-65-0	0.013	(1)	0.34	(1)
			2,4,5-Trichlorophenol.	95-95-4	0.018	(1)	8.2	(1)
			2,4,6-Trichlorophenol.	88-06-2	0.039	(1)	7.8	(1)
			Tetrachlorophenols (Total).		0.018	(1)	0.68	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			Pentachlorophenol	87-86-5	0.022	[1]	1.9	[1]
			Tetrachloroethene	79-01-6	0.006	[1]	1.7	[1]
			Hexachlorodibenzo-p-dioxins		0.001	[1]	0.001	[1]
			Hexachlorodibenzo-furans		0.001	[1]	0.001	[1]
			Pentachlorodibenzo-p-dioxins		0.001	[1]	0.001	[1]
			Pentachlorodibenzo-furans		0.001	[1]	0.001	[1]
			Tetrachlorodibenzo-p-dioxins		0.001	[1]	0.001	[1]
			Tetrachlorodibenzo-furans		0.001	[1]	0.001	[1]
K046	NA	Table CCWE in 268.41.	Lead	7439-92-1	0.037		NA	
K048	NA	Table CCWE in 268.41.	Benzene	71-43-2	0.011	[1]	14	[1]
			Benzo(a)pyrene	50-32-8	0.047	[1]	12	[1]
			Bis(2-ethylhexyl) phthalate	117-81-7	0.043	[1]	7.3	[1]
			Chrysene	218-01-9	0.043	[1]	15	[1]
			Di-n-butyl phthalate	84-74-2	0.06	[1]	3.6	[1]
			Ethylbenzene	100-41-4	0.011	[1]	14	[1]
			Fluorene	86-73-7	0.05 ~~0.005~~	[1]	NA	
			Naphthalene	91-20-3	0.033	[1]	42	[1]
			Phenanthrene	85-01-8	0.039	[1]	34	[1]
			Phenol	108-95-2	0.047	[1]	3.6	[1]
			Pyrene	129-00-0	0.045	[1]	36	[1]
			Toluene	108-88-3	0.011	[1]	14	[1]
			Xylene(s)		0.011	[1]	22	[1]
			Cyanides (Total)	57-12-5	0.028	[1]	1.8	[1]
			Chromium (Total)	7440-47-32	0.2		NA	
			Lead	7439-92-1	0.037		NA	
K049	NA	Table CCWE in 268.41.	Anthracene	120-12-7	0.039	[1]	28	[1]
			Benzene	71-43-2	0.011	[1]	14	[1]
			Benzo(a)pyrene	50-32-8	0.047	[1]	12	[1]
			Bis(2-ethylhexyl) phthalate	117-81-7	0.043	[1]	7.3	[1]
			Carbon disulfide	75-15-0	0.011	[1]	NA	
			Chrysene	2218-01-9	0.043	[1]	15	[1]
			2,4-Dimethylphenol	105-67-9	0.033	[1]	NA	
			Ethylbenzene	100-41-4	0.011	[1]	14	[1]
			Naphthalene	91-20-3	0.033	[1]	42	[1]
			Phenanthrene	85-01-8	0.039	[1]	34	[1]
			Phenol	108-95-2	0.047	[1]	3.6	[1]
			Pyrene	129-00-0	0.045	[1]	36	[1]
			Toluene	108-88-3	0.011	[1]	14	[1]
			Xylene(s)		0.011	[1]	22	[1]
			Cyanides (Total)	57-12-5	0.028	[1]	1.8	[1]
			Chromium (Total)	7440-47-32	0.2		NA	
			Lead	7439-92-1	0.037	[1]	NA	
K050	NA	Table CCWE in 268.41.	Benzo(a)pyrene	50-32-8	0.047	[1]	12	[1]
			Phenol	108-95-2	0.047	[1]	3.6	[1]
			Cyanides (Total)	57-12-5	0.028	[1]	1.8	[1]
			Chromium (Total)	7440-47-32	0.2		NA	
			Lead	7439-92-1	0.037		NA	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
K051	NA	Table CCWE in 268.41.	Acenaphthene	208-96-8	0.05	[1]	NA	
			Anthracene	120-12-7	0.039	[1]	28	
			Benzene	71-43-2	0.011	[1]	14	
			Benzo(a)-anthracene.	50-32-8	0.043	[1]	20	
			Benzo(a)pyrene	117-81-7	0.047	[1]	12	
			Bis(2-ethylhexyl) phthalate.	75-15-0	0.043	[1]	7.3	
			Chrysene	2218-01-09				
			Di-n-butyl phthalate.	105-67-9	0.043	[1]	15	
					0.06	[1]	3.6	
			Ethylbenzene	100-41-4				
			Fluorene	86-73-7	0.011	[1]	14	
			Naphthalene	91-20-3	0.05	[1]	NA	
			Phenanthrene	85-01-8	0.033	[1]	42	
			Phenol	108-95-2	0.039	[1]	34	
			Pyrene	129-00-0	0.047	[1]	36	
			Toluene	108-88-3	0.045	[1]	36	
			Xylene(s)		0.011	[1]	14	
			Cyanides (Total)	57-12-5	0.011	[1]	22	
			Chromium (Total)	7440-47-32	0.028	[1]	1.8	
			Lead	7439-92-1	0.2		NA	
					0.037		NA	
K052	NA	Table CCWE in 268.41.	Benzene	71-43-2	0.011	[1]	14	
			Benzo(a)pyrene	50-32-8	0.047	[1]	12	
			o-Cresol	95-48-7	0.011	[1]	6.2	
			p-Cresol	106-44-5	0.011	[1]	6.2	
			2,4-Dimethylphenol.	105-67-9	0.033	[1]	NA	
			Ethylbenzene	100-41-4	0.011	[1]	14	
			Naphthalene	91-20-3	0.033	[1]	42	
			Phenanthrene	85-01-8	0.039	[1]	34	
			Phenol	108-95-2	0.047	[1]	36	
			Toluene	108-88-3	0.011	[1]	14	
			Xylenes		0.011	[1]	22	
			Cyanides (Total)	57-12-5	0.028	[1]	1.8	
			Chromium (Total)	7440-47-32	0.2		NA	
			Lead	7439-92-1	0.037		NA	
K060	NA	NA	Benzene	71-43-2	0.17	[1,3]	0.071	
			Benzo(a)pyrene	50-32-8	0.035	[1,3]	3.6	
			Naphthalene	91-20-3	0.028	[1,3]	3.4	
			Phenol	108-95-2	0.042	[1,3]	3.4	
			Cyanides (Total)	57-12-5	1.9		1.2	
K061	NA	Table CCWE in 268.41.	Cadmium	7440-43-9	1.61		NA	
			Chromium (Total)	7440-47-32	0.32		NA	
			Lead	7439-92-1	0.51		NA	
			Nickel	7440-02-0	0.44		NA	
K062	NA	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.32		NA	
			Lead	7439-92-1	0.04		NA	
			Nickel	7440-02-0	0.44		NA	
K069	NA	Table CCWE in 268.41 and Table 2 in 268.42.	Cadmium	7440-43-9	1.6		NA	
			Lead	7439-92-1	0.51		NA	
K071	NA	Table CCWE in 268.41.	Mercury	7439-97-6	0.030		NA	
K073	NA	NA	Carbon tetrachloride.	56-23-5	0.057	[2]	6.2	
			Chloroform	67-66-3	0.046	[2]	6.2	
			Hexachloroethane	67-72-1	0.055	[2]	30	
			Tetrachloroethane.	127-18-4	0.056	[2]	6.2	
			1,1,1-Trichloroethane.	71-55-6	0.054	[2]	6.2	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
K083	NA	Table CCWE in 268.41.	Benzene	71-43-2	0.14	[2]	6.6	[1]
			Aniline	62-53-3	0.81		14	[1]
			Diphenylamine	22-39-4	0.52	[2]	NA	
			Diphenylnitrosamine.	86-30-6	0.40	[2]	NA	
			Sum of Diphenylamine and Diphenylnitrosamine.		NA		14	[1]
			Nitrobenzene	98-95-3	0.068	[2]	14	[1]
			Phenol	108-95-2	0.039		5.6	[1]
			Cyclohexanone	108-94-1	0.36		NA	
			Nickel	7440-02-0	0.47		NA	
K084	NA	NA	Arsenic	7440-33-2	0.79		NA	
K085	NA	NA	Benzene	71-43-2	0.14	[2]	4.4	[1]
			Chlorobenzene	108-90-7	0.057	[2]	4.4	[1]
			o-Dichlorobenzene.	95-50-1	0.088	[2]	4.4	[1]
			m-Dichlorobenzene.	541-73-1	0.036	[2]	4.4	[1]
			p-Dichlorobenzene.	106-46-7	0.090	[2]	4.4	[1]
			1,2,4-Trichlorobenzene.	120-82-1	0.055	[2]	4.4	[1]
			1,2,4,5-Tetrachlorobenzene.	95-94-3	0.055	[2]	4.4	[1]
			Pentachlorobenzene.	608-93-5	0.055	[2]	4.4	[1]
			Hexachlorobenzene.	118-74-1	0.055	[2]	4.4	[1]
			Aroclor 1016	12674-11-2	0.013	[2]	0.92	[1]
			Aroclor 1221	11104-28-2	0.014	[2]	0.92	[1]
			Aroclor 1232	11141-16-5	0.013	[2]	0.92	[1]
			Aroclor 1242	53469-21-9	0.017	[2]	0.92	[1]
			Aroclor 1248	12672-29-6	0.013	[2]	0.92	[1]
			Aroclor 1254	11097-69-1	0.014	[2]	1.8	[1]
			Aroclor 1260	11096-82-5	0.014	[2]	1.8	[1]

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
K086	NA	Table CCWE in 268.41.	Acetone	67-64-1	0.28		160	(1)
			Acetophenone	96-86-2	0.010		9.7	(1)
			Bis(2-ethylhexyl) phthalate.	117-81-7	0.28	(2)	28	(1)
			n-Butyl alcohol	71-36-3	5.6		2.6	(1)
			Butylbenzylphthalate.	85-68-7	0.017	(2)	7.9	
			Cyclohexanone	108-94-1	0.36		NA	(1)
			1,2-Dichlorobenzene.	95-50-1	0.088		6.2	
			Diethyl phthalate	84-66-2	0.20	(2)	28	(1)
			Dimethyl phthalate.	131-11-3	0.047	(2)	28	
			Di-n-butyl phthalate.	84-74-2	0.057	(2)	28	(1)
			Di-n-octyl phthalate.	117-84-0	0.017	(2)	28	(1)
			Ethyl acetate	141-78-6	0.34	(2)	33	(1)
			Ethylbenzene	100-41-4	0.057	(2)	6.0	
			Methanol	67-56-1	5.6	(2)	NA	(1)
			Methyl isobutyl ketone.	108-10-1	0.14		33	
			Methyl ethyl ketone.	78-93-3	0.28		36	(1)
			Methylene chloride.	75-09-2	0.089	(2)	33	(1)
			Naphthalene	91-20-3	0.059	(2)	3.1	(1)
			Nitrobenzene	98-95-3	0.068	(2)	14	(1)
			Toluene	108-88-3	0.080	(2)	28	(1)
			1,1,1-Trichloroethane.	71-55-6	0.054	(2)	5.6	
			Trichloroethylene	79-01-6	0.054	(2)	5.6	(1)
			Xylenes (Total)		0.32	(2)	28	(1)
			Cyanides (Total)	57-12-5	1.9		1.5	
			Chromium (Total)	7440-47-32	0.32		NA	
			Lead	7439-92-1	0.037		NA	
K087	NA	Table CCWE in 268.41.	Acenaphthalene	208-96-8	0.028	(1)	3.4	(1)
			Benzene	71-43-2	0.014	(1)	0.071	(1)
			Chrysene	218-01-9	0.028	(1)	3.4	(1)
			Fluoranthene	206-44-0	0.028	(1)	3.4	(1)
			Indeno(1,2,3-cd)pyrene.	193-39-5	0.028	(1)	3.4	(1)
			Naphthalene	91-20-3	0.028	(1)	3.4	(1)
			Phenanthrene	85-01-8	0.028	(1)	3.4	(1)
			Toluene	108-88-3	0.008	(1)	0.65	(1)
			Xylenes		0.014	(1)	0.07	(1)
			Lead	7439-92-1	0.037		NA	
K093	NA	NA	Phthalic anhydride (measured as Phthalic acid).	85-44-9	0.54	(1)	28	(1)
K094	NA	NA	Phthalic anhydride (measured as Phthalic acid).	85-44-9	0.54	(1)	28	(1)
K095	NA	NA	1,1,1,2-Tetrachloroethane.	630-20-6	0.057		5.6	(1)
			1,1,2,2-Tetrachloroethane.	79-34-5	0.057		5.6	(1)
			Tetrachloroethene.	127-18-4	0.056		6.0	(1)
			1,1,2-Trichloroethane.	79-00-5	0.054		6.0	(1)
			Trichloroethylene	79-01-6	0.054		5.6	(1)
			Hexachloroethane	67-72-1	0.055		28	(1)
			Pentachloroethane.	76-01-7	0.055		5.6	(1)
K096	NA	NA	1,1,1,2-Tetrachloroethane.	630-20-6	0.057		5.6	(1)
			1,1,2,2-Tetrachloroethane.	79-34-5	0.057		5.6	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
			Tetrachloroethene.	127-18-4	0.056		6.0	(1)
			1,1,2-Trichloroethane.	79-00-5	0.054		6.0	(1)
			Trichloroethene	79-01-6	0.054		5.6	(1)
			Trichloroethylene	79-01-6	0.054		5.6	(1)
			1,3-Dichlorobenzene.	541-73-1	0.036		5.6	(1)
			Pentachloroethane.	76-01-7	0.055		5.6	(1)
			1,2,4-Trichlorobenzene.	120-82-1	0.055		19	(1)
K097	NA.	NA	Hexachlorocyclopentadiene.	77-47-4	0.057	(2)	2.4	(1)
			Chlordane	57-74-9	0.0033	(2)	0.26	(1)
			Heptachlor	76-44-8	0.0012	(2)	0.066	(1)
			Heptachlor epoxide.	1024-57-3	0.016	(2)	0.068	(1)
K098	NA	NA	Toxaphene	8001-35-1	0.0095	(2)	2.6	(1)
K099	NA	NA	2,4-Dichlorophenoxyacetic acid.	94-75-7	1.0	(1)	1.0	(1)
			Hexachlorodibenzo-p-dioxins.		0.001	(1)	0.001	(1)
			Hexachlorodibenzofurans.		0.001	(1)	0.001	(1)
			Pentachlorodibenzo-p-dioxins.		0.001	(1)	0.001	(1)
			Pentachlorodibenzofurans.		0.001	(1)	0.001	(1)
			Tetrachlorodibenzo-p-dioxins.		0.001	(1)	0.001	(1)
			Tetrachlorodibenzofurans.		0.001	(1)	0.001	
K100	NA	Table CCWE in 268.41.	Cadmium	7440-43-9	1.6		NA	
			Chromium (Total)	7440-47-32	0.32		NA	
			Lead	7439-92-1	0.51		NA	
K101	NA	NA	o-Nitroaniline		0.27	(1)	14	(1)
			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	NA	Table CCWE in 268.41.	o-Nitrophenol		0.028	(1)	13	(1)
			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	NA	NA	Aniline	62-53-3	4.5		5.6	(1)
			Benzene	71-43-2	0.15		6.0	(1)
			2,4-Dinitrophenol	51-28-5	0.61		5.6	(1)
			Nitrobenzene	98-95-3	0.073		5.6	(1)
			Phenol	108-95-2	1.4		5.6	(1)
K104	NA	NA	Aniline	62-53-3	4.5		5.6	(1)
			Benzene	71-43-2	0.15		6.0	(1)
			2,4-Dinitrophenol	51-28-5	0.61		5.6	(1)
			Nitrobenzene	98-95-3	0.073		5.6	(1)
			Phenol	108-95-2	1.4		5.6	(1)
			Cyanides (Total)	57-12-5	2.7		1.8	(1)
K105	NA	NA	Benzene	71-43-2	0.14		4.4	(1)
			Chlorobenzene	108-90-7	0.057		4.4	(1)
			o-Dichlorobenzene.	95-50-1	0.088		4.4	(1)
			p-Dichlorobenzene.	106-46-7	0.090		4.4	(1)
			2,4,5-Trichlorophenol.	95-95-4	0.18		4.4	(1)
			2,4,6-Trichlorophenol.	88-06-2	0.035		4.4	(1)
			2-Chlorophenol	95-57-8	0.044		4.4	
			Phenol	108-95-2	0.039		4.4	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
K106	NA	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030		NA	
K115	NA	Table CCWE in 268.41.	Nickel	7440-02-0	0.47		NA	
P004	Aldrin	NA	Aldrin	309-00-2	0.021	(4)	0.066	(1)
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).	NA	2-sec-Butyl-4,6-dinitrophenol (Dinoseb).	88-85-7	0.066		2.5	(1)
P021	Calcium cyanide	NA	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	NA	p-Chloroaniline	106-47-8	0.46		16	(1)
P029	Copper cyanide	NA	Cyanides (Total).	57-12-5	1.9		110	
			Cyanides (Amenable).	57-12-5	0.1		9.1	
P030	Cyanides (soluble salts and complexes).	NA	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	NA	Dieldrin	60-57-1	0.017	(2)	0.13	(1)
P038	Diethylarsine	Table CCWE in 268.41.	Arsenic	7440-38-2	0.79		NA	
P039	Disulfoton	NA	Disulfoton	298-04-4	0.017		0.1	(1)
P047	4,6-Dinitro-o-cresol.	NA	4,6-Dinitro-o-cresol.	534-52-1	0.28	(2)	160	(1)
P048	2,4-Dinitrophenol	NA	2,4-Dinitrophenol	51-28-5	0.12	(2)	160	(1)
P050	Endosulfan	NA	Endosulfan I	939-98-8	0.023	(2)	0.066	(1)
			Endosulfan II	33213-6-5	0.029	(2)	0.13	(1)
			Endosulfan sulfate.	1031-07-8	0.029	(2)	0.13	(1)
P051	Endrin	NA	Endrin	72-20-8	0.0028	(2)	0.13	(1)
			Endrin aldehyde	7421-93-4	0.025	(2)	0.13	(1)
P056	Fluoride	Table 2 in 268.42	Fluoride	16984-48-8	35		NA	
P059	Heptachlor	NA	Heptachlor	76-44-8	0.0012	(2)	0.066	(1)
			Heptachlor epoxide.	1024-57-3	0.016	(2)	0.066	(1)
P060	Isodrin	NA	Isodrin	465-73-6	0.021	(2)	0.066	(1)
P063	Hydrogen cyanide	NA	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	NA	Methyl parathion	298-00-0	0.025		0.1	(1)
P073	Nickel carbonyl	Table CCWE in 268.41.	Nickel	7440-02-0	0.44 ~~0.32~~		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	NA	p-Nitroaniline	100-01-6	0.028	(2)	28	(1)
P082	N-Nitrosodimethylamine.	Table 2 in 268.42	N-Nitrosodimethylamine.	62-75-9	0.40	(2)	NA	
P089	Parathion	NA	Parathion	56-38-2	0.025		0.1	(1)
P092	Phenylmercury acetate.	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030		NA	
P094	Phorate	NA	Phorate	298-02-2	0.025		0.1	(1)
P097	Famphur	NA	Famphur	52-85-7	0.025		0.1	(1)
P098	Potassium cyanide.	NA	Cyanides (Total)	57-12-5	1.9		110	
			Cyanides (Amenable).	57-12-5	0.10		9.1	

P003 Acrolein Table 2 in 268.42 Acrolein 107-02-8 0.29 ... NA ...

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
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).	NA	Ethyl cyanide (Propanenitrile).	107-12-0	0.24	(2)	360	(1)
P103	Selenourea	Table CCWE in 268.41.	Selenium	7782-49-2	1.0	(2)	NA	
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	
			Silver	7440-22-4	0.29		NA	
P106	Sodium cyanide	NA	Cyanides (Total)	57-12-5	1.9		110	
			Cyanides (Amenable).	57-12-5	0.10		9.1	
P110	Tetraethyl lead	Table CCWE in 268.41 and Table 2 in 268.42.	Lead	7439-92-1	0.040		NA	
P113	Thallic oxide	Table 2 in 268.42	Thallium	7440-28-0	0.14	(8)	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	(8)	NA	
P119	Ammonium vanadate	Table 2 in 268.42	Vanadium	7440-62-2	28	(2)	NA	
P120	Vanadium pentoxide.	Table 2 in 268.42	Vanadium	7440-62-2	28	(2)	NA	
P121	Zinc cyanide	NA	Cyanides Total)	57-12-5	1.9		110	
			Cyanides (Amenable).	57-12-5	0.10		9.1	
P123	Toxaphene	NA	Toxaphene	8001-35-1	0.0095	(3)	1.3	(1)
U002	Acetone	NA	Acetone	67-64-1	0.28		160	(1)
U003	Acetonitrile	Table 2 in 268.42	Acetonitrile	75-05-8	0.17		NA ~~0.17~~	
U004	Acetophenone	NA	Acetophenone	98-86-2	0.010	(1)	9.7	(1)
U005	2-Acetylamino-fluorene.	NA	2-Acetylamino-fluorene.	53-96-3	0.059	(8)	140	
U009	Acrylonitrile	NA	Acrylonitrile	107-13-1	0.24	(2)	84	(1)
U012	Aniline	NA	Aniline	62-53-3	0.81		14	(1)
U018	Benz(a)anthracene	NA	Benz(a)anthracene	56-55-3	0.059	(8)	8.2	(1)
U019	Benzene	NA	Benzene	71-43-2	0.14	(2)	36	(1)
U022	Benzo(a)pyrene	NA	Benzo(a)pyrene	50-32-8	0.061	(8)	8.2	(1)
U024	Bis(2-chloroethoxy) methane.	NA	Bis(2-chloroethoxy) methane.	111-91-1	0.036		7.2	(1)
U025	Bis(2-chloroethyl) ether.	NA	Bis(2-chloroethyl) ether.	111-44-4	0.033		7.2	(1)
U027	Bis(2-chloroisopropyl) ether.	NA	Bis(2-chloroisopropyl) ether.	39638-32-9	0.055	(2)	7.2	(1)
U028	Bis(2-ethylhexyl) phthalate.	NA	Bis(2-ethylhexyl) phthalate.	117-81-7	0.54	(1)	28	(1)
U029	Bromomethane (Methyl bromide).	NA	Bromomethane (Methyl bromide).	74-83-9	0.11	(1)	15	(1)
U030	4-Bromophenyl phenyl ether.	NA	4-Bromophenyl phenyl ether.	101-55-3	0.055	(1)	15	(1)
U031	n-Butyl alcohol	NA	n-Butyl alcohol	71-36-3	5.6		2.6	(1)
U032	Calcium chromate	Table CCWE in 268.41.	Chromium (Total)	7440-47-32	0.32		NA	
U036	Chlordane (alpha and gamma).	NA	Chlordane (alpha and gamma).	57-74-9	0.0033	(8)	0.13	(1)
U037	Chlorobenzene	NA	Chlorobenzene	108-90-7	0.057	(8)	5.7	(1)
U038	Chlorobenzilate	Table 2 in 268.42	Chlorobenzilate	510-15-6	0.10	(2)	NA	
U039	p-Chloro-m-cresol	NA	p-Chloro-m-cresol	59-50-7	0.018	(8)	14	(1)
~~U042~~	~~2-Chloroethyl vinyl.~~	~~Table 2 in 268.42~~	~~2-Chloroethyl vinyl.~~	~~110-75-8~~	~~0.057~~		~~NA~~	
U043	Vinyl chloride	NA	Vinyl chloride	75-01-4	0.27	(8)	33	(1)
U044	Chloroform	NA	Chloroform	67-66-3	0.046	(2)	5.6	(1)
U045	Chloromethane (Methyl chloride).	NA	Chloromethane (Methyl chloride).	74-87-3	0.19	(2)	33	(1)
U047	2-Chloro-naphthalene.	NA	2-Chloro-naphthalene	91-58-7	0.055	(2)	5.6	(1)
U048	2-Chlorophenol	NA	2-Chlorophenol	95-57-8	0.044	(2)	5.7	(1)
U050	Chrysene	NA	Chrysene	218-01-9	0.059	(2)	8.2	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
U051	Creosote	Table CCWE in 268.41.	Naphthalene	91-20-3	0.031		1.5	(1)
			Pentachlorophenol.	87-86-5	0.18		7.4	(1)
			Phenanthrene	85-01-8	0.031		1.5	(1)
			Pyrene	129-00-0	0.028		1.5	(1)
			Toluene	108-88-3	0.028		28	(1)
			Xylenes (Total)		0.032		33	(1)
			Lead	7439-92-1	0.037		NA	
U052	Cresols (Cresylic acid).	NA	o-Cresol	95-48-7	0.11	(2)	5.6	(1)
			Cresols (m- and p- isomers).		0.77	(2)	3.2	(1)
U057	Cyclohexanone	Table 2 in 268.42	Cyclohexanone	108-94-1	0.36		NA	
U060	DDD	NA	o,p'-DDD	53-19-0	0.023		0.087	(1)
			p,p'-DDD	72-54-8	0.023		0.087	(1)
U061	DDT	NA	o,p'-DDT	789-02-6	0.0039	(2)	0.087	(1)
			p,p'-DDT	50-29-3	0.0039	(2)	0.087	(1)
			o,p'-DDD	53-19-0	0.023	(2)	0.087	(1)
			p,p'-DDD	72-54-8	0.023	(2)	0.087	(1)
			o,p'-DDE	3424-82-6	0.031	(2)	0.087	(1)
			p,p'-DDE	72-55-9	0.031	(2)	0.087	(1)
U063	Dibenzo(a,h) anthracene.	NA	Dibenzo(a,h) anthracene.	53-70-3	0.055	(2)	8.2	(1)
U065	1,2-Dibromo-3-chloropropane.	NA	1,2-Dibromo-3-chloropropane.	96-12-8	0.11	(2)	15	(1)
U067	1,2-Dibromoethane (Ethylene dibromide).	NA	1,2-Dibromoethane (Ethylene dibromide).	106-93-4	0.028	(2)	15	(1)
U068	Dibromomethane	NA	Dibromomethane	74-95-3	0.11	(2)	15	(1)
U069	Di-n-butyl phthalate.	NA	Di-n-butyl phthalate.	84-74-2	0.54	(1)	28	(1)
U070	o-Dichlorobenzene.	NA	o-Dichlorobenzene.	95-50-1	0.088	(2)	6.2	(1)
U071	m-Dichlorobenzene.	NA	m-Dichlorobenzene.	541-73-1	0.036		6.2	(1)
U072	p-Dichlorobenzene.	NA	p-Dichlorobenzene.	104-46-7	0.090	(2)	6.2	(1)
U075	Dichlorodifluoromethane.	NA	Dichlorodifluoromethane.	75-71-8	0.23	(2)	7.2	(1)
U076	1,1-Dichloroethane.	NA	1,1-Dichloroethane.	75-34-3	0.059	(2)	7.2	(1)
U077	1,2-Dichloroethane.	NA	1,2-Dichloroethane.	107-06-2	0.21	(2)	7.2	(1)
U078	1,1-Dichloroethylene.	NA	1,1-Dichloroethylene.	75-35-4	0.025	(2)	33	(1)
U079	1,2-Dichloroethylene.	NA	trans-1,2-Dichloroethylene.	156-60-5	0.054	(2)	33	(1)
U080	Methylene chloride.	NA	Methylene chloride.	75-09-2	0.089	(2)	33	(1)
U081	2,4-Dichlorophenol.	NA	2,4-Dichlorophenol.	120-83-2	0.044	(2)	14	(1)
U082	2,6-Dichlorophenol.	NA	2,6-Dichlorophenol	87-65-0	0.044	(2)	14	(1)
U083	1,2-Dichloropropane	NA	1,2-Dichloropropane	78-87-5	0.85	(2)	18	(1)
U084	1,3-Dichloropropene.	NA	cis-1,3-Dichloropropylene	10061-01-5	0.036	(2)	18	(1)
			trans-1,3-Dichloropropylene	10061-02-6	0.036	(2)	18	(1)
U088	Diethyl phthalate	NA	Diethyl phthalate	84-66-2	0.54	(2)	28	(1)
U093	p-Dimethylaminoazobenzene.	Table 2 in 268.42	p-Dimethylaminoazobenzene.	60-11-7	0.13	(4)	NA	
U101	2,4-Dimethylphenol.	NA	2,4-Dimethylphenol.	105-67-9	0.036	(2)	14	(1)
U102	Dimethyl phthalate.	NA	Dimethyl phthalate.	131-11-3	0.54	(1)	28	(1)
U105	2,4-Dinitrotoluene	NA	2,4-Dinitrotoluene	121-14-2	0.32	(3)	140	(1)
U106	2,6-Dinitrotoluene	NA	2,6-Dinitrotoluene	606-20-2	0.55	(3)	28	(1)

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
U107	Di-n-octyl phthalate.	NA	Di-n-octyl phthalate.	117-84-0	0.54	(1)	28	(1)
U108	1,4-Dioxane	NA	1,4-Dioxane	123-91-1	0.12	(2)	170	(1)
U111	Di-n-propylnitrosoamine.	NA	Di-n-propylnitrosoamine.	621-64-7	0.40	(2)	14	(1)
U112	Ethyl acetate	NA	Ethyl acetate	141-78-6	0.34	(2)	33	(1)
U117	Ethyl ether	NA	Ethyl ether	60-29-7	0.12	(2)	160	(1)
U118	Ethyl methacrylate.	NA	Ethyl methacrylate.	97-63-2	0.14	(2)	160	(1)
U120	Fluoranthene	NA	Fluoranthene	206-44-0	0.068	(2)	8.2	(1)
U121	Trichloromonofluoromethane.	NA	Trichloromonofluoromethane.	75-69-4	0.020	(2)	33	(1)
U127	Hexachlorobenzene.	NA	Hexachlorobenzene.	118-74-1	0.055	(2)	37	(1)
U128	Hexachlorobutadiene.	NA	Hexachlorobutadiene.	87-68-3	0.055	(2)	28	(1)
U129	Lindane	NA	alpha-BHC	319-84-6	0.00014	(2)	0.66	(1)
			beta-BHC	319-85-7	0.00014	(2)	0.66	(1)
			Delta-BHC	319-86-8	0.023	(2)	0.66	(1)
			gamma-BHC (Lindane).	58-89-9	0.0017	(2)	0.66	(1)
U130	Hexachlorocyclopentadiene.	NA	Hexachlorocyclopentadiene.	77-47-7	0.057	(2)	3.6	(1)
U131	Hexachloroethane	NA	Hexachloroethane	67-72-1	0.055	(2)	28	(1)
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.	NA	Indeno(1,2,3-c,d)pyrene.	193-39-5	0.0055	(2)	8.2	(1)
U138	Iodomethane	NA	Iodomethane	74-88-4	0.19	(2)	65	(1)
U140	Isobutyl alcohol	NA	Isobutyl alcohol	78-83-1	5.6		170	(1)
U141	Isosafrole	NA	Isosafrole	120-58-1	0.081		2.6	(1)
U142	Kepone	NA	Kepone	143-50-0	0.0011		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	7439-97-6	0.020		NA	
U152	Methacrylonitrile	NA	Methacrylonitrile	126-98-7	0.24	(2)	84	(1)
U154	Methanol	NA Table 2 in 268.42	Methanol	67-56-1	5.6		NA	
U155	Methapyrilene	NA	Methapyrilene	91-80-5	0.081		1.5	(1)
U157	3-Methylcholanthrene.	NA	3-Methylcholanthrene.	56-49-5	0.0055	(2)	15	(1)
U158	4,4'-Methylenebis(2-chloroaniline)	NA	4,4'-Methylenebis(2-chloroaniline)	101-14-4	0.50	(2)	35	(1)
U159	Methyl ethyl ketone.	NA	Methyl ethyl ketone.	78-93-3	0.28		36	(1)
U161	Methyl isobutyl ketone	NA	Methyl isobutyl ketone	108-10-1	0.14		33	(1)
U162	Methyl methacrylate	NA	Methyl methacrylate	80-62-6	0.14		160	(1)
U165	Naphthalene	NA	Naphthalene	91-20-3	0.059	(2)	3.1	(1)
U168	2-Naphthylamine	Table 2 in 268.42	2-Naphthylamine	91-59-8	0.52	(2)	NA	
U169	Nitrobenzene	NA	Nitrobenzene	98-95-3	0.068	(2)	14	(1)
U170	4-Nitrophenol	NA	4-Nitrophenol	100-02-7	0.12	(2)	29	(1)
U172	N-Nitrosodi-n-butylamine	NA	N-Nitrosodi-n-butylamine	924-16-3	0.40	(2)	17	(1)
U174	N-Nitrosodiethylamine	NA	N-Nitrosodiethylamine	55-18-5	0.40	(2)	28	(1)
U179	N-Nitrosopiperidine	NA	N-Nitrosopiperidine	100-75-4	0.013	(2)	35	(1)
U180	N-Nitrosopyrrolidine.	NA	N-Nitrosopyrrolidine.	930-55-2	0.013	(2)	35	(1)
U181	5-Nitro-o-toluidine	NA	5-Nitro-o-toluidine	99-55-8	0.32	(2)	28	
U183	Pentachlorobenzene.	NA	Pentachlorobenzene.	608-93-5	0.055	(2)	37	

268.43 TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters		Nonwastewaters	
					Concentration (mg/l)	Notes	Concentration (mg/kg)	Notes
U185	Pentachloronitrobenzene.	NA	Pentachloronitrobenzene.	82-68-8	0.055	[2]	4.8	[1]
U187	Phenacetin	NA	Phenacetin	62-44-2	0.081		16	[1]
U188	Phenol	NA	Phenol	108-95-2	0.039		6.2	[1]
U190	Phthalic anhydride (measured as Phthalic acid).	NA	Phthalic anhydride (measured as Phthalic acid).	85-44-9	0.54	[1]	28	[1]
U192	Pronamide	NA	Pronamide	23950-58-5	0.093		1.5	[1]
U196	Pyridine	NA	Pyridine	110-86-1	0.014	[2]	16	[1]
U203	Safrole	NA	Safrole	94-59-7	0.081		22	[1]
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.	NA	1,2,4,5-Tetrachlorobenzene.	95-94-3	0.055	[2]	19	[1]
U208	1,1,1,2-Tetrachloroethane.	NA	1,1,1,2-Tetrachloroethane.	630-20-6	0.057		42	[1]
U209	1,1,2,2-Tetrachloroethane.	NA	1,1,2,2-Tetrachloroethane.	79-34-5	0.057	[2]	42	[1]
U210	Tetrachloroethylene.	NA	Tetrachloroethylene.	127-18-4	0.056	[2]	5.6	[1]
U211	Carbon tetrachloride.	NA	Carbon tetrachloride.	56-23-5	0.057	[2]	5.6	[1]
U214	Thallium(I)acetate	Table 2 in 268.42	Thallium	7440-28-0	0.14	[2]	NA	
U215	Thallium(I) carbonate.	Table 2 in 268.42	Thallium	7440-28-0	0.14	[2]	NA	
U216	Thallium(I)chloride	Table 2 in 268.42	Thallium	7440-28-0	0.14	[2]	NA	
U217	Thallium(I)nitrate	Table 2 in 268.42	Thallium	7440-28-0	0.14	[2]	NA	
U220	Toluene	NA	Toluene	108-88-3	0.080	[3]	28	[1]
U225	Tribromomethane (Bromoform).	NA	Tribromomethane (Bromoform).	75-25-2	0.63	[3]	15	[1]
U226	1,1,1-Trichloroethane.	NA	1,1,1-Trichloroethane.	71-55-6	0.054	[3]	5.6	[1]
U227	1,1,2-Trichloroethane.	NA	1,1,2-Trichloroethane.	79-00-5	0.054	[3]	5.6	[1]
U228	Trichloroethylene	NA	Trichloroethylene	79-01-6	0.054	[3]	5.6	[1]
U235	tris-(2,3-Dibromopropyl) phosphate.	NA	tris-(2,3-Dibromopropyl) phosphate.	126-72-7	0.025		0.10	[1]
U239	Xylenes	NA	Xylenes		0.32	[3]	29	[1]
U240	2,4-Dichlorophenoxyacetic acid.	NA	2,4-Dichlorophenoxyacetic acid.	94-75-7	0.72		10	[1]
U243	Hexachloropropene.	NA	Hexachloropropene.	1888-71-7	0.035	[2]	28	
U247	Methoxychlor	NA	Methoxychlor	72-43-5	0.25	[2]	0.18	[1]

[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.

[2] Based on analysis of composite samples.

[3] As analyzed using SW-846 Method 9010 or 9012; sample size 10 gram; distillation time: one hour and fifteen minutes.

[4] Reserved.

Note: NA means 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 by a footnote in Table CCW in this section, provided the following conditions are satisfied:

(1) The treatment standards 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 part 265, subpart O, or based on combustion in fuel substitution units operating in accordance with applicable technical requirements;

(2) The treatment or disposal facility has used the methods referenced in paragraph (c)(1) of this section to treat the organic constituents; 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, the treatment or disposal facility may demonstrate such good-faith efforts by achieving detection limits for the regulated organic constituents that do not exceed an orde of magnitude of the treatment standards specified in this section.

13. Appendix IV to part 268 is revised to read as follows:

Appendix IV—Organometallic Lab Packs

Hazardous waste with the following EPA Hazardous Waste Code No. 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, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P033, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, 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, P106, P108, P109, P110, P111, P112, P113, P114, P115, P116, P118, P119, P120, P121, 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, U136, U137, U138, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, 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, 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.

F001, F002, F003, F004, F005, F006, F010, F020, F021, F022, F023, F024, F025, F026, F027, F028, F039.

K001, K002, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, 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, K060, K061, K069, K071, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K113, K114, K115, K116.

D001, D002, D003, D004, D005, D006, D007, D008, D010, D011, D012, D013, D014, D015, D016, D017.

14. Part 268, appendix V is revised to read as follows:

Appendix V—Organic Lab Packs

Hazardous waste with the following EPA Hazardous Waste Code No. may be placed in an "organic" or "Appendix V" lab pack:

P001, P002, P003, P004, P005, P007, P008, P009, P014, P016, P017, P018, P020, P021, P022, P023, P024, P026, P027, P028, P030, P031, P033, P034, P037, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P057, P058, P059, P060, P062, P063, P064, P066, P067, P068, P069, P070, P071, P072, P075, P077, P081, P082, P084, P085, P088, P089, P093, P094, P095, P097, P098, P101, P102, P105, P106, P108, P109, P111, P112, P116, P118, P123.

U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U016, U017, U018, U019, U020, U021, 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, 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, U140, U141, U142, U143, U147, U148, U149, U150, 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, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U206, U207, U208, U209, U210, U211, U213, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249.

F001, F002, F003, F004, F005, F010, F020, F021, F022, F023, F025, F026, F027, F028.

K009, K010, K011, K013, K014, K016, K017, K018, K019, K020, K023, K024, K025, K026, K027, K029, K030, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K047, K060, K073, K087, K093, K094, K095, K096, K097, K098, K099, K103, K104, K105, K113, K114, K116.

D001, D012, D013, D014, D015, D016, D017.

15. Appendix VII to part 268 is revised to read as follows:

Appendix VII

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS [a]—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.
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg.	Nov. 8, 1988.
D001	All	Aug. 8, 1990
D002	All	Aug. 8, 1990.
D003	All	Aug. 8, 1990.
D004	Wastewater	Aug. 8, 1990.
D004	Nonwastewater	May 8, 1992.
D005	All	Aug. 8, 1990
D006	All	Aug. 8, 1990
D007	All	Aug. 8, 1990
D008	Lead materials before secondary smelting	May 8, 1992
D008	All others	Aug. 8, 19
D009	Nonwastewater	May 8, 19
D009	All others	Aug. 8, 1990
D010	All	Aug. 8, 1990

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS [a]—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
D011	All	Aug. 8, 1990.
D012	All	Aug. 8, 1990.
D013	All	Aug. 8, 1990.
D014	All	Aug. 8, 1990.
D015	All	Aug. 8, 1990.
D016	All	Aug. 8, 1990.
D017	All	Aug. 8, 1990.
F001	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	Nov. 8, 1988.
F001	All others	Nov. 8, 1986.
F002 (1,1,2-trichloroethane)	Wastewater and Nonwastewater	Aug. 8, 1990.
F002	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	Nov. 8, 1988.
F002	All others	Nov. 8, 1986.
F003	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	Nov. 8, 1988.
F003	All others	Nov. 8, 1986.
F004	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	Nov. 8, 1988.
F004	All others	Nov. 8, 1986.
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane)	Wastewater and Nonwastewater	Aug. 8, 1990.
F005	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	Nov. 8, 1988.
F005	All others	Nov. 8, 1986.
F006	Wastewater	Aug. 8, 1990.
F006	Nonwastewater	Aug. 8, 1988.
F006 (cyanides)	Nonwastewater	July 8, 1989.
F007	All	July 8, 1989.
F008	All	July 8, 1989.
F009	All	July 8, 1989.
F010	All	June 8, 1989.
F011 (cyanides)	Nonwastewater	Dec. 8, 1988.
F011	All others	July 8, 1989.
F012 (cyanides)	Nonwastewater	Dec. 8, 1988.
F012	All others	July 8, 1989.
F019	All	Aug. 8, 1990.
F020	All	Nov. 8, 1988.
F021	All	Nov. 8, 1988.
F022	All	Nov. 8, 1988.
F023	All	Nov. 8, 1988.
F024 (metals)	Wastewater	June 8, 1989.
F024 (metals)	Nonwastewater	Aug. 8, 1990.
F024 [b]	All others	June 8, 1989.
F025	All	Aug. 8, 1990.
F026	All	Nov. 8, 1988.
F027	All	Nov. 8, 1988.
F028	All	Nov. 8, 1988.
F039	Wastewater	Aug. 8, 1990.
F039	Nonwastewater	May 8, 1992.
K001 (organics) [b]	All	Aug. 8, 1988.
K001	All others	Aug. 8, 1988.
K002	All	Aug. 8, 1990.
K003	All	Aug. 8, 1990.
K004	Wastewater	Aug. 8, 1990.
K004 [c]	Nonwastewater	Aug. 8, 1988.
K005	Wastewater	Aug. 8, 1990.
K005 [c]	Nonwastewater	June 8, 1989.
K006	All	Aug. 8, 1990.
K007	Wastewater	Aug. 8, 1990.
K007 [c]	Nonwastewater	June 8, 1989.
K008	Wastewater	Aug. 8, 1990.
K008 [c]	Nonwastewater	Aug. 8, 1988.
K009	All	June 8, 1988.
K010	All	June 8, 1989.
K011	Wastewater	Aug. 8, 1990.
K011	Nonwastewater	June 8, 1989.
K013	Wastewater	Aug. 8, 1990.
K013	Nonwastewater	June 8, 1989.
K014	Wastewater	Aug. 8, 1990.
K014	Nonwastewater	June 8, 1989.
K015	Wastewater	Aug. 8, 1988.
K015	Nonwastewater	Aug. 8, 1990.
K016	All	Aug. 8, 1988.
K017	All	Aug. 8, 1990.
K018	All	Aug. 8, 1988.
K019	All	Aug. 8, 1988.
K020	All	Aug. 8, 1988.
K021	Wastewater	Aug. 8, 1990.

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS [a]—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
K021 [c]	Nonwastewater	Aug. 8, 1988.
K022	Wastewater	Aug. 8, 1990.
K022	Nonwastewater	Aug. 8, 1988.
K023	All	June 8, 1989.
K024	All	Aug. 8, 1988.
K025	Wastewater	Aug. 8, 1990.
K025 [c]	Nonwastewater	Aug. 8, 1988.
K026	All	Aug. 8, 1990.
K027	All	June 8, 1989.
K028 (metals)	Nonwastewater	Aug. 8, 1990.
K028	All others	June 8, 1989.
K029	Wastewater	Aug. 8, 1990.
K029	Nonwastewater	June 8, 1989.
K030	All	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	Wastewater	June 8, 1989.
K036 [c]	Nonwastewater	Aug. 8, 1988.
K037 [c]	Wastewater	Aug. 8, 1988.
K037	Nonwastewater	Aug. 8, 1988.
K038	All	June 8, 1989.
K039	All	June 8, 1989.
K040	All	June 8, 1989.
K041	All	Aug. 8, 1990.
K042	All	Aug. 8, 1990.
K043	All	June 8, 1989.
K044 [c]	All	Aug. 8, 1988.
K045 [c]	All	Aug. 8, 1988.
K046 (Nonreactive)	Nonwastewater	Aug. 8, 1988.
K046	All others	Aug. 8, 1990.
K047 [c]	All	Aug. 8, 1988.
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	Wastewater	Aug. 8, 1990.
K060 [c]	Nonwastewater	Aug. 8, 1988.
K061	Wastewater	Aug. 8, 1990.
K061 (low zinc) (interim standard for high zinc remains in effect until August 7, 1991).	Nonwastewater	Aug. 8, 1988.
K062	All	Aug. 8, 1988.
K069 (Non-Calcium Sulfate) [c]	Nonwastewater	Aug. 8, 1988.
K069	All others	Aug. 8, 1990.
K071	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 (organics) [c]	All	Aug. 8, 1988.
K086	All others	Aug. 8, 1988.
K087	All	Aug. 8, 1988.
K093	All	June 8, 1989.
K094	All	June 8, 1989.
K095	Wastewater	Aug. 8, 1990.
K095	Nonwastewater	June 8, 1989.
K096	Wastewater	Aug. 8, 1990.
K096	Nonwastewater	June 8, 1989.
K097	All	Aug. 8, 1990.
K098	All	Aug. 8, 1990.
K099	All	Aug. 8, 1988.
K100	Wastewater	Aug. 8, 1990.
K100 [c]	Nonwastewater	Aug. 8, 1988.
K101 (organics)	Wastewater	Aug. 8, 1988.
K101 (metals)	Wastewater	Aug. 8, 1990.
K101 (organics)	Nonwastewater	Aug. 8, 1988.
K101 (metals)	Nonwastewater	May 8, 19[redacted]
K102 (organics)	Wastewater	Aug. 8, 19[redacted]

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS [a]—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
K102 (metals)	Wastewater	Aug. 8, 1990.
K102 (organics)	Nonwastewater	Aug. 8, 1988.
K102 (metals)	Nonwastewater	May 8, 1992.
K103	All	Aug. 8, 1988.
K104	All	Aug. 8, 1988.
K105	All	Aug. 8, 1990.
K106	Wastewater	Aug. 8, 1990.
K106	Nonwastewater	May 8, 1992.
K113	All	June 8, 1989.
K114	All	June 8, 1989.
K115	All	June 8, 1989.
K116	All	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 (barium)	Nonwastewater	Aug. 8, 1990.
P013	All others	June 8, 1989.
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	All	June 8, 1989.
P040	All	June 8, 1989.
P041	All	June 8, 1989.
P042	All	Aug. 8, 1990.
P043	All	June 8, 1989.
P044	All	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.
P058	All	Aug. 8, 1990.
P059	All	Aug. 8, 1990.
P060	All	Aug. 8, 1990.
P062	All	June 8, 1989.
P063	All	June 8, 1989.
P064	All	Aug. 8, 1990.
P065	Wastewater	Aug. 8, 1990.
P065	Nonwastewater	May 8, 1992.
P066	All	Aug. 8, 1990.
P067	All	Aug. 8, 1990.

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS *—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
P068	All	Aug. 8, 1990.
P069	All	Aug. 8, 1990.
P070	All	Aug. 8, 1990.
P071	All	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	All	June 8, 1989.
P087	All	May 8, 1992.
P088	All	Aug. 8, 1990.
P089	All	June 8, 1989.
P092	Wastewater	Aug. 8, 1990.
P092	Nonwastewater	May 8, 1992.
P093	All	Aug. 8, 1990.
P094	All	June 8, 1989.
P095	All	Aug. 8, 1990.
P096	All	Aug. 8, 1990.
P097	All	June 8, 1989.
P098	All	June 8, 1989.
P099 (silver)	Wastewater	Aug. 8, 1990.
P099	All others	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	All others	June 8, 1989.
P105	All	Aug. 8, 1990.
P106	All	June 8, 1989.
P108	All	Aug. 8, 1990.
P109	All	June 8, 1989.
P110	All	Aug. 8, 1990.
P111	All	June 8, 1989.
P112	All	Aug. 8, 1990.
P113	All	Aug. 8, 1990.
P114	All	Aug. 8, 1990.
P115	All	Aug. 8, 1990.
P116	All	Aug. 8, 1990.
P118	All	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	All	Aug. 8, 1990.
U004	All	Aug. 8, 1990.
U005	All	Aug. 8, 1990.
U006	All	Aug. 8, 1990.
U007	All	Aug. 8, 1990.
U008	All	Aug. 8, 1990.
U009	All	Aug. 8, 1990.
U010	All	Aug. 8, 1990.
U011	All	Aug. 8, 1990.
U012	All	Aug. 8, 1990.
U014	All	Aug. 8, 1990.
U015	All	Aug. 8, 1990.
U016	All	Aug. 8, 1990.
U017	All	Aug. 8, 1990.
U018	All	Aug. 8, 1990.
U019	All	Aug. 8, 1990.
U020	All	Aug. 8, 1990.
U021	All	Aug. 8, 1990.
U022	All	Aug. 8, 1990.
U023	All	Aug. 8, 1990.
U024	All	Aug. 8, 1990.
U025	All	Aug. 8, 1990.
U026	All	Aug. 8, 1990.
U027	All	Aug. 8, 1990.
U028	All	June 8, 19[illegible]
U029	All	Aug. 8, 19[illegible]

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS *—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
U030	All	Aug. 8, 1990.
U031	All	Aug. 8, 1990.
U032	All	Aug. 8, 1990.
U033	All	Aug. 8, 1990.
U034	All	Aug. 8, 1990.
U035	All	Aug. 8, 1990.
U036	All	Aug. 8, 1990.
U037	All	Aug. 8, 1990.
U038	All	Aug. 8, 1990.
U039	All	Aug. 8, 1990.
U041	All	Aug. 8, 1990.
U042	All	Aug. 8, 1990.
U043	All	Aug. 8, 1990.
U044	All	Aug. 8, 1990.
U045	All	Aug. 8, 1990.
U046	All	Aug. 8, 1990.
U047	All	Aug. 8, 1990.
U048	All	Aug. 8, 1990.
U049	All	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	All	June 8, 1989.
U059	All	Aug. 8, 1990.
U060	All	Aug. 8, 1990.
U061	All	Aug. 8, 1990.
UC62	All	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	All	June 8, 1989.
U070	All	Aug. 8, 1990.
U071	All	Aug. 8, 1990.
U072	All	Aug. 8, 1990.
U073	All	Aug. 8, 1990.
U074	All	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	All	June 8, 1989.
U088	All	June 8, 1989.
U089	All	Aug. 8, 1990.
U090	All	Aug. 8, 1990.
U091	All	Aug. 8, 1990.
U092	All	Aug. 8, 1990.
U093	All	Aug. 8, 1990.
U094	All	Aug. 8, 1990.
U095	All	Aug. 8, 1990.
U096	All	Aug. 8, 1990.
U097	All	Aug. 8, 1990.
U098	All	Aug. 8, 1990.
U099	All	Aug. 8, 1990.
U101	All	Aug. 8, 1990.
U102	All	June 8, 1989.
U103	All	Aug. 8, 1990.
U105	All	Aug. 8, 1990.
U106	All	Aug. 8, 1990.
U107	All	June 8, 1989.
U108	All	Aug. 8, 1990.
U109	All	Aug. 8, 1990.
U110	All	Aug. 8, 1990.
U111	All	Aug. 8, 1990.
U112	All	Aug. 8, 1990.

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRS *—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
U113	All	Aug. 8, 1990.
U114	All	Aug. 8, 1990.
U115	All	Aug. 8, 1990.
U116	All	Aug. 8, 1990.
U117	All	Aug. 8, 1990.
U118	All	Aug. 8, 1990.
U119	All	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	All	Aug. 8, 1990.
U131	All	Aug. 8, 1990.
U132	All	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	All	Aug. 8, 1990.
U144	All	Aug. 8, 1990.
U145	All	Aug. 8, 1990.
U146	All	Aug. 8, 1990.
U147	All	Aug. 8, 1990.
U148	All	Aug. 8, 1990.
U149	All	Aug. 8, 1990.
U150	All	Aug. 8, 1990.
U151	Wastewater	Aug. 8, 1990.
U151	Nonwastewater	May 8, 1992.
U152	All	Aug. 8, 1990.
U153	All	Aug. 8, 1990.
U154	All	Aug. 8, 1990.
U155	All	Aug. 8, 1990.
U156	All	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	All	Aug. 8, 1990.
U164	All	Aug. 8, 1990.
U165	All	Aug. 8, 1990.
U166	All	Aug. 8, 1990.
U167	All	Aug. 8, 1990.
U168	All	Aug. 8, 1990.
U169	All	Aug. 8, 1990.
U170	All	Aug. 8, 1990.
U171	All	Aug. 8, 1990.
U172	All	Aug. 8, 1990.
U173	All	Aug. 8, 1990.
U174	All	Aug. 8, 1990.
U176	All	Aug. 8, 1990.
U177	All	Aug. 8, 1990.
U178	All	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	All	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	All	June 8, 1989.

TABLE 1.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES (NON-SOIL AND DEBRIS) REGULATED IN THE LDRs [a]—COMPREHENSIVE LIST—Continued

Waste code	Waste category	Effective date
U191	All	Aug. 8, 1990.
U192	All	Aug. 8, 1990.
U193	All	Aug. 8, 1990.
U194	All	Aug. 8, 1990.
U196	All	Aug. 8, 1990.
U197	All	Aug. 8, 1990.
U200	All	Aug. 8, 1990.
U201	All	Aug. 8, 1990.
U202	All	Aug. 8, 1990.
U203	All	Aug. 8, 1990.
U204	All	Aug. 8, 1990.
U205	All	Aug. 8, 1990.
U206	All	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	All	Aug. 8, 1990.
U219	All	Aug. 8, 1990.
U220	All	Aug. 8, 1990.
U221	All	June 8, 1989.
U222	All	Aug. 8, 1990.
U223	All	June 8, 1989.
U225	All	Aug. 8, 1990.
U226	All	Aug. 8, 1990.
U227	All	Aug. 8, 1990.
U228	All	Aug. 8, 1990.
U234	All	Aug. 8, 1990.
U235	All	June 8, 1989.
U236	All	Aug. 8, 1990.
U237	All	Aug. 8, 1990.
U238	All	Aug. 8, 1990.
U239	All	Aug. 8, 1990.
U240	All	Aug. 8, 1990.
U243	All	Aug. 8, 1990.
U244	All	Aug. 8, 1990.
U246	All	Aug. 8, 1990.
U247	All	Aug. 8, 1990.
U248	All	Aug. 8, 1990.
U249	All	Aug. 8, 1990.

[a] This table does not include mixed radioactive wastes (from the First, Second, and Third rules) which are receiving a national capacity variance until May 8, 1992, for all applicable treatment technologies. This table also does not include contaminated soil and debris wastes.
[b] The standard has been revised in the Third Third Final Rule.
[c] No land disposal standard has been revised in the Third Third Final Rule.

Appendix VII

TABLE 2.—SUMMARY OF EFFECTIVE DATES OF LAND DISPOSAL RESTRICTIONS FOR CONTAMINATED SOIL AND DEBRIS (CSD)

Restricted hazardous waste in CSD	Effective date
1. Solvent-(F001–F005) and dioxin-(F020–F023 and F026–F028) containing soil and debris from CERCLA response or RCRA corrective actions.	Nov. 8, 1990.
2. Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001–F005) or dioxins (F020–F023 and F026–F028).	Nov. 8, 1988.
3. Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	Nov. 8, 1990.
4. Soil and debris contaminated with California list HOCs not from CERCLA response or RCRA corrective actions.	July 8, 1989.
5. All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	Aug. 8, 1990.
6. All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	June 8, 1991.

TABLE 2.—SUMMARY OF EFFECTIVE DATES OF LAND DISPOSAL RESTRICTIONS FOR CONTAMINATED SOIL AND DEBRIS (CSD)—Continued

TABLE 2.—SUMMARY OF EFFECTIVE DATES OF LAND DISPOSAL RESTRICTIONS FOR CONTAMINATED SOIL AND DEBRIS (CSD)—Continued

TABLE 2.—SUMMARY OF EFFECTIVE DATES OF LAND DISPOSAL RESTRICTIONS FOR CONTAMINATED SOIL AND DEBRIS (CSD)—Continued

Restricted hazardous waste in CSD	Effective date
7. All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004–D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	May 8, 1992.

Note: 1. Appendix VII is provided for the convenience of the reader.

2. Contaminated Soil and Debris Rule will be promulgated in the future.

16. Appendix VIII to part 268 is revised to read as follows:

Appendix VIII

NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES [a]

Waste code	Waste category	Effective date
F001–F005	All spent F001–F005 solvent containing less than 1 percent total F001–F005 solvent constituents	Aug. 8, 1990.
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.	Aug. 8, 1990.
California list	Liquid hazardous waste having a pH less than or equal to 2	Aug. 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	Aug. 8, 1990.
D002 [b]	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	Nonwastewater	May 8, 1992.
F007	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.
K049	All	Aug. 8, 1990.
K050	All	Aug. 8, 1990.
K051	All	Aug. 8, 1990.
K052	All	Aug. 8, 1990.
K062	All	Aug. 8, 1990.
K071	All	Aug. 8, 1990.
K104	All	Aug. 8, 1990.

[a] Wastes that are deep well disposed on-site receive a six-month variance, with restrictions effective in November 1990.
[b] 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.

17. Appendix IX is added to part 268 to read as follows:

Appendix IX—Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test (SW–846, Method 1310A)

1.0 Scope and Application

1.1 This method is an interim method to determine whether a waste exhibits the characteristic of Extraction Procedure Toxicity.

1.2 The procedure may also be used to simulate the leaching which a waste may undergo if disposed of in a sanitary landfill. Method 1310 is applicable to liquid, solid, and multiphase samples.

2.0 Summary of Method

2.1 If a representative sample of the waste contains >0.5% solids, the solid phase of the sample is ground to pass a 9.5 mm sieve and extracted with deionized water which is maintained at a pH of 5±0.2, with acetic acid. Wastes that contain <0.5% filterable solids are, after filtering, considered to be the EP extract for this method. Monolithic wastes which can be formed into a cylinder 3.3 cm (dia) x 7.1 cm, or from which such a cylinder can be formed which is representative of the waste, may be evaluated using the Structural Integrity Procedure instead of being ground to pass a 9.5-mm sieve.

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 Extractor—For purposes of this test, an acceptable extractor is one that will impart sufficient agitation to the mixture to (1) prevent stratification of the sample and extraction fluid and (2) ensure that all sample surfaces are continuously brought into contact with well-mixed extraction fluid. Examples of suitable extractors are shown in Figures 1–3 of this method and are available from: Associated Designs & Manufacturing Co., Alexandria, Virginia; Glas-Col Apparatus Co., Terre Haute, Indiana; Millipore, Bedford, Massachusetts; and Rexnard, Milwaukee, Wisconsin.

4.2 pH meter or pH controller—Accurate to 0.05 pH units with temperature compensation.

4.3 Filter holder—Capable of supporting a 0.45-μm filter membrane and of withstanding the pressure needed to accomplish separation. Suitable filter holders range from simple vacuum units to relatively complex systems that can exert up to 5.3 kg/cm² (75 psi) of pressure. The type of filter holder used depends upon the properties of the mixture to be filtered. Filter holders known to EPA and deemed suitable for use are listed in Table 1.

4.4 Filter membrane—Filter membrane suitable for conducting the required filtration shall be fabricated from a material that (1) is not physically changed by the waste material to be filtered and (2) does not absorb or leach the chemical species for which a waste's EP extract will be analyzed. Table 2 lists filter media known to the agency to be suitable for solid waste testing.

4.4.1 In cases of doubt about physical effects on the filter, contact the filter manufacturer to determine if the membrane or the prefilter is adversely affected by the particular waste. If no information is available, submerge the filter in the waste's liquid phase. A filter that undergoes visible physical change after 48 hours (*i.e.*, curls, dissolves, shrinks, or swells) is unsuitable for use.

4.4.2 To test for absorption or leaching by the filter:

4.4.2.1 Prepare a standard solution of the chemical species of interest.

4.4.2.2 Analyze the standard for its concentration of the chemical species.

4.4.2.3 Filter the standard and reanalyze. If the concentration of the filtrate differs from that of the original standard, then the filter membrane leaches or absorbs one or more of the chemical species and is not usable in this test method.

4.5 Structural integrity tester—A device meeting the specifications shown in Figure 4 and having a 3.18-cm (1.25-in) diameter hammer weighing 0.33 kg (0.73 lb) with a free fall of 15.24 cm (6 in) shall be used. This device is available from Associated Design and Manufacturing Company, Alexandria, VA 22314, as Part No. 125, or it may be fabricated to meet these specifications.

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. All references to water in this method refer to reagent water, as defined in Chapter One.

5.3 Acetic acid (0.5N), CH_3COOH. This can be made by diluting concentrated glacial acetic acid (17.5N) by adding 57 ml glacial acetic acid to 1,000 ml of water and diluting to 2 liters. The glacial acetic acid must be of high purity and monitored for impurities.

5.4 Analytical standards should be prepared according to the applicable analytical methods.

6.0 Sample Collection, Preservation, and Handling

6.1 All samples must be collected using a sampling plan that addresses the considerations discussed in Chapter Nine of this manual.

6.2 Preservatives must not be added to samples.

6.3 Samples can be refrigerated if it is determined that refrigeration will not affect the integrity of the sample.

7.0 Procedure

7.1 If the waste does not contain any free liquid, go to Step 7.9. If the sample is liquid or multiphase, continue as follows. Weigh filter membrane and prefilter to ±0.01 g. Handle membrane and prefilters with blunt curved-tip forceps or vacuum tweezers, or by applying suction with a pipet.

7.2 Assemble filter holder, membranes, and prefilters following the manufacturer's instructions. Place the 0.45-μm membrane on the support screen and add prefilters in ascending order of pore size. Do not prewet filter membrane.

7.3 Weigh out a representative subsample of the waste (100 g minimum).

7.4 Allow slurries to stand, to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration.

7.5 Wet the filter with a small portion of the liquid phase from the waste or from the extraction mixture. Transfer the remaining material to the filter holder and apply vacuum or gentle pressure (10–15 psi) until all liquid passes through the filter. Stop filtration when air or pressurizing gas moves through the membrane. If this point is not reached under vacuum or gentle pressure, slowly increase the pressure in 10-psi increments to 75 psi. Halt filtration when liquid flow stops. This liquid will constitute part or all of the extract (refer to Step 7.16). The liquid should be refrigerated until time of analysis.

Note: Oil samples or samples containing oil are treated in exactly the same way as any other sample. The liquid portion of the sample is filtered and treated as part of the EP extract. If the liquid portion of the sample will not pass through the filter (usually the case with heavy oils or greases), it should be carried through the EP extraction as a solid.

7.6 Remove the solid phase and filter media and, while not allowing them to dry, weigh to ± 0.01 g. The wet weight of the residue is determined by calculating the weight difference between the weight of the filters (Step 7.1) and the weight of the solid phase and the filter media.

7.7 The waste will be handled differently from this point on, depending on whether it contains more or less than 0.5% solids. If the sample appears to have <0.5% solids, determine the percent solids exactly (see Note below) by the following procedure:

7.7.1 Dry the filter and residue at 80 °C until two successive weighings yield the same value.

7.7.2 Calculate the percent solids, using the following equation:

$$\frac{\text{weight of filtered solid and filters} - \text{tared weight of filters}}{\text{initial weight of waste material}} \times 100 = \%\ \text{solids}$$

Note: This procedure is used only to determine whether the solid must be extracted or whether it can be discarded unextracted. It is not used in calculating the amount of water or acid to use in the extraction step. Do not extract solid material that has been dried at 80 °C. A new sample will have to be used for extraction if a percent solids determination is performed.

7.8 If the solid constitutes <0.5% of the waste, discard the solid and proceed immediately to Step 7.17, treating the liquid phase as the extract.

7.9 The solid material obtained from Step 7.5 and all materials that do not contain free liquids shall be evaluated for particle size. If the solid material has a surface area per g of material ≥3.1 cm² or passes through a 9.5-mm (0.375-in.) standard sieve, the operator shall proceed to Step 7.11. If the surface area is smaller or the particle size larger than specified above, the solid material shall be prepared for extraction by crushing, cutting, or grinding the material so that it passes through a 9.5-mm (0.375-in.) sieve or, if the material is in a single piece, by subjecting the material to the "Structural Integrity Procedure" described in Step 7.10.

7.10 Structural Integrity Procedure (SIP).

7.10.1 Cut a 3.3-cm diameter by 7.1-cm long cylinder from the waste material. If the waste has been treated using a fixation process, the waste may be cast in the form of a cylinder and allowed to cure for 30 days prior to testing.

7.10.2 Place waste into sample holder and assemble the tester. Raise the hammer to its maximum height and drop. Repeat 14 additional times.

7.10.3 Remove solid material from tester and scrape off any particles adhering to sample holder. Weigh the waste to the nearest 0.01 g and transfer it to the extractor.

7.11 If the sample contains >0.5% solids, use the wet weight of the solid phase (obtained in Step 7.6) to calculate the amount of liquid and acid to employ for extraction by using the following equation:

$W = W_1 - W_2$

where:

W = Wet weight in g of solid to be charged to extractor.

W_f = Wet weight in g of filtered solids and filter media.
W_t = Weight in g of tared filters.

If the waste does not contain any free liquids, 100 g of the material will be subjected to the extraction procedure.

7.12 Place the appropriate amount of material (refer to Step 7.11) into the extractor and add 16 times its weight with water.

7.13 After the solid material and water are placed in the extractor, the operator shall begin agitation and measure the pH of the solution in the extractor. If the pH is >5.0, the pH of the solution shall be decreased to 5.0 ±0.2 by slowly adding 0.5N acetic acid. If the pH is ≤5.0, no acetic acid should be added. The pH of the solution shall be monitored, as described below, during the course of extraction, and, if the pH rises above 5.2, 0.5N acetic acid shall be added to bring the pH down to 5.0 ±0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 mL of acid per g of solid. The mixture shall be agitated for 24 hours and maintained at 20–40 °C (68–104 °F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45–A pH Controller, manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123, or its equivalent, in conjunction with a metering pump and reservoir of 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed.

Note: Do not add acetic acid too quickly. Lowering the pH to below the target concentration of 5.0 could affect the metal concentrations in the leachate.

7.13.1 A pH meter shall be calibrated in accordance with the manufacturer's specifications.

7.13.2 The pH of the solution shall be checked and, if necessary, 0.5N acetic acid shall be manually added to the extractor until the pH reaches 5.0 ± 0.2. The pH of the solution shall be adjusted at 15-, 30-, and 60-minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5 pH units.

7.13.3 The adjustment procedure shall be continued for at least 8 hours.

7.13.4 If at the end of the 24-hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (4 mL per g of solids) has not been added, the pH shall be adjusted to 5.0 ± 0.2 and the extraction continued for an additional 4 hours, during which the pH shall be adjusted at 1-hour intervals.

7.14 At the end of the extraction period, water shall be added to the extractor in an amount determined by the following equation:

$V = (20)(W) - 16(W) - A$

Where:

V = mL water to be added.
W = Weight in g of solid charged to extractor.
A = mL of 0.5N acetic acid added during extraction.

7.15 The material in the extractor shall be separated into its component liquid and solid phases in the following manner:

7.15.1 Allow slurries to stand to permit the solid phase to settle (wastes that are slow to settle may be centrifuged prior to filtration) and set up the filter apparatus (refer to Steps 4.3 and 4.4).

7.15.2 Wet the filter with a small portion of the liquid phase from the waste or from the extracted mixture. Transfer the remaining material to the filter holder and apply vacuum or gentle pressure (10–15 psi) until all liquid passes through the filter. Stop filtration when air or pressurized gas moves through the membrane. If this point is not reached under vacuum or gentle pressure, slowly increase the pressure in 10-psi increments to 75 psi. Halt filtration when liquid flow stops.

7.16 The liquids resulting from Steps 7.5 and 7.15 shall be combined. This combined liquid (or waste itself, if it has < 0.5% solids, as noted in Step 7.8) is the extract and shall be analyzed for the presence of any of the contaminants specified in 40 CFR 261.24 using the analytical procedures as designated in Step 7.17.

7.17 The extract is then prepared and analyzed using the appropriate analytical methods described in Chapters Three and Four of this manual.

Note: If the EP extract includes two phases, the concentration of contaminants is determined by using a simple weighted average. For example: An EP extract contains 50 mL of oil and 1,000 mL of an aqueous phase. Contaminant concentrations are determined for each phase. The final contamination concentration is taken to be:

$$\frac{50 \times \text{contaminant conc. in oil} + 1{,}000 \times \text{contaminant conc. of aqueous phase}}{1050}$$

Note: In cases where a contaminant was not detected, use the MDL in the calculation. For example, if the MDL in the oily phase is 100 mg/L and 1 mg/L in the aqueous phase, the reporting limit would be 6 mg/L (rounded to the nearest mg). If the regulatory threshold is 5 mg/L, the waste may be EP toxic and results of the analysis are inconclusive.

7.18 The extract concentrations are compared with the maximum contamination limits listed in 40 CFR 261.24. If the extract concentrations are greater than or equal to the respective values, the waste then is considered to exhibit the characteristic of Extraction Procedure Toxicity.

8.0 Quality Control

8.1 Refer to Chapter One for specific quality control procedures.

9.0 Method Performance

9.1 The data tabulated in Table 3 were obtained from records of state and contractor laboratories and are intended to show the precision of the entire method (1301 plus analysis method).

10.0 References

1. Rohrbough, W.G.; et al. *Reagent Chemicals, American Chemical Society Specifications*. 7th ed.; American Chemical Society: Washington, DC 1986.

2. *1985 Annual Book of ASTM Standards*. Vol. 11.01; "Standard Specification for Reagent Water"; ASTM: Philadelphia, PA. 1985; D1193–77.

3. Gaskill, A., Compilation and Evaluation of RCRA Method Performance Data. Work Assignment No. 2. EPA Contract No. 68–01–7075. September 1986.

TABLE 1.—EPA-APPROVED FILTER HOLDERS

Manufacturer	Size	Model No.	Comments
Vacuum Filters			
Gelman	47 mm	4011	
Nalgene	500 mL	44–0045	Disposable plastic unit, including prefilter, filter pads, and reservoir; can be used when solution is to be analyzed for inorganic constituents.
Nuclepore	47 mm	410400	
Millipore	47 mm	XX10 047 00	
Pressure Filters			
Nuclepore	142 mm	425900	
Micro Filtration Systems	142 mm	302300	

TABLE 1.—EPA-APPROVED FILTER HOLDERS—Continued

Manufacturer	Size	Model No.	Comments
Millipore	142 mm	YT30 142 HW	

TABLE 2.—EPA-APPROVED FILTRATION MEDIA

Supplier	Filter to be used for aqueous systems	Filter to be used for organic systems
Coarse prefilters		
Gelman	61631, 61635	61631, 61635
Nuclepore	210907, 211707.	210907, 211707
Millipore	AP25 035 00, AP25 127 50.	AP25 035 00, AP25 127 50
Medium prefilters		
Gelman	61654, 61655	
Nuclepore	210905, 211705.	210905, 211705
Millipore	AP20 035 00, AP20 124 50.	AP20 035 00, AP20 124 50
Fine prefilters		
Gelman	64798, 64803	64798, 64803
Nuclepore	210903, 211703.	210903, 211703
Millipore	AP15 035 00, AP15 124 50.	AP15 035 00, AP15 124 50
Fine filters (0.45 μm)		
Gelman	63069, 66536	60540 or 66149, 66151
Pall	NX04750, NX14225.	
Nuclepore	142218	*142218
Millipore	HAWP 047 00, HAWP 142 50.	FHUP 047 00, FHLP 142 50
Selas	83485-02, 83486-02.	83485-02, 83486-02

*Susceptible to decomposition by certain polar organic solvents.

TABLE 3.—PRECISIONS OF EXTRACTION-ANALYSIS PROCEDURES FOR SEVERAL ELEMENTS

Element	Sample matrix	Analysis method	Laboratory replicates
Arsenic	1. Auto fluff	7060	1.8,1.5 μg/L
	2. Barrel sludge	7060	0.9, 2.6 μg/L
	3. Lumber treatment company sediment	7060	28, 42 mg/L
Barium	1. Lead smelting emission control dust	6010	0.12, 0.12 mg/L
	2. Auto fluff	7081	791, 780 μg/L
	3. Barrel sludge	7081	422, 380 μg/L
Cadmium	1. Lead smelting emission control dust	3010/7130	120, 120 mg/L
	2. Wastewater treatment sludge from electroplating	3010/7130	360, 290 mg/L
	3. Auto fluff	7131	470, 610 μg/L
	4 Barrel sludge	7131	1100, 890 μg/L
	5. Oil refinery tertiary pond sludge	7131	3.2, 1.9 μg/L
Chromium	1. Wastewater treatment sludge from electroplating	3010/7190	1.1, 1.2 mg/L
	2. Paint primer	7191	61, 43 μg/L
	3. Paint primer filter	7191	—
	4 Lumber treatment company sediment	7191	0.81, 0.89 mg/L
	5. Oil refinery tertiary pond sludge	7191	—
Mercury	1. Barrel sludge	7470	0.15, 0.09 μg/L
	2. Wastewater treatment sludge from electroplating	7470	1.4, 0.4 μg/L
	3. Lead smelting emission control dust	7470	0.4, 0.4 μg/L
Lead	1. Lead smelting emission control dust	3010/7420	940, 920 mg/L
	2. Auto fluff	7421	1540, 1490 μg/L
	3. Incinerator ash	7421	1000, 974 μg/L
	4 Barrel sludge	7421	2550, 2800 μg/L
	5. Oil refinery tertiary pond sludge	7421	31, 29 μg/L
Nickel	1. Sludge	7521	2260, 1720 μg/L
	2. Wastewater treatment sludge from electroplating	3010/7520	130, 140 mg/L
Chromium (VI)	1. Wastewater treatment sludge from electroplating	7196	18, 19 μg/L

BILLING CODE 6560-50-M

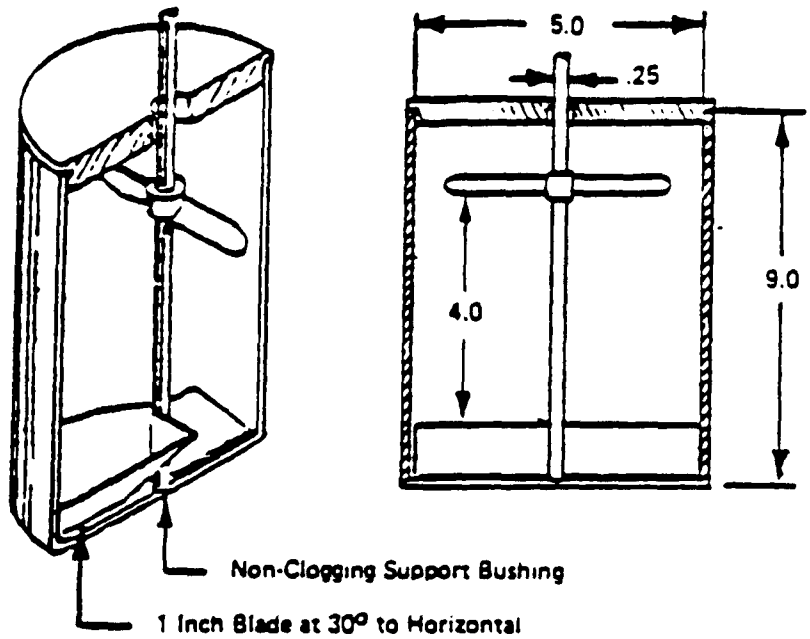


Figure 1. Extractor.

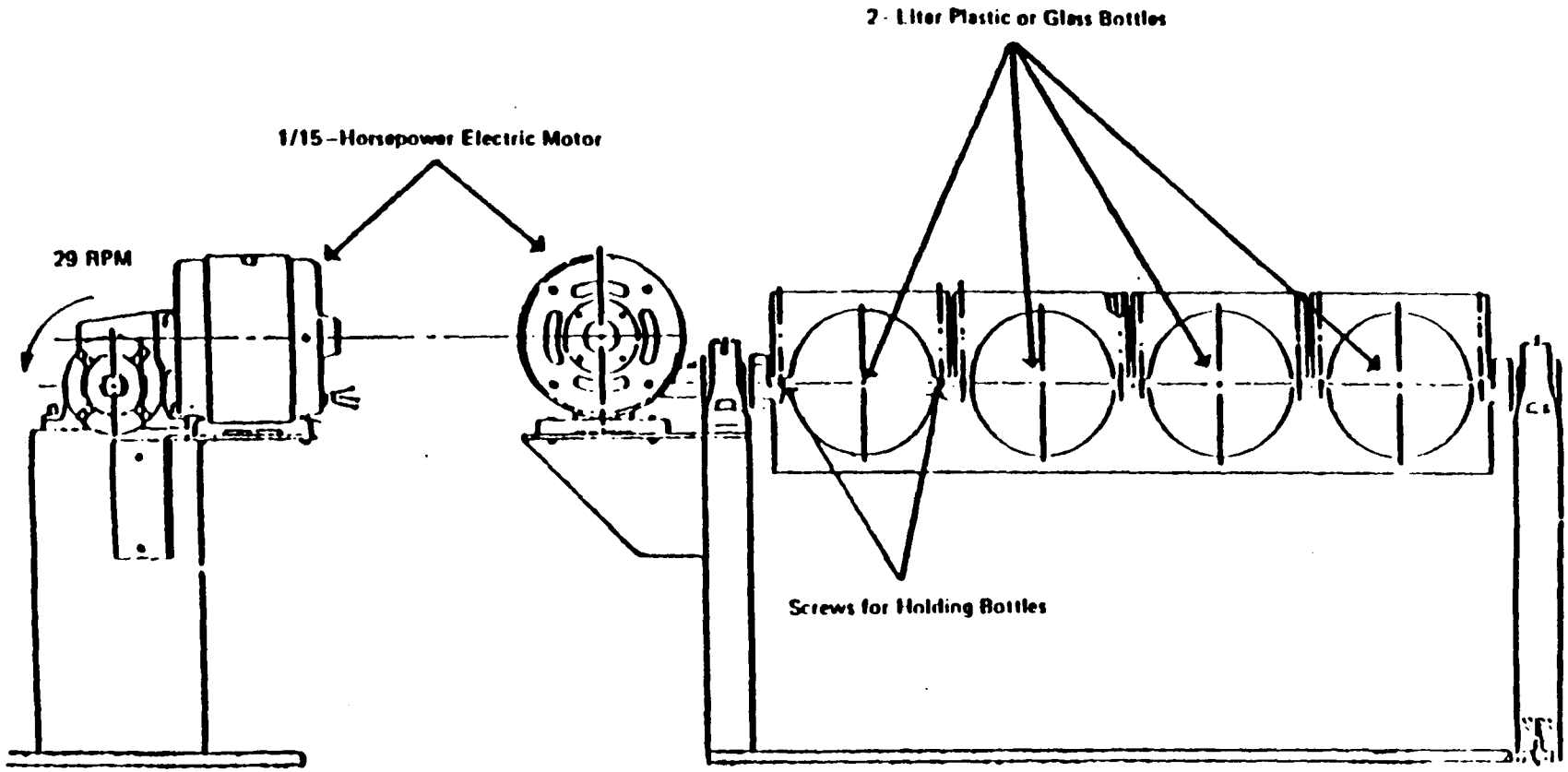


Figure 2. Rotary Extractor.

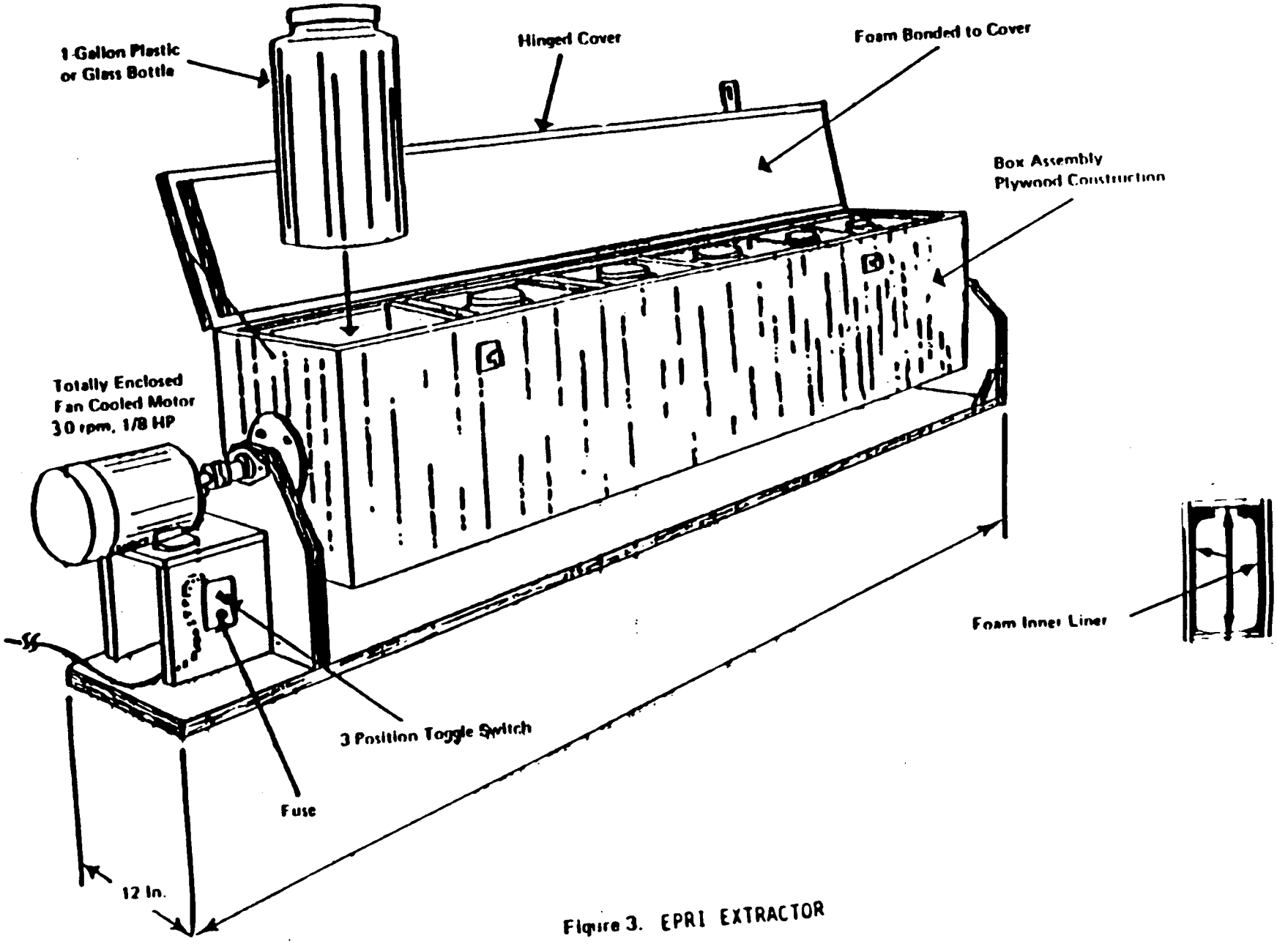


Figure 3. EPRI EXTRACTOR

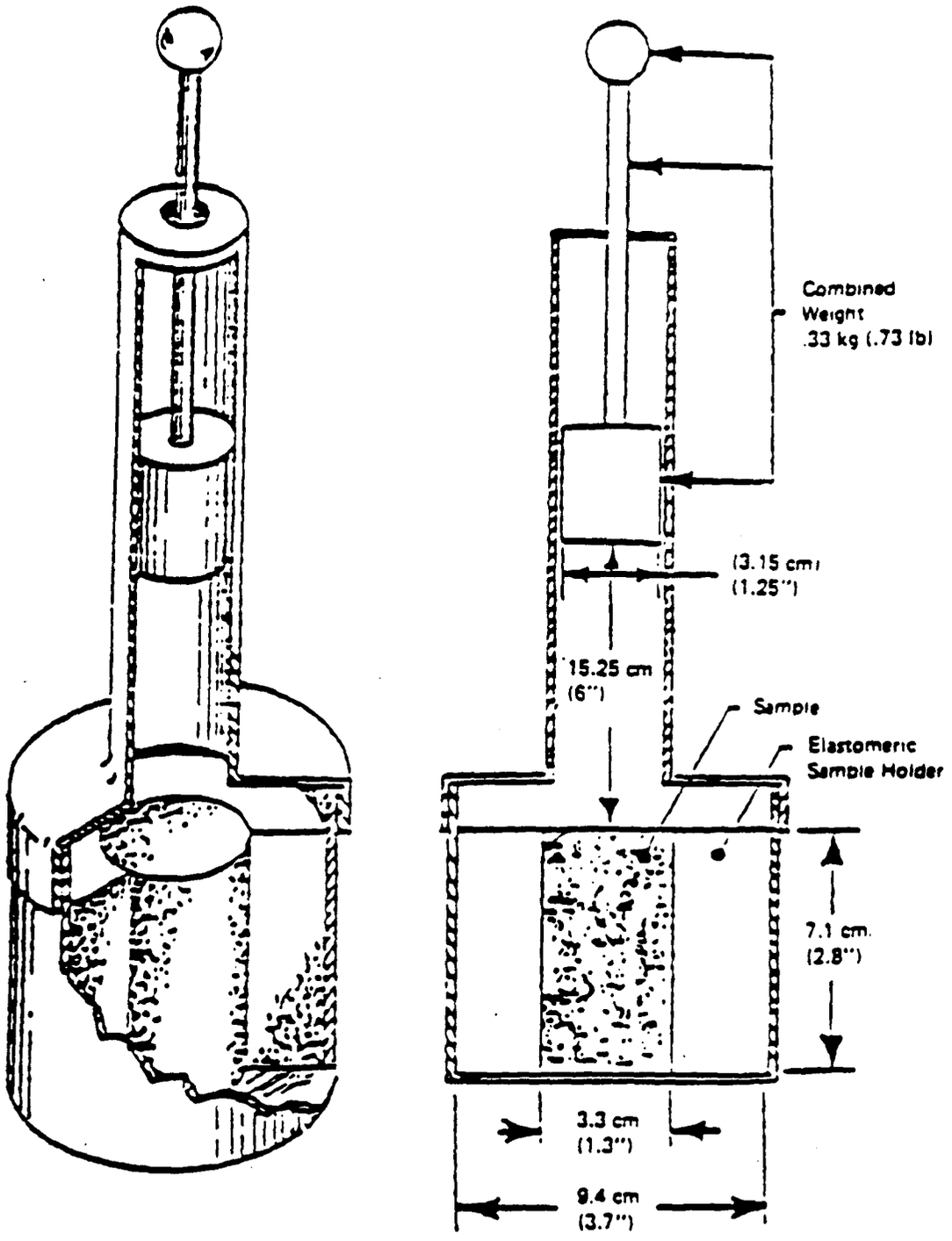


Figure 4. Compaction tester.

BILLING CODE 6560-50-C

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. The entry in appendix I to § 270.42, B.1.b., is revised to read 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) 1
* * * * *	

[1] Class 1 modifications requiring prior Agency approval.

[FR Doc. 91-2234 Filed 1-30-91; 8:45 am]

BILLING CODE 6560-50-M

SPA 11

RCRA REVISION CHECKLIST 84

Toxicity Characteristic; Chlorofluorocarbon Refrigerants
56 FR 5910-5915
February 13, 1991
(RCRA Cluster I, HSWA Rule)

Note: This Revision Checklist addresses an interim final rule which suspends the Toxicity Characteristic (TC) rule (see 55 FR 11798, March 29, 1990, Revision Checklist 74) for certain used chlorofluorocarbon refrigerants which exhibit the toxicity characteristic and which are recycled. The exemption only applies if the refrigerants are reclaimed for reuse. This interim final rule provides for a standard which is narrower in scope than would be imposed in the final TC rule. Thus, States are not required to mandate this narrower-in-scope standard 1/, and the affected citation is designated as optional. Section 3009 of RCRA, however, provides that States may impose requirements that are broader in scope or more stringent than those imposed under Federal regulations.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE					
SUBPART A - GENERAL					
† EXCLUSIONS					
used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, provided the refrigerant is reclaimed for further use	261.4(b)(12)				

1 This rule is considered "narrower-in-scope" because it narrows the wastes which are regulated, by exluding from regulation certain chlorofluorocarbon refrigerants as specified at 261.4(b)(12).

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 261

[SWH-FRL-3904-5/EPA/OSW-FR-91-005]

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristic

AGENCY: Environmental Protection Agency.

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 several characteristics used to identify waste regulated as hazardous under Subtitle C of the Resource Conservation and Recovery Act (RCRA). Since the promulgation of the Toxicity Characteristic (TC), the Agency has received information that the rule's immediate application may cause certain used chlorofluorocarbon (CFC) refrigerants to be subject to hazardous waste regulations because they exhibit the TC. EPA is concerned that subjecting used CFC refrigerants to Subtitle C regulations will promote continued or increased venting, increasing the levels of ozone-depleting substances in the stratosphere. As a result of this new information and to allow time for gathering additional information and giving all relevant facts careful consideration, the Agency is promulgating today's interim final rule to suspend the TC rule for used refrigerants which exhibit the toxicity characteristic and which are recycled. The exemption only applies if the refrigerants are reclaimed for reuse. At the same time, the Agency is seeking public comment on the merits of this suspension.

DATES: *Effective Date:* February 5, 1991. *Comment Date:* Comments must be submitted on or before April 1, 1991.

ADDRESSES: The public must send an original and two copies of their comments to: RCRA Docket Information Center (OS-305), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

Place the docket number F-91-CFIF-FFFFF on your comments. The EPA RCRA docket is located at: EPA RCRA Docket (room M2427), 401 M Street SW., Washington, DC 20406.

The docket 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: Call (202) 475-9327 for appointments. Copies of docket materials cost $0.15/page.

FOR FURTHER INFORMATION CONTACT: For general information about this notice, contact the RCRA/Superfund Hotline at (800) 424-9346 toll free, or (703) 920-9810 in the Washington, DC, metropolitan area. For information on specific aspects of this notice, contact Becky Cuthbertson, Regulatory Development Branch, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-8551.

SUPPLEMENTARY INFORMATION:

Outline of Today's Notice

I. Background
A. Refrigeration System Operations
B. RCRA Applicability
C. Previous EPA Actions on Refrigerants
D. Regulations under the Clean Air Act
II. Application of Existing Regulatory Framework
A. Definition of Solid Waste
B. Refrigerant Handlers' RCRA Requirements
III. Issues Arising from the TC Rule
A. Impacts on Recycling Markets
B. Impacts on an Orderly CFC Phaseout and Transition to CFC Substitutes
C. Environmental Concerns
D. Time Considerations
IV. Suspension of TC Requirements
A. Eligible Refrigerants
B. Rationale for Suspension
V. State Authorization
A. Applicability of Rules in Authorized States
B. Effect on State Authorizations
VI. Additional Information
A. Executive Order 12291—Regulatory Impacts
B. Regulatory Flexibility Act
C. Paperwork Reduction Act
VII. References

I. Background

A. Refrigeration System Operations

Vapor compression refrigeration systems typically use CFC refrigerants as the working fluid. The most common refrigerants include CFC-11, 12, 114, 502 and HCFC-22. These cycles are closed systems, relying on the ability to continually compress and evaporate the refrigerants to provide the proper heat transfer for cooling.

CFC-11 is typically a liquid at room temperature, but because its boiling point is around 75 °F, it volatilizes easily. An infrequently used refrigerant, CFC-113, also has a high boiling point (117 °F). However, the other more common refrigerants, such as CFC-12 and HCFC-22, have very low boiling points (−21 and −41 degrees F respectively), which cause them to immediately volatilize; therefore, they are not likely to leach from wastes into groundwater in any measurable quantities.

Refrigerants, as the working fluid of a mechanical cooling process, are not deliberately vented or removed from the system, unless the systems are being tested, serviced, maintained, retired, or retrofitted to use new CFC alternatives. In order to service the refrigeration hardware, the closed refrigeration loop must be opened. Because of the rapid volatilization of CFC refrigerants when they are released from the closed refrigerant system, traditional service and maintenance procedures involved venting the refrigerant. However, because of environmental concern regarding ozone depletion, recent international regulations phasing out production of CFCs, (see London Amendments to the Montreal Protocol) and increased price and decreased CFC availability, service technicians are beginning to capture and reuse refrigerant.

B. RCRA Applicability

RCRA regulations apply to materials that are solid wastes (including solids, liquids, semi-solids, and contained gases), as that term is defined in 40 CFR 261.2. Used Refrigerants are considered spent materials, and if reclaimed, are solid wastes under 40 CFR 261.2(c)(3). However, a limited subset of used refrigerant, i.e., those which are used or reused without prior reclamation, are not subject to regulation under the RCRA hazardous waste program (see 40 CFR 261.2(e)(1)(ii)).

On March 29, 1990 (55 FR 11798), EPA promulgated the Toxicity Characteristic to replace the EP toxicity characteristic. (The TC went into effect September 25, 1990.) The Toxicity Characteristic is used to identify solid wastes which are identified as hazardous based on the presence of constituents that may leach from the waste. The TC expanded the range of wastes subject to subtitle C (hazardous waste) controls, because a number of constituents not regulated under the EP toxicity characteristic, which it replaced, were included in the TC.

Two of the new TC constituents may be present in certain used refrigerants (e.g., those containing CFC-11) and are likely to leach from the waste at levels that may cause the used refrigerants to be subject to the federal hazardous waste regulations. The two constituents which are of concern in CFC-11 are carbon tetrachloride, which is present in used CFC-11 refrigerant at levels of 25-215 mg/l, and chloroform, present in used CFC-11 refrigerant at levels of 6-52 mg/l. (The TC regulatory level for

carbon tetrachloride is 0.5 mg/l, and for chloroform, it is 6.0 mg/l.) These contaminants are present in low levels in the manufacturing raw feedstock required to produce CFC–11 and are left over in used CFC–11 and remain as residuals in used CFC–11. Thus when the refrigerant is removed from the refrigeration system, it may contain carbon tetrachloride and/or chloroform at levels that cause it to exhibit the characteristic of toxicity. See the data provided in the August 29, 1990 letter from C.A. McCain of E.I. DuPont de Nemours and Co., to Ms. Lena Nirk of EPA, available for public viewing in the docket for this notice.

For the data on CFC–11 provided in the docket, there is no documentation of the analytical methods or quality control/quality assurance procedures used. We also do not have data on other CFC refrigerants, e.g., CFC–113. EPA solicits comments on whether other data are available that can be used to determine whether used CFC refrigerants are TC hazardous. EPA also solicits comment on whether the suspension should be extended to hydrofluorocarbon (HFC) refrigerants, which are being used as refrigerants (for example, in mobile air conditioning systems); EPA has no data at all on whether HFCs would exhibit any hazardous waste characteristics when removed from refrigeration systems.

C. Previous EPA Actions on Refrigerants

The issue of RCRA applicability to refrigerants being recycled has been discussed previously; see the July 28, 1989 Federal Register notice (54 FR 31335) describing the status of recycled refrigerants under the 1989 Federal hazardous waste regulations. Under the regulations in place from 1980 to 1990, recycled refrigerants were unlikely to be Federally regulated as hazardous wastes because they would not have exhibited any of the characteristics of hazardous waste, nor did they fit any of the hazardous waste listing descriptions. However, as discussed above, the TC regulation promulgated on March 29, 1990, which added new constituents to the Toxicity Characteristic, may change the RCRA regulatory status of those recycled refrigerants containing carbon tetrachloride or other Toxicity Characteristic constituents.

No commenters on the original Toxicity Characteristic proposal raised the issue of possible negative impacts on recycling of used refrigerants if they were to become regulated as hazardous wastes. One reason this may have occurred is that at the time of the original TC proposal (June 13, 1988; see 51 FR 21648) most refrigerants were being vented and recycling was not feasible.

EPA has taken a related action under the Clean Air Act by issuing an Advanced Notice of Proposed Rulemaking (ANPRM) on May 1, 1990 (55 FR 18258) to develop a national CFC and halon recycling program. Some commenters on that notice raised concerns about RCRA applicability to recycled refrigerants and described potential disruption of recycling markets if refrigerant is managed as a hazardous waste under RCRA. However, the commenters did not specifically mention the Toxicity Characteristic.

D. Regulations under the Clean Air Act

The recently enacted amendments to the Clean Air Act require EPA, by 1992, to issue regulations regarding the use and disposal of certain CFCs in appliances and industrial process refrigeration units. The regulations must include requirements to maximize recapture and recycling and ensure safe disposal. The amendments, as a general rule, also prohibit venting of certain CFCs to the environment.

The new Clean Air Act authority is the Agency's best available tool to limit CFC emissions. The Clean Air Act authority enables the Agency to regulate the handling, recycling, reuse and disposal of CFCs by refrigerant recyclers, service technicians and equipment owners and manufacturers. When EPA proposes and finalizes a prohibition on venting chlorofluorocarbons under the Clean Air Act, and the prohibition becomes effective, the Agency will reconsider the issue of RCRA applicability to used CFC refrigerants being recycled.

II. Application of Existing Regulatory Framework

A. Definition of Solid Waste

One of the first questions that arises in determining RCRA applicability to refrigeration system maintenance and repair is whether a material is a solid waste. The hazardous waste regulations of RCRA Subtitle C apply to materials that are "solid wastes," which are defined in RCRA section 1004(27) as

> • • • discarded material including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities • • •

Contained gases thus clearly are solid wastes under RCRA, whereas uncontained gases not associated with solid waste management units are outside of RCRA.

As stated in the July 28, 1989 Federal Register (54 FR 31336), EPA's regulations classify the used refrigerants as spent materials that are solid wastes when reclaimed. (The refrigerants must be collected as a contained gas under this scenario.) See 40 CFR 261.2(c)(3). If the waste also exhibits a characteristic of a hazardous waste, it is a hazardous waste in addition to being a solid waste. Thus, the equipment servicer who must remove the chlorofluorocarbon refrigerants in order to service the equipment must decide whether to vent them (and thus avoid hazardous waste regulatory requirements) or collect them and possibly be required to manage them as hazardous wastes. EPA is concerned that, if the refrigerants are regulated as hazardous wastes, most servicers will vent the material rather than collect it for recycling.

B. Refrigerant Handlers' RCRA Requirements

This section presents the hazardous waste requirements for handlers of used CFC refrigerants being reclaimed, if those used CFC refrigerants were to be classified as hazardous wastes because they exhibit the Toxicity Characteristic. The requirements described here are suspended by today's action (discussed further in section IV of this notice).

Currently, the owners of refrigeration equipment using CFC refrigerant as the heat transfer fluid are considered hazardous waste generators if the used CFC refrigerant exhibits the characteristic of Toxicity, and if they collect the used CFC refrigerant for reclamation or disposal. In addition, parties who repair or maintain the refrigeration equipment under contract with the equipment owners would be "co-generators" if their actions produced hazardous waste, or caused it to be subject to regulation (see 45 FR 72026, October 30, 1990). Parties co-generating hazardous waste must arrange among themselves who is to take responsibility for managing the hazardous waste, although all parties remain potentially liable for hazardous waste mismanagement.

As of September 25, 1990, generators who generate more than 1000 kg of hazardous waste per month must manage their TC hazardous wastes according to the requirements in 40 CFR parts 261 and 262 and other relevant parts of the hazardous waste regulations. For generators of 100–1000 kg of hazardous waste per month, effective date for managing TC hazardous wastes according to the hazardous waste requirements is March 29, 1991. (Generators of less than 100 kg

hazardous waste per month are conditionally exempt from hazardous waste management standards.)

In a scenario in which the refrigeration equipment servicer collects the CFC refrigerant and transports it from a large quantity generator's site for recycling, that servicer acts as a transporter (in addition to being a co-generator) and must comply with the requirements in 40 CFR part 263 if the used CFC refrigerant exhibits a hazardous waste characteristic. Transporters may hold hazardous wastes at "transfer facilities" for up to ten days, consistent with activities undertaken in the normal course of transportation, without needing a RCRA storage permit.

As of September 25, 1990, the recycling facility accepting CFC refrigerants that are hazardous wastes from large quantity generators (greater than 1000 kg/month) must meet the definition of a "designated facility," which requires that the facility either has a permit or interim status, or meets certain other conditions as a recycling facility (see 40 CFR 260.10 for the definition of designated facility).

III. Issues Arising From the TC Rule

A. Impacts on Recycling Markets

EPA has received information since promulgation of the TC indicating that certain companies currently recycling CFC refrigerants may stop doing so if they must manage the CFC refrigerants as hazardous wastes. See Items No. 2–7 in the public docket for this notice. These companies and other groups generally cite the cost and complexity of the hazardous waste regulations, along with specific RCRA requirements such as manifesting, and other requirements that may be imposed at the local level as a result of the hazardous waste requirements (i.e., rezoning refrigerant distribution centers as hazardous waste transfer stations), as reasons that recycling will diminish or cease. Although EPA is still evaluating the merits of the arguments presented by the parties submitting this information, EPA is concerned that some of the results suggested may cause serious environmental harm, the nature and significance of which EPA did not explore during the TC rulemaking. EPA is concerned that the increased requirements associated with regulating refrigerants as hazardous wastes will result in increased venting. EPA has not considered the feasibility of administrative options to reduce the impacts on recycling of these materials under current RCRA regulations. Therefore, EPA is suspending application of the rule in order to have time to evaluate these issues.

In order to evaluate these issues, EPA is soliciting public comment on whether handling used CFC refrigerants as a hazardous waste is causing or will cause a decrease in current recycling rates, and whether the decrease (if any) is or will be occurring for the reasons these parties put forward, or for other reasons.

To assess the potential impacts of the hazardous waste regulations on used CFC refrigerant recycling, EPA will consider information on the universe of used CFC refrigerant handlers (numbers of facilities reclaiming, number of facilities that use the CFC–11 and other refrigerants and would be classified as generators if the CFC refrigerants were hazardous wastes, and how many transporters there are currently). Finally, EPA is soliciting comment on whether the concerns can be redressed by phased compliance rather than exemption, and on whether alternative approaches (such as streamlined permitting, or reduced manifesting requirements) could be used to reduce any adverse recycling impact of RCRA regulations.

Under RCRA, there is a requirement to obtain a permit prior to beginning construction of a new hazardous waste management facility (if the facility did not manage hazardous wastes prior to the effective date of regulations for those hazardous wastes—see 40 CFR 270.10(f)). This requirement exists for facilities that intend to treat, store, or dispose of hazardous wastes from generators other than conditionally exempt small quantity generators. (In the case of used CFC refrigerants, if such facilities had begun storing and reclaiming used CFC refrigerants prior to September 25, 1990, and met certain other requirements, they would be able to obtain "interim status" and would have been able to continue storing and reclaiming after September 25. However, it appears that few parties were aware of the TC's potential application to used CFC refrigerants.) EPA believes that this requirement may act as a deterrent to firms contemplating entering the CFC reclamation market after the effective date of the TC rules. EPA notes that the preceding discussion applies only to the facilities actually conducting the reclamation or reprocessing of the refrigerants, and not to all refrigeration equipment owners who have used refrigerants that can be reclaimed.

In addition to potential requirements on reclaimed refrigerants, other factors may be influencing the reclamation/reprocessing firms' decision to enter the CFC refrigerant recycling market. Because of the ease with which equipment servicers can vent, as opposed to collect, used CFC refrigerants, and the low cost and ready availability of refrigerant, recycling has not been common in the past. (Equipment design, including the ability to attach devices to collect the refrigerant, may also influence the equipment servicer's decision.) In order to increase recycling rates, the refrigeration industry must contend with both the need to change the equipment servicers' behavior, and the need to change some equipment design.

However, the recent (July 1989) implementation of Phase I of the Montreal Protocol reduces CFC supplies by over 20%, resulting in price increases. In addition, a tax on chemicals that deplete the ozone layer further increases the price and provides incentives to collect used CFC for recycling; this tax is scheduled to increase yearly.[1] The current price of CFCs are at the margin at which recycling becomes economically feasible. If used refrigerant is regulated as a RCRA hazardous waste, the cost of recycling is likely to increase enough to make recycling economically less attractive. Since venting is not currently prohibited, venting is likely to continue to occur until the economics of recycling improve, or regulations prohibiting the venting go into effect.

B. Impacts on an Orderly CFC Phaseout and Transition to CFC Substitutes

The Agency is concerned that if recycling is not practiced due to the increased costs of recycling that results from handling the used CFC refrigerants as RCRA hazardous wastes, industry may begin using other, more environmentally costly practices. These practices could include premature retirement of CFC-using equipment or retrofitting that equipment to work with alternatives. A premature retrofit to an alternative that has not yet been completely evaluated may result in the wrong refrigerant choice, leading to negative environmental impacts. The Agency is currently evaluating the toxicity, global warming potential, energy efficiency, safety, flammability, ozone depletion and materials compatibility of various alternative refrigerants. Many of the results will not be available until 1991–1994, and thus, information is not currently available to completely identify alternatives which

[1] EPA analysis indicates that the cost of recycling is approximately $2 per weighted kilogram of CFC (see the Advance Notice of Proposed Rulemaking dated May 1, 1990, 55 FR 18230).

satisfy all environmental, health, and safety concerns. For instance, a premature selection of an alternative that is less energy efficient would result in increases in carbon dioxide and other air pollutants which may cause increases in global warming.

Recycling CFCs provides the opportunity for industry to postpone or even avoid entirely the need to retire prematurely or retrofit equipment. The Agency estimates that a recycling program in the major air conditioning and refrigeration sectors, fully implemented by the early 1990's, could result in a net saving of over 159,000 metric tons of CFCs by the year 2000. Complying with RCRA regulations may increase venting of CFC refrigerants, and thus increase the cost of the Agency's CFC phaseout regulations. The Agency discussed the potential for increasing the costs of a recycling program if there are delays in its implementation in an advance notice of proposed rulemaking published on May 1, 1990 (55 FR 18258).

C. Environmental Concerns

In the ANPRM of May 1, 1990 (55 FR 18258), the Agency described the human health and environmental risks of CFCs. An EPA analysis shows that chlorine levels will continue to increase from current levels of 3.0 to about 4.0 parts per billion (ppb) despite a phaseout in production of controlled substances by the year 2000. The Antarctic ozone hole was discovered at chlorine levels of approximately 2.5 ppb; natural chlorine levels are .7 ppb. Earlier reductions in CFCs before 2000 would reduce the environmental risks (described below) even as chlorine levels continue to increase over the next decade.

The largest environmental impact from emissions of CFCs comes from the chlorine's ability to deplete the ozone layer, and thereby increasing the amount of ultraviolet radiation reaching the earth's surface. EPA believes that an increase in UV radiation will result in increased deaths from skin cancer, increased incidence of cataracts, reduction in the function of the body's immune system, and damage to crops. CFCs are also suspected greenhouse gases.

Recycling provides an opportunity to delay or reduce the increase in chlorine levels. Indeed, estimates based on preliminary EPA analysis of a proposed recycling program indicate that one-third of all CFCs could be recycled by the turn of the century. Recycling may reduce the peak rate of chlorine loading to the stratosphere.

The Agency is currently investigating the impact that recycled CFCs may have on the ozone layer. Since these chemicals are difficult to destroy, it is likely that they will be eventually released although at a later point in time.[2] EPA is investigating the impact of their eventual release on peak chlorine concentrations. Recent scientific evidence suggests that a reduction of the peak chlorine concentrations may more than proportionally reduce ozone depletion.[3] It is likely that delayed or reduced release of CFCs due to recycling over the next 30 to 40 years will lower the peak of chlorine concentration.

The Agency is promulgating today's interim final rule with the belief that this action will encourage used refrigerant recycling. EPA is interested in hearing from commenters who have evidence on the effect of this exemption. EPA is also interested in evidence of harmful environmental or health effects other than those discussed in this rulemaking. Because EPA is attempting to balance the potential environmental harm caused by disruption to emerging refrigerant recycling markets against the potential environmental harm caused by removing this wastestream from RCRA subtitle C regulatory control, EPA is asking for commenters to provide any available information to aid in evaluating the human health and environmental effects of these actions.

D. Time Considerations

Of paramount concern to the Agency is mitigating the potential for significant adverse health and environmental impacts, as discussed above, while investigating these issues further. Under the Clean Air Act amendments, a prohibition on venting must become effective by July 1, 1992. Thus because of the potential seriousness of the risks posed by CFC refrigerant venting, EPA believes that immediate action to temporarily postpone the RCRA regulation of these materials pending further investigation is warranted to mitigate the potential health and environmental effects. EPA is exercising its authority under the good cause exemptions in sections 553(b)(3) and 553(d)(3) of the Administrative Procedure Act to immediately suspend the requirements imposed as a result of the TC for CFC refrigerants being recycled. EPA believes that, without the immediate suspension, recycling of CFC refrigerants may decrease substantially, with potentially serious impacts on stratospheric ozone levels that are contrary to the public's best interest.

IV. Suspension of TC Requirements

A. Eligible Refrigerants

The refrigerants that are eligible for this exemption are those chlorofluorocarbons that are recycled and that were used as the heat transfer fluid in a refrigeration cycle in totally enclosed heat transfer equipment. These chlorofluorocarbons include CFC-11, CFC-113, and the other chlorofluorocarbon refrigerants, including HCFCs. Examples of the equipment in which these chlorofluorocarbons may be used include mobile air conditioning systems (e.g., those used in mass transit vehicles), mobile refrigeration (refrigerated trucks and rail cars), and commercial and industrial air conditioning and refrigeration systems. The requirements imposed by the TC are suspended for such refrigerants by today's interim final action. The spent CFCs that are being reclaimed will not be regulated as a Federal hazardous waste as a result of today's action (unless a future determination to do so is made). Thus, the hazardous waste regulatory requirements for generators, transporters, and recyclers of used chlorofluorocarbons that are being reclaimed (discussed in section II.B. of this notice) are suspended, effective February 5, 1991.

B. Rationale for Suspension

As a result of the new information provided in this notice, and to allow adequate time to collect additional data and give careful consideration to all the relevant issues and regulatory options, the Agency is today promulgating an interim final rule that suspends the TC rule for handlers of used CFC refrigerants being recycled. The suspension will allow time for individuals to submit comments on the various issues raised in this proposal, and it will allow the Agency time to consider all information concerning these operations. Had the Agency been aware of this issue during the comment period on the TC proposal, the Agency would have carefully considered the impacts and consequences of the TC and determined the appropriate action at that time. Faced with new information concerning the potential adverse environmental impacts caused by the TC, EPA weighed the benefits of

[2] The Agency is assessing the possibility that such chemicals could either be destroyed or transformed into other chemicals at a later date, thus diminishing their eventual impact on the ozone layer.

[3] U.S. Environmental Protection Agency "Analysis of Environmental Implications of the Future Growth in Demand for Partially Halogenated Chlorinated Compounds". EPA 400/1-90001, January 1990.

the rule as applied to CFC refrigerants against the potential public health consequences of applying the rule to CFC refrigerants in the interim while EPA considers the new information. In this case, due to the environmental and health consequences from ozone depletion, EPA believes that the public interest may be better served by suspending the rule to evaluate the consequences. EPA solicits public comment on its decision to suspend the TC regulation for used CFC refrigerants being reclaimed.

V. 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. 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 the Hazardous and Solid Waste Amendments of 1984 (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.

B. Effect on State Authorizations

EPA considers this rule to be part of the TC rule, and thus also a HSWA rule. As a result, EPA will implement the provisions of today's rule in authorized States until their programs are modified to adopt the final toxicity characteristic and the modification is approved by EPA. Implementation of today's 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 unauthorized States.

Today's rule suspends the requirements imposed in the final Toxicity Characteristic regulation (see 55 FR 11798, March 29, 1990) for certain CFC refrigerants being recycled. 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 a standard which is narrower in scope than would be imposed in the final Toxicity Characteristic for certain CFC refrigerants which may fail the characteristic and are recycled. In order to promote recycling operations, today's rule provides that these wastes would not be hazardous wastes under the Federal regulations, and States would not be required to mandate their management as such in order to retain their RCRA authorization. However, Section 3009 of RCRA provides that States may impose requirements that are broader in scope or more stringent 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.

VI. Additional Information

A. Executive Order 12291—Regulatory Impacts

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 would be to suspend requirements imposed by the final Toxicity Characteristic rule for certain CFC refrigerant recycling operations. There are no sampling or analysis requirements in today's rule. The net effect of this rule is to extend cost savings to certain segments of the potentially regulated community. Consequently, no regulatory impact analysis is required.

B. 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 suspension of the Toxicity Characteristic requirements for certain limited CFC recycling 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 on a substantial number of small entities. This regulation, therefore, does not require a regulatory flexibility analysis.

C. 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.*

VII. References

Copies of the following documents are available for viewing only in the OSW docket room:

1. August 28, 1990 letter from C.A. McCain of E.I. du Pont de Nemours & Company to Lena Nirk of EPA.
2. September 24, 1990 letter from Kevin J. Fay of the Alliance for Responsible CFC Policy to Sylvia Lowrance of EPA.
3. September 24, 1990 letter from Gerald Hapka of du Pont to Steve Cochran of EPA.
4. September 4, 1990 letter from Lorraine Segala-Long of Omega Recovery Services to Steve Seidel and Jean Lupinacci of EPA.
5. September 4, 1990 letter from William Chaisson of the Air Conditioning Contractors of America to Sylvia Lowrance of EPA.
6. September 24, 1990 letter from James Patrick Leonard of National Refrigerants to Sylvia Lowrance of EPA.
7. September 24, 1990 letter from James Patrick Leonard of United Refrigeration Inc. to Sylvia Lowrance of EPA.

8. Properties—du Pont Freon® Refrigerants (August 1986).

9. Scientific Assessment of Stratospheric Ozone: 1989 (July 14, 1989).

10. Status of Used Refrigerants under 40 CFR 261.2—Memorandum to the Docket from Michael Petruska, Acting Chief, Waste Characterization Branch (October 18, 1990).

11. October 12, 1990 letter from Harold J. See of C.F.C. Inc. to EPA's Asbestos and Small Business Ombudsman.

12. September 7, 1990 information from du Pont on Used CFC Refrigerants.

13. U.S. Environmental Protection Agency. "Analysis of Environmental Implications of the Future Growth in Demand for Partially Halogenated Chlorinated Compounds." EPA 400/190001, January, 1990.

List of Subjects in 40 CFR Part 261

Administrative practice and procedure, Air pollution control, Hazardous materials transportation, Hazardous substances, Hazardous waste, Natural resources, Penalties, Recycling, Waste treatment and disposal.

Dated: February 5, 1991.

William K. Reilly,

Administrator.

For the reasons set forth in the preamble, title 40, chapter 1 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. Section 261.4 is amended by adding paragraph (b)(12) to read as follows:

§ 261.4 Exclusions.

* * * * *

(b) * * *

(12) Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use.

* * * * *

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SPA 11

RCRA REVISION CHECKLIST 85

Burning of Hazardous Waste in
Boilers and Industrial Furnaces
56 FR 7134-7240
February 21, 1991
(RCRA Cluster I, HSWA and non-HSWA provisions)

1) There are numerous typographical and technical errors in the final rule addressed by this checklist; where they are obvious, we have noted them. On July 17, 1991 (56 FR 32688; Revision Checklist 94) extensive corrections were made to the final rule addressed by this checklist because of the many typographical and other errors found in the February 21, 1991 final rule. The Agency also published a second technical correction on August 27, 1991 (56 FR 42504; Revision Checklist 96), which reversed the revisions to 265.112(d)(2), 265.113(a) and 265.113(b) made by the final rule addressed by this present checklist, which contains these revisions as published in that February 21, 1991 (56 FR 7134) final rule. States are cautioned not to make the corrections to 265.112(d)(2), 265.113(a) and 265.113(b) as requested by this checklist. Otherwise those corrections will have to be undone when Revision Checklist 96 is applied for. Finally, Revision Checklists 111 (57 FR 38558; August 25, 1992) and 114 (57 FR 44999; September 30, 1992) made several technical amendments to the BIFs rule. Because of the extent of the technical corrections made to the rule addressed by Revision Checklist 85, States are strongly encouraged to use the Consolidated Boilers and Industrial Furnaces Checklist, which consolidates this present Boilers and Industrial Furnaces rule with subsequent revisions made to it. A Consolidated Checklist which consolidates all final BIFs rules through December 31, 1991 (i.e., Revision Checklists 85, 94, 96 and 98 (56 FR 33874; September 5, 1991) is currently available on the SRPB Electronic Bulleting Board System. That consolidated checklist will be part of SPA 12. The consolidated checklist will be updated as part of subsequent SPAs as additional final rules addressing the BIFs rule are promulgated. For example, a Consolidated Checklist which consolidates changes to the Federal code through June 30, 1993, including Revision Checklists 85, 94, 96, 98, 105 (57 FR 27880; June 22, 1992), 111 (57 FR 38558; August 25, 1992) and 114 (57 FR 44999; September 30, 1992) will be developed as part of SPA 14.

2) States applying for Revision Checklist 85 are urged to adopt required Revision Checklists 94, 96, 111 and 114 changes at the same time the requirements addressed by Revision Checklist 85 are adopted. States that have already adopted the provisions addressed by Revision Checklist 85 are strongly encouraged to apply for the Revision Checklists 94, 96, 111, and 114 provisions as soon as possible.

3) Note that on September 5, 1991 (56 FR 43874; Revision Checklist 98), an administrative stay was published affecting this final rule, by delaying when the permit standards become effective for coke ovens burning certain hazardous wastes from a coke by-products recovery process. The changes addressed by Revision Checklist 98 are optional. However, the final rule addressed by Revision Checklist 105 (June 22, 1992; 57 FR 27880) removed the September 5, 1991 administrative stay. Thus States should either not adopt the administrative stay or, if they choose to adopt the stay, state in their regulations that this stay ends on June 22, 1992.

4) The regulations addressed by this checklist typically do not make a distinction between the various types of burning devices. However, the provisions in the regulations as they apply to sludge dryers, carbon regeneration units, infrared incinerators, and plasma arc incinerators are non-HSWA requirements, while the regulations as they apply to all other types of burning devices are HSWA provisions. EPA will implement the HSWA requirements in authorized States until the States modify their programs and such modifications are approved by EPA. The non-HSWA requirements are applicable only in those States that do not have authorization. In authorized States, the non-HSWA requirements will not be applicable until States revise their programs to adopt equivalent requirements under State law.

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL					
SUBPART B - DEFINITIONS					
change "Parts 260 through 265 and 268" to "Parts 260 through 266 and 268"	260.10(intro)				
"carbon regeneration unit"	260.10				
revise "incinerator"	260.10(1)&(2)				
replace "controlled flame devices" with "thermal treatment" in introductory text of the definition for "industrial furnace"	260.10				
redesignate paragraph (12) in the definition for "industrial furnace" as paragraph (13); add new paragraph (12) that adds halogen acid furnaces to the list of devices considered industrial furnaces	260.10(12)&(13)				
"infrared incinerator"	260.10				
"plasma arc incinerator"	260.10				
"sludge dryer"	260.10				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
REFERENCES					
add to the first set of listings, in alphabetical order: "U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources..."	260.11(a)				
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE					
SUBPART A - GENERAL					
DEFINITION OF SOLID WASTE					
redesignate (d)(2) as (d)(3); add new paragraph (d)(2) regarding secondary materials fed to a halogen acid furnace that exhibit a characteristic or are a listed waste	261.2(d)(2)				
redesignate old 261.2(d)(2) as 261.2(d)(3)	261.2(d)(3)				
EXCLUSIONS					
† add exclusion for coke and coal tar when used as a fuel that contains or is produced from K087; process of producing coke and coal tar in a coke oven also excluded from regulation	261.4(a)(10)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
insert "except as provided by §266.112 of this chapter for facilities that burn or process hazardous waste" at end of paragraph	261.4(b)(4)				
revise first sentence to include phosphate rock and overburden from the mining of uranium ore in the existing parenthetical phrase; insert "except as provided by §266.112 of this chapter for facilities that burn or process hazardous waste" at end of first sentence	261.4(b)(7)				
add "except as provided by §266.112 of this chapter for facilities that burn or process hazardous waste" to end of paragraph	261.4(b)(8)				
REQUIREMENTS FOR RECYCLABLE MATERIALS					
remove existing paragraph 261.6(a)(3)(vii) and redesignate 261.6(a)(3)(viii) as 261.6(a)(3)(vii)	261.6(a)(3)(vii)				
redesignate 261.6(a)(3)(ix) as 261.6(a)(3)(viii)	261.6(a)(3)(viii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES					
SUBPART G - CLOSURE AND POST-CLOSURE					
CLOSURE OF PLAN; AMENDMENT OF PLAN					
add sentence regarding written notification of Regional Administrator at least 45 days prior to partial or final closure of a boiler or industrial furnace	264.112(d)(1)				
SUBPART O - INCINERATORS					
APPLICABILITY					
regulations apply to owners and operators of hazardous waste incinerators (as defined in 260.10) except as 264.1 provides otherwise	264.340(a)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
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					
insert "or by six months after the effective date of the rule that first subjects a facility to provisions of this section" after "By May 19, 1981"	265.112(a)				
add sentence regarding submittal of closure plan at least 45 days prior to beginning partial or final closure of a boiler or industrial furnace; add sentence regarding written notification at least 45 days prior to beginning partial or final closure of a boiler or industrial furnace when the owner or operator has an approved closure plan	265.112(d)(1)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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	restructure paragraph by deleting the subparagraph designations (i) and (ii) and the text under (ii); add "Exception for boilers and industrial furnaces that operate under interim status, as specified by 266.103(c)(7)(i)(B) or (C)" at beginning of paragraph; add sentence at end of paragraph requiring the date when interim status boilers and industrial furnaces expect to begin closure to be within 30 days of failure to meet 266.103(c)(7)(i)(B) or (C) deadline	265.112(d)(2)				
	CLOSURE; TIME ALLOWED FOR CLOSURE					
1	remove text regarding the final volume of nonhazardous waste; add text regarding the 90-day requirement for a boiler or industrial furnace that does not submit a complete certification of compliance by the 266.103(c)(7)(i)(B) or (C) deadline	265.113(a)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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	remove text regarding the final volume of nonhazardous waste; add text regarding the 180-day requirement for a boiler or industrial furnace that does not submit a complete certification of compliance by the 266.103(c)(7)(i)(B) or (C) deadline	265.113(b)				
	SUBPART O - INCINERATORS					
	APPLICABILITY					
	regulations apply to owners and operators of hazardous waste incinerators (as defined in 260.10) except as 265.1 provides otherwise	265.340(a)				
	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					
	remove and reserve Subpart D	266.30-266.35				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
SUBPART H - HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES					
APPLICABILITY					
regulations apply to hazardous waste burned or processed in a boiler or industrial furnace, irrespective of purpose, except as 266.100(b),(c) and (d) provide; definition of "burn"; 266.104-266.107 emissions standards apply to interim status or permitted facilities as specified in §§266.102 and 266.103	266.100(a)				
hazardous wastes and facilities not subject to regulation under Subpart H:	266.100(b)				
used oil burned for energy recovery that is hazardous solely because it exhibits a characteristic; regulated under 266, Subpart E	266.100(b)(1)				
gas recovered from landfills and burned for energy recovery	266.100(b)(2)				
exempt hazardous wastes under 261.4 and 261.6(a)(3)(v)-(viii); CESQG hazardous wastes under 261.5	266.100(b)(3)				
coke ovens burning only K087	266.100(b)(4)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
owners and operators of smelting, melting and refining furnaces processing hazardous waste solely for metal recovery conditionally exempt, except for 266.101 and 266.112	266.100(c)				
requirements for exemption from 266.102 through 266.111	266.100(c)(1)				
one-time written notice indicating:	266.100(c)(1)(i)				
owner or operator claims 266.100(c) exemption	266.100(c)(1)(i)(A)				
metal recovery as per 266.100(c)(2) provisions	266.100(c)(1)(i)(B)				
recoverable levels of metals	266.100(c)(1)(i)(C)				
compliance with 266.100 sampling and analysis and record-keeping requirements	266.100(c)(1)(i)(D)				
sample and analyze hazardous waste and other feedstocks as necessary using specified procedures	266.100(c)(1)(ii)				
maintain specified records at facility for at least three years	266.100(c)(1)(iii)				
criteria under which a hazardous waste is not processed solely for metal recovery	266.100(c)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
total concentration of 261, Appendix VIII organic compounds exceeds 500 ppm by weight and are considered burned for destruction	266.100(c)(2)(i)				
heating value of 5,000 Btu/lb or more and considered burned as fuel	266.100(c)(2)(ii)				
266.111 direct transfer operation standards apply only to facilities subject to 266.102 or 266.103 standards	266.100(d)				
266.112 residue management standards apply to any boiler or industrial furnace burning hazardous waste	266.100(e)				
MANAGEMENT PRIOR TO BURNING					
generators of hazardous waste that is burned in a boiler or industrial furnace subject to Part 262	266.101(a)				
transporters of hazardous waste that is burned in a boiler or industrial furnace subject to Part 263	266.101(b)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
owner and operators of facilities that store hazardous waste burned in a boiler or industrial furnace subject to 264 and 265, Subparts A through L, and 270, except as provided by 266.101(c)(2); standards applicable to storage by burners and intermediary facilities	266.101(c)(1)				
generators of hazardous waste who burn on-site in boilers or industrial furnaces exempt from regulation under 266.108 small quantity burner provisions are exempt from regulation under 264 and 265, subparts A through L, and 270 with respect to storage of mixtures of hazardous waste and the primary fuel in tanks that feed mixture directly to burner; hazardous waste storage prior to mixing subject to 266.101(c)(1) regulation	266.101(c)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
PERMIT STANDARDS FOR BURNERS					
owners and operators not operating under interim status and not exempt under 266.108 small quantity burner exemption, are subject to 266.102, 270.22 and 270.66 requirements	266.102(a)(1)				
	266.102(a)(2)				
	266.102(a)(2)(i)				
	266.102(a)(2)(ii)				
	266.102(a)(2)(iii)				
	266.102(a)(2)(iv)				
	266.102(a)(2)(v)				
	266.102(a)(2)(vi)				
	266.102(a)(2)(vii)				
	266.102(a)(2)(viii)				
applicable 264 provisions:	266.102(a)(2)(ix)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
analysis to quantify concentration of any 261, Appendix VIII constituent at levels detectable by specified analytical procedures; identification; explanation of constituents excluded from analysis; analysis provides Subpart H, 270.22 and 270.66 information to prescribe permit conditions; analysis included in Part B permit application or in trial burn plan for interim status facilities; owners/operators of units not operating under interim status include 270.22 or 270.66(c) information in Part B application, to extent possible	266.102(b)(1)				
sampling and analysis throughout normal operation to ensure permit-specified physical and chemical composition limits are met	266.102(b)(2)				
compliance with 266.104 through 266.107 emissions standards	266.102(c)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
burn only hazardous wastes specified in permit under 266.102(e) operating conditions; exception for approved trial burns under 270.66 conditions	266.102(d)(1)				
new permit or permit modification necessary to burn hazardous waste not specified in permit; trial burn results or Part B alternative data form basis for new waste operating requirements	266.102(d)(2)				
266.103 interim status boilers and industrial furnaces permitted under 270.66(g) procedures	266.102(d)(3)				
permit for new boiler or industrial furnace must establish appropriate conditions for each applicable 266.102 requirement in order to comply with specified standards:	266.102(d)(4)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for period beginning with initial introduction of hazardous waste and ending with initiation of trial burn; such period not to exceed 720 hours; operating requirements in compliance with 266.104-266.107 emissions standards; applicable provisions when seeking waiver from a trial burn; extension for up to 720 additional hours by Director based on good cause demonstration	266.102(d)(4)(i)				
during trial burn, operating requirements sufficient for 266.104-266.107 emissions compliance and in accordance with approved trial burn plan	266.102(d)(4)(ii)				
immediately after trial burn, for minimum period needed to allow sample analysis, data computation, submission and review of trial burn results, and permit modification, operating requirements to ensure 266.104-266.107 emissions compliance	266.102(d)(4)(iii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
2	for duration of permit, operating requirements based on trial burn or 270.22 alternative data, sufficient to ensure 266.104-266.107 emissions compliance	266.102(d)(4)(iv)				
	operating requirements specified in the permit apply at all times where hazardous waste is in unit	266.102(e)(1)				
	operating conditions, either case-by-case for each hazardous waste to ensure compliance with 266.104(a) DRE performance standard or special operating requirements provided by 266.104(a)(4) DRE trial burn waiver; when no waiver, each set of operating requirements will specify composition of hazardous waste to which they apply; permit-specified operating limits for each hazardous waste include:	266.102(e)(2)(i)				
	feed rate of hazardous waste and other fuels as per 266.102(e)(6)	266.102(e)(2)(i)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
minimum and maximum device production rate when producing normal product as per 266.102(e)(6)	266.102(e)(2)(i)(B)				
appropriate controls of hazardous waste firing system	266.102(e)(2)(i)(C)				
allowable variation in boiler and industrial furnace system design or operating procedures	266.102(e)(2)(i)(D)				
minimum combustion gas temperature measured at a location indicative of combustion chamber temperature as per 266.102(e)(6)	266.102(e)(2)(i)(E)				
appropriate indicator of combustion gas velocity as per 266.102(e)(6), unless 270.66 documentation	266.102(e)(2)(i)(F)				
other operating requirements to ensure 266.104(a) DRE compliance	266.102(e)(2)(i)(G)				
permit must incorporate carbon monoxide (CO) limit and, as appropriate, hydrocarbon (HC) limit as per 266.104(b)-(f); permit limits specified:	266.102(e)(2)(ii)				
when complying with 266.104(b)(1) CO standard, permit limit is 100 ppmv	266.102(e)(2)(ii)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
when complying with 266.104(c) alternative CO standard, permit limit based on trial burn, established as specified average, and permit limit for HC is 20 ppmv, except as 266.104(f) provides	266.102(e)(2)(ii)(B)				
when complying with 266.104(f) alternative HC limit, permit limit for HC and CO is baseline level when hazardous waste is not burned	266.102(e)(2)(ii)(C)				
no hazardous waste as feed during start-up and shut-down, unless device is operating within permit conditions; exception	266.102(e)(2)(iii)				
except as provided in 266.102(e)(3)(ii) and (iii), operating requirements the permit will specify to ensure 266.105 particulate standard compliance:	266.102(e)(3)(i)				
total ash feed rate from hazardous waste, other fuels, and industrial furnace feedstocks, as per 266.102(e)(6)	266.102(e)(3)(i)(A)				
maximum device production rate when producing normal product as per 266.102(e)(6)	266.102(e)(3)(i)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
operation and maintenance controls for hazardous waste firing system and air pollution control system	266.102(e)(3)(i)(C)				
allowable variation in system design including air pollution control system or operating procedures	266.102(e)(3)(i)(D)				
other operating requirements to ensure 266.111(b) particulate standard compliance	266.102(e)(3)(i)(E)				
no permit conditions to ensure particulate standard compliance for 266.105(b) exempt facilities	266.102(e)(3)(ii)				
for cement kilns and light-weight aggregate kilns, permit conditions shall not limit ash content of hazardous waste or other feed materials	266.102(e)(3)(iii)				
operating requirements the permit will specify to conform with 266.106(b) or (e) Tier I or adjusted Tier I metals feed rate screening limits:	266.102(e)(4)(i)				
total feed rate of each metal in hazardous waste, other fuels, and industrial furnace feedstocks as per 266.102(e)(6)	266.102(e)(4)(i)(A)				
total feed rate of hazardous waste as per 266.102(e)(6)	266.102(e)(4)(i)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	sampling and metals analysis program	266.102(e)(4)(i)(C)				
	operating requirements the permit will specify to conform with 266.106(c) Tier II metals emission rate screening limits and 266.106(d) Tier III metals controls:	266.102(e)(4)(ii)				
	maximum emission rate for each metal based on average rate during trial burn	266.102(e)(4)(ii)(A)				
	feed rate of total and pumpable hazardous waste as per 266.102(e)(6)(i)	266.102(e)(4)(ii)(B)				
3	feed rate of each metal in specified feedstreams, measured and specified as per 266.102(e)(6)	266.102(e)(4)(ii)(C)				
		266.102(e)(4)(ii)(C)(*1*)				
		266.102(e)(4)(ii)(C)(*2*)				
		266.102(e)(4)(ii)(C)(*3*)				
	total feed rate of chlorine and chloride in total feedstreams as per 266.102(e)(6)	266.102(e)(4)(ii)(D)				
	maximum combustion gas temperature measured at location indicative of combustion chamber temperature as per 266.102(e)(6)	266.102(e)(4)(ii)(E)				

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
maximum flue gas temperature at inlet to particulate matter air pollution control system as per 266.102(e)(6)	266.102(e)(4)(ii)(F)				
maximum device production rate when producing normal product as per 266.102(e)(6)	266.102(e)(4)(ii)(G)				
operation and maintenance controls of hazardous waste firing system and any air pollution control system	266.102(e)(4)(ii)(H)				
allowable variation in system design including air pollution control system or operating procedures	266.102(e)(4)(ii)(I)				
other operating requirements to ensure 266.106(c) or (d) metals standards compliance	266.102(e)(4)(ii)(J)				
operating requirements the permit will specify to conform with 266.106(f) alternative implementation approach:	266.102(e)(4)(iii)				
maximum emission rate for each metal based on average rate	266.102(e)(4)(iii)(A)				
feed rate of total and pumpable hazardous waste as per 266.102(e)(6)(i)	266.102(e)(4)(iii)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
3,4	feed rate of each metal in specified feedstreams, measures and specified as per 266.102(e)(6)	266.102(e)(4)(iii)(C)				
		266.102(e)(4)(iii)(C)(*1*)				
		266.102(e)(4)(iii)(C)(*2*)				
	total feed rate of chlorine and chloride in total feedstreams as per 266.102(e)(6)	266.102(e)(4)(iii)(D)				
	maximum combustion gas temperature measured at location indicative of combustion chamber temperature as per 266.102(e)(6)	266.102(e)(4)(iii)(E)				
	maximum flue gas temperature at inlet to particulate matter air pollution control system as per 266.102(e)(6)	266.102(e)(4)(iii)(F)				
	maximum device production rate when producing normal product as per 266.102(e)(6)	266.102(e)(4)(iii)(G)				
	operation and maintenance controls of hazardous waste firing system and any air pollution control system	266.102(e)(4)(iii)(H)				
	allowable variation in system design including air pollution control system or operating procedures	266.102(e)(4)(iii)(I)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
other operating requirements to ensure 266.106(c) or (d) metals standards compliance	266.102(e)(4)(iii)(J)				
operating requirements the permit will specify to ensure 266.107(b)(1) Tier I total chloride and chlorine feed rate screening limits conformance:	266.102(e)(5)(i)				
feed rate of total chloride and chlorine in hazardous waste, other fuels, and industrial furnace feedstocks as per 266.102(e)(6)	266.102(e)(5)(i)(A)				
feed rate of total hazardous waste as per 266.102(e)(6)	266.102(e)(5)(i)(B)				
sampling and analysis program for total chloride and chlorine	266.102(e)(5)(i)(C)				
operating requirements the permit will specify for 266.107(b)(2) Tier II and 266.107(c) Tier III HCl and Cl_2 emission rate screening limits conformance:	266.102(e)(5)(ii)				
maximum emission rate for HCl and Cl_2 based on average rate	266.102(e)(5)(ii)(A)				
feed rate of total hazardous waste as per 266.102(e)(6)	266.102(e)(5)(ii)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
total feed rate of chlorine and chloride in total feedstreams as per 266.102(e)(6)	266.102(e)(5)(ii)(C)				
maximum device production rate when producing normal product as per 266.102(e)(6)	266.102(e)(5)(ii)(D)				
operation and maintenance controls of hazardous waste firing system and any air pollution control system	266.102(e)(5)(ii)(E)				
allowable variation in system design including air pollution control system or operating procedures	266.102(e)(5)(ii)(F)				
other operating requirements to ensure 266.107(b)(2) or (c) HCl or Cl_2 standards compliance	266.102(e)(5)(ii)(G)				
as specified in 266.102(e)(2)-(5), each operating parameter shall be measured and permit limits on the parameter established according to following procedures:	266.102(e)(6)(i)				
measured and recorded on instantaneous basis and permit limit based on time-weighted average	266.102(e)(6)(i)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
		266.102(e)(6)(i)(B)(*1*)				
		266.102(e)(6)(i)(B)(*1*)(*i*)				
	hourly rolling average basis as defined	266.102(e)(6)(i)(B)(*1*)(*ii*)				
5	permit limit based on average overall valid test runs of highest hourly rolling average value per run	266.102(e)(6)(i)(B)(*2*)				
	feed rate limits for carcinogenic metals and lead established on either an hourly rolling average basis or on (up to) to 24-hour rolling average basis; requirements for 2 to 24 hour average period:	266.102(e)(6)(ii)				
	feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	266.102(e)(6)(ii)(A)				
		266.102(e)(6)(ii)(B)				
5	specifications the continuous monitor shall meet	266.102(e)(6)(ii)(B)(*1*)				
		266.102(e)(6)(ii)(B)(*2*)				
	feed rate permit limit based on specified average	266.102(e)(6)(ii)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
feed rate limits for metals, total chloride and chlorine, and ash established and monitored based on feedstream concentration and flow rate; flow rate continuously monitored as per 266.102(e)(6)(i) and (ii)	266.102(e)(6)(iii)				
if no simultaneous demonstration of 266.104-266.107 compliance during a set of test runs, operating conditions of additional test runs as close as possible to original operating conditions	266.102(e)(6)(iv)(A)				
facility to operate under trial burn conditions and reach steady-state operations before obtaining test data to demonstrate 266.104-266.107 emissions standards compliance or establishing operating parameter limits; specific industrial furnaces need not reach steady-state conditions for flow of metals prior to beginning metals emissions compliance testing	266.102(e)(6)(iv)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
trial burn data obtained during emissions sampling are used to establish operating parameter limits in the permit when parameter must be established as per 266.102(e)	266.102(e)(6)(iv)(C)				
	266.102(e)(7)(i)				
	266.102(e)(7)(i)(A)				
requirements for controlling fugitive emissions	266.102(e)(7)(i)(B)				
	266.102(e)(7)(i)(C)				
automatic waste feed cutoff required; Director may limit number of cutoffs per operating period; additional requirements include:	266.102(e)(7)(ii)				
maintenance of permit limit for minimum combustion chamber temperature while hazardous waste or residues remain in chamber	266.102(e)(7)(ii)(A)				
exhaust gases ducted to air pollution control system while hazardous waste or residues remain in chamber	266.102(e)(7)(ii)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
continued monitoring of parameters with limits during cutoff and hazardous waste feed not restarted until parameters comply with limits; for parameters monitored on instantaneous basis, conditions for restarting hazardous waste feed	266.102(e)(7)(ii)(C)				
cease burning hazardous waste when changes in combustion properties, feed rates, or design or operating conditions deviate from permit limits	266.102(e)(7)(iii)				
operator or operator, while burning hazardous waste, must monitor and record:	266.102(e)(8)(i)				
specified feed rates and composition of specified materials	266.102(e)(8)(i)(A)				
CO, HC, and oxygen on a continuous basis as specified; monitors installed, operated and maintained as per 266, Appendix IX methods	266.102(e)(8)(i)(B)				
sampling and analysis as requested to verify that requirements established in permit achieve 266.104-266.107 standards	266.102(e)(8)(i)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
monitors record data in permit limit units, unless permit allows otherwise	266.102(e)(8)(ii)				
daily visual inspection of boiler or industrial furnace and associated equipment when they contain hazardous waste	266.102(e)(8)(iii)				
test automatic feed cutoff system and associated alarms at least once every 7 days when hazardous waste is burned unless specified conditions are demonstrated; operational testing at least once every 30 days	266.102(e)(8)(iv)				
monitoring and inspection data recorded and placed in 264.73 operating record	266.102(e)(8)(v)				
compliance with 266.111 if direct transfer of hazardous waste to boiler or industrial furnace without use of storage unit	266.102(e)(9)				
all 266.102-required information and data in facility operating record for not less than three years	266.102(e)(10)				
remove all hazardous waste and hazardous waste residues at closure	266.102(e)(11)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
INTERIM STATUS STANDARDS FOR BURNERS					
establish minimum national standards for owners and operators of existing boilers and industrial furnaces until permitted under	266.102(d) or closed 266.103(a)(1)(i)				
definition of "existing or in existence"; facility has commenced construction if all permits necessary to begin physical construction are obtained and	either: 266.103(a)(1)(ii)				
continuous on-site, physical construction	program has begun 266.103(a)(1)(ii)(A)				
contractual obligations cannot be cancelled or modified without substantial loss and physical construction is to be completed	within reasonable time 266.103(a)(1)(ii)(B)				
if boiler or industrial furnace at facility with permit or interim status, then compliance with 270.42 permit modification or 270.72	interim status changes 266.103(a)(1)(iii)				
266.103 requirements not applicable to hazardous waste and facilities exempt under	266.100(b) or 266.108 266.103(a)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
hazardous waste listed for dioxin or derived from F020-F023, F026 or F027 may not be burned in interim status boiler or industrial furnace	266.103(a)(3)				
	266.103(a)(4)				
	266.103(a)(4)(i)				
	266.103(a)(4)(ii)				
	266.103(a)(4)(iii)				
	266.103(a)(4)(iv)				
	266.103(a)(4)(v)				
	266.103(a)(4)(vi)				
interim status owners and operators subject to specified 265 provisions:	266.103(a)(4)(vii)				
	266.103(a)(4)(viii)				
controls that apply to interim status industrial furnaces that feed hazardous waste for a purpose other than solely as an ingredient at any location other than the hot end and where fuels are normally fired:	266.103(a)(5)				
fed at location where temperatures are at least 1800° F	266.103(a)(5)(i)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	determination and documentation in facility record of adequate oxygen	266.103(a)(5)(i)(B)				
	for cement kiln systems, hazardous waste fed into kiln	266.103(a)(5)(i)(C)				
6	applicability of 266.104(c) or 266.104(c)(5) hydrocarbon controls	266.103(a)(5)(i)(D)				
	criteria for burning hazardous waste for a purpose other than solely as an ingredient:	266.103(a)(5)(ii)				
	total concentration of 261, Appendix VIII nonmetal compounds exceed 500 ppm by weight as generated and considered burned for destruction	266.103(a)(5)(ii)(A)				
	heating value of 5,000 Btu/lb or more, as generated or as fired, and considered burned as fuel	266.103(a)(5)(ii)(B)				
	burning hazardous waste with heating value less than 5,000 Btu/lb prohibited except for purposes of compliance testing for no more than 720 hours	266.103(a)(6)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
266.111 compliance if hazardous waste directly transferred from transport vehicle to boiler or industrial furnace without storage unit use	266.103(a)(7)				
August 21, 1991 submittal date for 266.103(b)(2) information; establish limits for 266.103(b)(3) parameters; certificate of precompliance; burning limited to 266.103(b)(3) conditions until 266.103(b)(8) revised certification of precompliance, or 266.103(c) certification of compliance, or permit is issued	266.103(b)(1)				
information to be submitted with certification of precompliance to support determination and compliance with operating parameter limits	266.103(b)(2)				
	266.103(b)(2)(i)				
	266.103(b)(2)(i)(A)				
	266.103(b)(2)(i)(B)				
	266.103(b)(2)(i)(C)				
	266.103(b)(2)(i)(D)				
general facility information	266.103(b)(2)(i)(E)				

SPA 11

RCRA REVISION CHECKLIST 85: *Burning of Hazardous Waste 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
	except for facilities complying with Tier I feed rate screening limits provided by 266.106(b) or (e) and 266.107(b)(1) or (e), estimated uncontrolled emissions of particulate matter, each 266.106 metal, hydrogen chloride and chlorine, and following information to support determinations:	266.103(b)(2)(ii)				
	feed rate of specified materials in each feedstream	266.103(b)(2)(ii)(A)				
7	estimated partitioning factor to combustion gas for 266.103(b)(2)(ii)(A) materials, basis for estimate, and estimate of partitioning to HCl and Cl_2 of total chloride and chlorine in feed materials; use best engineering judgment or 266, Appendix IX procedures	266.103(b)(2)(ii)(B)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for industrial furnaces that recycle collected particulate matter and certify compliance with 266.103(c)(ii)(A) metals emissions standards, estimated enrichment factor for each metal, using best engineering judgment or specified Appendix IX procedures	266.103(b)(2)(ii)(C)				
basis for best engineering judgment; 270.11(d) certification of determinations included in certification of precompliance	266.103(b)(2)(ii)(D)				
for facilities complying with Tier I feed rate screening limits, the feed rate of specified materials in each feedstream	266.103(b)(2)(iii)				
for facilities complying with Tier II or III emission limits for metals or HCl or Cl_2, estimated controlled emissions rates of particulate matter, each 266.106 metal, HCl and Cl_2, and following information to support determinations:	266.103(b)(2)(iv)				
estimated air pollution control system (APCS) removal efficiency for specified materials	266.103(b)(2)(iv)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
use best engineering judgment or 266, Appendix IX procedures	266.103(b)(2)(iv)(B)				
basis for best engineering judgment in conformance with 266.103(b)(2)(ii)(D)	266.103(b)(2)(iv)(C)				
determination of allowable emissions rates for specified materials and information to support such determinations to include:	266.103(b)(2)(v)				
	266.103(b)(2)(v)(A)				
	266.103(b)(2)(v)(A)(*1*)				
	266.103(b)(2)(v)(A)(*2*)				
	266.103(b)(2)(v)(A)(*3*)				
	266.103(b)(2)(v)(A)(*4*)				
	266.103(b)(2)(v)(A)(*5*)				
	266.103(b)(2)(v)(A)(*6*)				
for all facilities:	266.103(b)(2)(v)(A)(*7*)				
for owners or operators using Tier III site specific dispersion modeling to determine 266.106(d) or 266.107(c) allowable levels, or adjusted Tier I feed rate screening limits under 266.106(e) or 266.107(e):	266.103(b)(2)(v)(B)				
	266.103(b)(2)(v)(B)(*1*)				
	266.103(b)(2)(v)(B)(*2*)				
	266.103(b)(2)(v)(B)(*3*)				
	266.103(b)(2)(v)(B)(*4*)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for facilities complying with Tier II or III emissions rate controls for metals or HCl and Cl_2, comparison of 266.103(b)(2)(iv) estimated rates with 266.103(b)(2)(v) allowable rates	266.103(b)(2)(vi)				
for facilities complying with Tier I or adjusted Tier I feed rate screening limits for metals or total chloride and chlorine, comparison of actual feed rates determined under 266.103(b)(2)(iii) to Tier I allowable feed rates	266.103(b)(2)(vii)				
for industrial furnaces that feed hazardous waste for any purpose other than solely as an ingredient at any location other than product discharge end of device, documentation of 266.103(a)(5)(i)(A)-(C) compliance	266.103(b)(2)(viii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
for industrial furnaces that recycle collected particulate matter back into the furnace and that will certify 266.103(c)(3)(ii)(A) metals emissions standards compliance,	266.103(b)(2)(ix)				
applicable particulate matter standard and	266.103(b)(2)(ix)(A)				
precompliance limit on metal concentration	266.103(b)(2)(ix)(B)				
establish limits on 266.103(b)(3)(i)-(v) parameters consistent with 266.103(b)(2) determinations and certify the facility will operate within the limits during interim status when there is hazardous waste in the unit until certain conditions are met	266.103(b)(3)				
feed rate of total hazardous waste and pumpable hazardous waste	266.103(b)(3)(i)				
	266.103(b)(3)(ii)				
	266.103(b)(3)(ii)(A)				
feed rate of each metal in specified feedstreams	266.103(b)(3)(ii)(B)				
	266.103(b)(3)(ii)(C)				
total feed rate of chlorine and chloride in total feedstreams	266.103(b)(3)(iii)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	total feed rate of ash in total feedstreams, except ash feed rate for cement kilns and light-weight aggregate kilns is not limited	266.103(b)(3)(iv)				
	maximum production rate when producing normal product	266.103(b)(3)(v)				
	special operating requirements under 266, Appendix IX for furnaces that recycle collected particulate matter back into furnace and that certify compliance with metals emissions controls under 266.103(c)(3)(ii)(A)	266.103(b)(4)				
	limits on 266.103(b)(3) parameters established and continuously monitoring under:	266.103(b)(5)(i)				
8	instantaneous limits	266.103(b)(5)(i)(A)				
		266.103(b)(5)(i)(B)				
		266.103(b)(5)(i)(B)(*1*)				
5	hourly rolling average basis as defined	266.103(b)(5)(i)(B)(*2*)				
	feed rate limits for carcinogenic metals and lead established on either an hourly rolling average basis or on (up to) 24 hour rolling average basis; requirements for 2 to 24 hour average period:	266.103(b)(5)(ii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	266.103(b)(5)(ii)(A)				
		266.103(b)(5)(ii)(B)				
5	specifications the continuous monitor shall meet:	266.103(b)(5)(ii)(B)(*1*)				
		266.103(b)(5)(ii)(B)(*2*)				
	feed rate limits for metals, total chloride and chlorine, and ash established and monitored based on feedstream concentration and flow rate; flow rate continuously monitored as per 266.103(b)(5)(i) and (ii)	266.103(b)(5)(iii)				
	owner or operator submits notice to major local newspaper and sends copy of notice to State and local government units; provide evidence of notice submittal for publication with certification of pre-compliance to Director; notice must bear specified title and include:	266.103(b)(6)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.103(b)(6)(i)				
	266.103(b)(6)(ii)				
	266.103(b)(6)(iii)				
	266.103(b)(6)(iv)				
	266.103(b)(6)(v)				
	266.103(b)(6)(vi)				
	266.103(b)(6)(vii)				
	266.103(b)(6)(viii)				
	266.103(b)(6)(viii)(A)				
	266.103(b)(6)(viii)(B)				
information to include in public notice	266.103(b)(6)(ix)				
	266.103(b)(6)(x)				
when monitoring systems for 266.103(c)(1)(v)-(xiii) operating parameters are installed and operating in conformance with vendor or 266, Appendix IX specifications, continuous monitoring required and records maintained in operating record	266.103(b)(7)				
submittal of revised certification of pre-compliance under 266.103(b)(2)&(3) procedures	266.103(b)(8)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
266.103(b)(6) public notice requirements not applicable to recertifications	266.103(b)(8)(i)				
operation of facility within limits established for 266.103(b)(3) parameters until 266.103(b) revised certification or 266.103(c) certification of compliance is submitted	266.103(b)(8)(ii)				
language of signed statement that must be included with the certification of precompliance	266.103(b)(9)				
on or before August 21, 1992, conduct emissions testing to document compliance with 266.104(b)-(e), 266.105-266.107 and 266.103(a)(5)(i)(D) emissions standards; submittal of certification of compliance	266.103(c)				
establish limits on 266.103(c)(1)(i)-(xiii) parameters based on operations during compliance test and include with certification of compliance; device will be operated within these limits when hazardous waste is in the unit until permit is issued	266.103(c)(1)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
feed rate of total hazardous waste and pumpable hazardous waste	266.103(c)(1)(i)				
	266.103(c)(1)(ii)				
	266.103(c)(1)(ii)(A)				
feed rate of each metal in specified feedstreams	266.103(c)(1)(ii)(B)				
	266.103(c)(1)(ii)(C)				
total feed rate of chlorine and chloride in total feedstreams	266.103(c)(1)(iii)				
total feed rate of ash in total feedstreams, except ash feed rate for cement kilns and light-weight aggregate kilns is not limited	266.103(c)(1)(iv)				
carbon monoxide concentration and where required, hydrocarbon concentration in stack gas; CO and HC limits	266.103(c)(1)(v)				
maximum production rate when producing normal product	266.103(c)(1)(vi)				
maximum combustion chamber temperature with temperature measured where specified; exception	266.103(c)(1)(vii)				
maximum flue gas temperature entering a particulate matter control device; exception	266.103(c)(1)(viii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.103(c)(1)(ix)				
limits for systems using wet scrubbers, including wet ionizing scrubbers; exception:	266.103(c)(1)(ix)(A)				
	266.103(c)(1)(ix)(B)				
	266.103(c)(1)(ix)(C)				
systems using venturi scrubbers, the minimum differential gas pressure across the venturi; exception	266.103(c)(1)(x)				
	266.103(c)(1)(xi)				
limits for systems using dry scrubbers; exception:	266.103(c)(1)(xi)(A)				
	266.103(c)(1)(xi)(B)				
limits for systems using wet ionizing scrubbers or electrostatic precipitators; exception:	266.103(c)(1)(xii)				
	266.103(c)(1)(xii)(A)				
	266.103(c)(1)(xii)(B)				
systems using fabric filters, the minimum pressure drop; exception	266.103(c)(1)(xiii)				
at least 30 days prior to 266.103(c)(3) compliance testing, notify Director and submit required information:	266.103(c)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
general facility information	266.103(c)(2)(i)				
	266.103(c)(2)(i)(A)				
	266.103(c)(2)(i)(B)				
	266.103(c)(2)(i)(C)				
	266.103(c)(2)(i)(D)				
specific information on each device to be tested	266.103(c)(2)(ii)				
	266.103(c)(2)(ii)(A)				
	266.103(c)(2)(ii)(B)				
	266.103(c)(2)(ii)(C)				
	266.103(c)(2)(ii)(D)				
	266.103(c)(2)(ii)(D)(*1*)				
	266.103(c)(2)(ii)(D)(*2*)				
	266.103(c)(2)(ii)(D)(*3*)				
	266.103(c)(2)(ii)(E)				
	266.103(c)(2)(ii)(F)				
information on testing planned, including complete copy of test protocol and QA/QC plan, and summary description for each test that provides specified information	266.103(c)(2)(iii)				
	266.103(c)(2)(iii)(A)				
	266.103(c)(2)(iii)(B)				
compliance testing under 266.103(b) and 266.103(c)(2) conditions	266.103(c)(3)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
industrial furnaces that recycle collected particulate matter from air pollution control system must test to determine 266.106(c) or (d) metals standards compliance using one of the following procedures:	266.103(c)(3)(ii)				
266, Appendix IX testing requirements in "Alternative Method for Implementing Metals Controls"	266.103(c)(3)(ii)(A)				
stack emissions testing for 6 hrs/day while hazardous waste is burned during interim status; conditions for testing; analysis for metals content to assure 266.106(c) or (d) compliance; parameters for which operating limits must be established under 266.103(c)(3)	266.103(c)(3)(ii)(B)				
	266.103(c)(3)(ii)(B)(*1*)				
	266.103(c)(3)(ii)(B)(*2*)				
	266.103(c)(3)(ii)(B)(*3*)				
	266.103(c)(3)(ii)(B)(*4*)				
	266.103(c)(3)(ii)(B)(*5*)				
conduct compliance testing and establish limits on 266.103(c)(1) parameters after kiln system has been conditioned and has reached equilibrium with metals feed and metals emissions; conditions to be met during conditioning	266.103(c)(3)(ii)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
if no simultaneous demonstration of 266.104-266.107 compliance during a set of test runs, operating conditions of additional test runs as close as possible to original operating conditions	266.103(c)(3)(iii)(A)				
facility to operate under compliance test conditions and reach steady-state operations before obtaining test data to demonstrate 266.104-266.107 emissions standards compliance or establishing operating parameter limits; specific industrial furnaces need not reach steady-state conditions prior to beginning metals compliance testing	266.103(c)(3)(iii)(B)				
compliance test data obtained during emissions sampling are used to establish operating parameter limits in the certification of compliance when parameter must be established as per 266.103(c)(1)	266.103(c)(3)(iii)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
within 90 days of completing compliance testing, certification to Director of compliance with 266.104(b), (c) and (e), 266.105-266.107 and 266.103(a)(5)(i)(D) emissions standards; certification must include:	266.103(c)(4)				
	266.103(c)(4)(i)				
	266.103(c)(4)(i)(A)				
	266.103(c)(4)(i)(B)				
	266.103(c)(4)(i)(C)				
	266.103(c)(4)(i)(D)				
	266.103(c)(4)(i)(E)				
	266.103(c)(4)(i)(F)				
	266.103(c)(4)(i)(G)				
	266.103(c)(4)(i)(H)				
general facility and testing information	266.103(c)(4)(i)(I)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.103(c)(4)(ii)				
	266.103(c)(4)(ii)(A)				
	266.103(c)(4)(ii)(B)				
	266.103(c)(4)(ii)(B)(*1*)				
	266.103(c)(4)(ii)(B)(*2*)				
	266.103(c)(4)(ii)(B)(*3*)				
	266.103(c)(4)(ii)(B)(*4*)				
	266.103(c)(4)(ii)(B)(*5*)				
	266.103(c)(4)(ii)(B)(*6*)				
	266.103(c)(4)(ii)(B)(*7*)				
	266.103(c)(4)(ii)(B)(*8*)				
specific information on each test	266.103(c)(4)(ii)(B)(*9*)				
comparison of actual emissions per test with emissions limits prescribed by 266.104(b),(c)&(e) and 266.105-266.107 and established in 266.103(b) certification of precompliance	266.103(c)(4)(iii)				
determination of operating limits based on all valid runs for 266.103(c)(1) parameters using one of two procedures:	266.103(c)(4)(iv)				
instantaneous limits	266.103(c)(4)(iv)(A)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.103(c)(4)(iv)(B)(*1*)				
	266.103(c)(4)(iv)(B)(*1*)(*i*)				
hourly rolling average basis as defined	266.103(c)(4)(iv)(B)(*1*)(*ii*)				
parameter operating limit based on compliance test data and specific average	266.103(c)(4)(iv)(B)(*2*)				
feed rate limits for carcinogenic metals and lead established on either an hourly rolling average basis or on (up to) 24 hour rolling average basis; requirements for 2 to 24 hour average period:	266.103(c)(4)(iv)(C)				
feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	266.103(c)(4)(iv)(C)(*1*)				
	266.103(c)(4)(iv)(C)(*2*)				
	266.103(c)(4)(iv)(C)(*2*)(*i*)				
specifications the continuous monitor shall meet	266.103(c)(4)(iv)(C)(*2*)(*ii*)				
operating limit for feed rate of each metal established based on compliance test data as the specified average	266.103(c)(4)(iv)(C)(*3*)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
feed rate limits for metals, total chloride and chlorine, and ash established and monitored based on feed-stream concentration and flow rate; flow rate continuously monitored as per 266.103(c)(4)(iv)(A)-(C)	266.103(c)(4)(iv)(D)				
language of statement to accompany the certification of compliance	266.103(c)(4)(v)				
if required to comply with 266.104(c) or 266.103(a)(5)(i)(D) HC controls, conditioned gas monitoring system may be used in conformance with 266, Appendix IX specifications, provided certification of compliance is submitted without 266.103(c)(7) time extension	266.103(c)(5)				
special operating requirements for industrial furnaces that recycle collected particulate matter from air pollution control system:	266.103(c)(6)				
266, Appendix IX operating requirements in "Alternative Method to Implement the Metals Controls" if complying with 266.103(c)(3)(ii)(A)	266.103(c)(6)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	operating requirements of 266.103(c)(3)(ii)(B) if complying with that paragraph	266.103(c)(6)(ii)				
	requirements if fail to submit complete certification of compliance for 266.104-266.107 emissions standards by August 21, 1992:	266.103(c)(7)(i)				
9	stop burning hazardous waste and begin 266.103(l) closure	266.103(c)(7)(i)(A)				
	limit hazardous waste burning to a total period of 720 hours beginning August 21, 1992; submit notification to Director by August 21, 1992, stating operation under restricted interim status and intention to resume hazardous waste burning; submit complete certification of compliance by August 23, 1993	266.103(c)(7)(i)(B)				
	obtain case-by-case time extension under 266.103(c)(7)(ii)	266.103(c)(7)(i)(C)				
	condition under which a case-by-case time extension may be requested for any 266.103(c) time limit	266.103(c)(7)(ii)				
	in granting extension, Director may apply specified conditions	266.103(c)(7)(ii)(A)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	if time extension requested to obtain RCRA permit because 266.104(c) HC limit cannot be met:	266.103(c)(7)(ii)(B)				
	what Director shall consider:	266.103(c)(7)(ii)(B)(*1*)				
	determine if complete Part B permit application that includes 270.22(b) information has been submitted	266.103(c)(7)(ii)(B)(*1*)(*i*)				
	consider if good faith effort to certify compliance with all other emission controls has been made	266.103(c)(7)(ii)(B)(*1*)(*ii*)				
5	if extension granted, require facility to operate under 266.104(f)(1) baseline CO and HC flue gas concentration limits	266.103(c)(7)(ii)(B)(*2*)				
	submit at any time a revised certification of compliance under specific procedures:	266.103(c)(8)				
	prior to submittal, may not burn hazardous waste for more than 720 hours under operating conditions that exceed those in current certification of compliance; such burning conducted only to determine if 266.104-266.107 emissions standards can be met under revised conditions	266.103(c)(8)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
at least 30 days prior to first burning under revised conditions, notify Director and submit specific information:	266.103(c)(8)(ii)				
EPA facility ID number, facility name, contact person, telephone number and address	266.103(c)(8)(ii)(A)				
operating conditions owner/operator is seeking to revise and description of changes that prompted need to revise	266.103(c)(8)(ii)(B)				
determination that under revised operating conditions, 266.104-266.107 standards unlikely to be exceeded; 266.103(b)(2) information for documentation	266.103(c)(8)(ii)(C)				
complete emissions testing protocol for pretesting and new compliance test, including schedule for 266.104-266.107 emission standards compliance; 30 day prior written notice if revision in compliance test date	266.103(c)(8)(ii)(D)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
conduct compliance test under revised operating conditions and submitted protocol to determine 266.104-266.107 emissions standards compliance	266.103(c)(8)(iii)				
submit revised certification of compliance under 266.103(c)(4)	266.103(c)(8)(iv)				
recertification of compliance within three years; if recertification under new operating conditions, 266.103(c)(8) compliance	266.103(d)				
if noncompliance with interim status compliance schedule, burning is to terminate on date deadline is missed, closure to begin under 266.103(l), and no resumption of burning except under 270.66 operating permit	266.103(e)				
no hazardous waste as feed during start-up and shut-down unless device is operating within certification conditions	266.103(f)				
during 266.103(c)(3) compliance test and upon certification of compliance, automatic waste feed cutoff required; additional requirements include:	266.103(g)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
maintenance of minimum combustion chamber temperature while hazardous waste or residues remain in chamber to minimize emissions or organic compounds	266.103(g)(1)				
if compliance with combustion chamber temperature limit is based on hourly rolling average, minimum temperature during compliance test is averaged over all runs of the lowest hourly rolling average for each run	266.103(g)(1)(i)				
if compliance with combustion chamber temperature limit is based on instantaneous temperature measurement, minimum temperature during compliance test is time-weighted average during all test runs	266.103(g)(1)(ii)				
continued monitoring of operating parameters with limits during cutoff; no restart of hazardous waste feed until parameters comply with certification of established compliance limits	266.103(g)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.103(h)				
	266.103(h)(1)				
requirements for	266.103(h)(2)				
controlling fugitive emissions	266.103(h)(3)				
cease burning hazardous waste when changes in combustion properties, feed rates, feed stocks/fuels or design or operating conditions deviate from permit limits	266.103(i)				
owner or operator, while burning hazardous waste, must monitor and record:	266.103(i)(1)				
specified feed rates and composition of specified materials to ensure conformance with certification	266.103(i)(1)(i)				
CO, HC and oxygen on a continuous basis as specified; monitors installed, operated and maintained as per 266, Appendix IX methods	266.103(i)(1)(ii)				
sampling and analysis as requested by Director to verify compliance with 266.104-266.107 standards	266.103(i)(1)(iii)				
daily visual inspection of boiler or industrial furnace and associated equipment when they contain hazardous waste	266.103(i)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
test automatic feed cutoff system and associated alarms at least once every 7 days when hazardous waste is burned unless specified conditions are demonstrated; operational testing at least once every 30 days	266.103(i)(3)				
monitoring and inspection data recorded and placed in operating log	266.103(i)(4)				
all 266.103-required information and data kept in facility operating record for three years	266.103(k)				
remove all hazardous waste and hazardous waste residues at closure and comply with 265.111-265.115	266.103(l)				
STANDARDS TO CONTROL ORGANIC EMISSIONS					
except as 266.104(a)(3) provides, DRE of 99.99% required for all organic hazardous constituents; demonstration during trial burn for each POHC in permit for each waste feed; DRE equation	266.104(a)(1)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	POHC compliance with DRE requirements to be demonstrated in trial burn in conformance with 270.66 procedures; designation of POHCs for each waste feed by Director based on degree of difficulty of destruction and on waste feed concentrations considering analyses submitted with Part B; 261, Appendix VIII compounds unless demonstration of other compound is suitable indicator of DRE requirements	266.104(a)(2)				
10	DRE of 99.9999% for F020-F023, F026 or F027 as determined from 266.104(a)(1) equation; notification of intent to burn such wastes	266.104(a)(3)				
	owners and operators of boilers operating under 266.110 requirements are exempt from DRE trial burn	266.104(a)(4)				
	owners and operators of boilers or industrial furnaces in compliance with 266.109(a) are exempt from DRE trial burn	266.104(a)(5)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
except as 266.104(c) provides, CO stack gas concentration cannot exceed 100 ppmv on an hourly rolling average basis, continuously corrected to 7% oxygen, dry gas basis	266.104(b)(1)				
continuous monitoring of CO and oxygen in conformance with 266, Appendix IX specifications	266.104(b)(2)				
demonstration of 100 ppmv CO compliance during trial burn or compliance test; highest hourly rolling average CO must not exceed 100 ppmv	266.104(b)(3)				
stack gas concentration of CO may exceed 100 ppmv if HC concentrations do not exceed 20 ppmv; exception under 266.104(f)	266.104(c)(1)				
HC limits established on hourly rolling average basis, reported as propane, continuously corrected to 7% oxygen, dry gas basis	266.104(c)(2)				
HC continuously monitored under 266, Appendix IX specifications; CO continuously monitored under 266.104(b)(2)	266.104(c)(3)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
alternative CO standard based on trial burn data (new facility) and compliance test (interim status facility); definition and implementation	266.104(c)(4)				
industrial furnaces that feed hazardous waste for purpose other than solely as an ingredient at any location other than end where products are normally discharged and fuels are normally fired must comply with 266.104(c) or (f) hydrocarbon limits, irrespective of whether 266.104(b) standard is met	266.104(d)				
site-specific risk assessment for specific boilers and industrial furnaces to demonstrate that chlorinated dibenzo-p-dioxins and dibenzofurans emissions do not result in increased lifetime cancer risk exceeding 1 in 100,000 MEI; assessment requirements:	266.104(e)				
determine emission rates of certain tetra-octa congeners during trial burn or compliance test using 266, Appendix IX Method 23	266.104(e)(1)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
estimate 2,3,7,8-TCDD toxicity equivalence of specified congeners using 266, Appendix IX procedures; formula for estimation of equivalent emission rate	266.104(e)(2)				
conduct dispersion modeling using recommended methods to predict maximum annual average off-site ground level concentrations of 2,3,7,8-TCDD equivalents; maximum annual average on-site concentration used when a person resides on-site	266.104(e)(3)				
specified 2,3,7,8-TCDD ratio shall not exceed 1.0	266.104(e)(4)				
for industrial furnaces that cannot meet the 20 ppmv HC limit because of organic matter in raw material, Director may establish alternative HC limit on case-by-case basis; cement kilns equipped with by-pass duct meeting 266.104(g) requirements not eligible for alternative limit	266.104(f)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
demonstrate that facility is designed and operated to minimize HC emissions from fuels and raw materials when baseline HC (and CO) level is determined; baseline level defined; may be multiple baseline levels	266.104(f)(1)				
develop approach to monitor over time changes in facility operation that could reduce baseline HC level	266.104(f)(2)				
conduct emissions testing during trial burn to:	266.104(f)(3)				
determine baseline HC (and CO) level	266.104(f)(3)(i)				
demonstrate that HC (and CO) levels do not exceed baseline level when hazardous waste is burned	266.104(f)(3)(ii)				
identify types and concentrations of 261, Appendix VIII organic compounds that are emitted; conduct dispersion modeling; on-site ground level concentrations evaluated if person resides on-site	266.104(f)(3)(iii)				
	266.104(f)(3)(iii)(A)				
	266.104(f)(3)(iii)(B)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	demonstrate that maximum annual average ground level concentrations of 266.104(f)(3)(iii) compounds do not exceed specified levels	266.104(f)(3)(iv)				
		266.104(f)(3)(iv)(A)				
		266.104(f)(3)(iv)(B)				
		266.104(f)(3)(iv)(C)				
	monitor and report all 266.104(f) hydrocarbon levels as 266.104(c)(1)&(2) specify	266.104(f)(4)				
	cement kilns may comply with CO and HC limits under 266.104(b)-(d) by monitoring in the by-pass duct provided:	266.104(g)				
	fire hazardous waste only into the kiln	266.104(g)(1)				
11	by-pass duct diverts minimum of 10% of kiln off-gas into duct	266.104(g)(2)				
	simultaneous demonstration of 266.104 compliance by emissions testing or during separate runs under identical operating conditions; data to demonstrate compliance with CO and HC limits or to establish alternative limits must be obtained during DRE testing, CDD/CDF testing and comprehensive organic emissions testing	266.104(h)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
compliance with permit operating requirements regarded as compliance with 266.104; if such compliance is insufficient, modification or revocation and reissuance of permit under 270.41	266.104(i)				
STANDARDS TO CONTROL PARTICULATE MATTER					
particulate matter emissions limited to 180 milligrams per dry standard cubic meter after specified correction using Part 60, Appendix A, Methods 1-5 and 266, Appendix IX procedures	266.105(a)				
owner or operator meeting 266.109(b) requirements for low risk waste exemption is exempt from particulate matter standard	266.105(b)				
compliance with permit operating requirements regarded as compliance with 266.105; if such compliance is insufficient, modification or revocation and reissuance of permit under 270.41	266.105(c)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
STANDARDS TO CONTROL METALS EMISSIONS					
compliance with 266.106(b), (c), (d), (e), or (f) for each 266.106(b) metal that is detectable in waste using specified procedures	266.106(a)				
Tier I feed rate screening limits for metals specified in 266, Appendix I as a function of terrain-adjusted effective stack height and terrain and land use in facility vicinity; criteria for ineligible facilities in 266.107(b)(7)	266.106(b)				
feed rates of antimony, barium, lead, mercury, thallium and silver in all feedstreams shall not exceed 266, Appendix I screening limits	266.106(b)(1)				
what feed rate screening limits for antimony, barium, mercury, thallium, and silver are based on	266.106(b)(1)(i)				
	266.106(b)(1)(i)(A)				
	266.106(b)(1)(i)(B)				
	266.106(b)(1)(ii)				
	266.106(b)(1)(ii)(A)				
what feed rate screening limit for lead is based on	266.106(b)(1)(ii)(B)				
	266.106(b)(1)(ii)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
feed rates of arsenic, cadmium, beryllium and chromium in all feedstreams shall not exceed values derived from 266, Appendix I screening limits; feed rate limit equation	266.106(b)(2)(i)				
	266.106(b)(2)(ii)				
what feed rate screening limits for carcinogenic metals are based on	266.106(b)(2)(ii)(A)				
	266.106(b)(2)(ii)(B)				
equation for terrain-adjusted effective stack height (TESH)	266.106(b)(3)(i)				
stack height may not exceed 40 CFR 51.100(ii) good engineering practice	266.106(b)(3)(ii)				
if TESH for a particular facility is not listed in table in appendices, nearest lower TESH to be used; if TESH ≤ 4 meters, a value of 4 meters shall be used	266.106(b)(3)(iii)				
screening limits function of non-complex or complex terrain; criteria; use U.S. Geological Survey 7.5-minute topographic maps	266.106(b)(4)				
screening limits function of urban or rural land use; determination using 266, Appendices IX or X	266.106(b)(5)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
facilities with multiple stacks must comply with screening limits for all units assuming all hazardous waste is fed into device with worst-case stack; worst-case stack equation, with lowest K value the worst-case stack	266.106(b)(6)				
	266.106(b)(7)				
	266.106(b)(7)(i)				
	266.106(b)(7)(ii)				
criteria under which Tier III standards apply instead of Tier I and Tier II screening limits	266.106(b)(7)(iii)				
	266.106(b)(7)(iv)				
	266.106(b)(7)(v)				
monitor feed rate of metals in each feed-stream to ensure screening limits are not exceeded	266.106(b)(8)				
Tier II emission rate screening limits function of stack height and terrain and land use in facility vicinity; ineligible facilities comply with 266.106(b)(7) criteria	266.106(c)				
emission rates of antimony, barium, lead, mercury, thallium and silver shall not exceed 266, Appendix I screening limits	266.106(c)(1)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
emission rates of arsenic, cadmium, beryllium and chromium shall not exceed values derived from 266, Appendix I screening limits; emission rate equation	266.106(c)(2)				
emission rate limits implemented by limiting individual metal feed rates to trial burn or compliance test levels; averaging periods; monitoring of metals feed rate in each feedstream to ensure compliance with 266.102 or 266.103 limits	266.106(c)(3)				
266.106(b) definitions and limitations for specified terms also apply to 266.106(c) Tier II emission rate screening limits	266.106(c)(4)				
facilities with multiple stacks must comply with emissions screening limits for any such stacks assuming all hazardous waste is fed into device with worst-case stack	266.106(c)(5)(i)				
worst-case stack determined by 266.106(b)(6) procedures	266.106(c)(5)(ii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for each metal, total emissions from those stacks shall not exceed worst-case stack screening limit	266.106(c)(5)(iii)				
conformance with Tier III metals control demonstrated by emissions testing, air dispersion modeling, and demonstration that acceptable ambient levels are not exceeded	266.106(d)(1)				
266, Appendices IV and V list acceptable ambient levels; RACs listed for noncarcinogenic metals and 10^{-5} RSDs listed for carcinogenic metals; RSD defined	266.106(d)(2)				
sum of the ratios of predicted ambient concentrations to risk-specific dose for all carcinogenic metals emitted shall not exceed 1.0; equation	266.106(d)(3)				
for noncarcinogenic metals, predicted maximum annual average off-site ground level concentration shall not exceed the RAC	266.106(d)(4)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
owners/operators with multiple stacks must conduct emissions testing and dispersion modeling to demonstrate that aggregate emissions do not exceed acceptable ambient levels	266.106(d)(5)				
under Tier III, feed rates limited to trial burn or compliance test levels; averaging periods same as under 266.106(b)(1)(i)-(ii) and (b)(2)(ii); monitor metals feed rate in each feedstream to ensure 266.102 or 266.103 compliance	266.106(d)(6)				
adjusted Tier I feed rate screening limits to account for site-specific dispersion modeling; how to estimate adjusted feed rate; feed rate screening limits for carcinogenic metals implemented under 266.106(b)(2)	266.106(e)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
alternative implementation approaches approved by Director on a case-by-case basis for Tier II or III metals emission limits	266.106(f)(1)				
	266.106(f)(2)				
	266.106(f)(2)(i)				
determination of 266.106(d) emissions limits for each noncarcinogenic and carcinogenic metal	266.106(f)(2)(ii)				
	266.106(f)(2)(ii)(A)				
	266.106(f)(2)(ii)(B)				
use 266, Appendix IX Multiple Metals Train to conduct emissions testing	266.106(g)(1)				
chromium emissions assumed to be hexavalent chromium unless owner/operator determines otherwise	266.106(g)(2)				
dispersion modeling conducted according to specified methods to predict maximum annual average off-site ground level concentration; on-site concentrations when person resides on-site	266.106(h)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
compliance with 266.102 permit operating requirements regarded as 266.106 compliance unless evidence indicates otherwise; modification or revocation and re-issuance of permit under 270.41	266.106(i)				
STANDARDS TO CONTROL HYDROGEN CHLORIDE (HCl) AND CHLORINE GAS (Cl_2) EMISSIONS					
Compliance with HCl and Cl_2 controls under 266.107(b), (c), or (d)	266.107(a)				
Tier I feed rate screening limits for total chlorine specified in 266, Appendix II as a function of stack height and terrain and land use in facility vicinity; feed rate of total chlorine and chloride in all feedstreams not to exceed specified levels	266.107(b)(1)				
Tier II emission rate screening limits for HCl and Cl_2 specified in 266, Appendix III as a function of terrain-adjusted effective stack height and terrain and land use in facility vicinity; stack emission rates not to exceed specified levels	266.107(b)(2)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
266.106(b) definitions and limitations for specified terms also apply to 266.107(b) screening limits	266.107(b)(3)				
facilities with multiple stacks subject to HCl or Cl_2 emissions controls must comply with Tier I and II screening limits assuming all hazardous waste is fed into device with worst-case stack	266.107(b)(4)				
worst-case stack determined by 266.106(b)(6) procedures	266.107(b)(4)(i)				
under Tier I, total feed rate of chlorine and chloride to all subject devices not to exceed worst-case stack screening limit	266.107(b)(4)(ii)				
under Tier II, total HCl and Cl_2 emissions from all subject stacks not to exceed worst-case stack screening limit	266.107(b)(4)(iii)				
conformance with Tier III controls demonstrated by HCl and Cl_2 emissions testing, air dispersion modeling, and demonstration that acceptable ambient levels are not exceeded	266.107(c)(1)				
266, Appendix IV lists RACs for HCl and Cl_2	266.107(c)(2)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	facilities with multiple stacks subject to HCl or Cl_2 emissions controls must conduct emissions testing and dispersion modeling to demonstrate that aggregate emissions do not exceed acceptable ambient levels for HCl and Cl_2	266.107(c)(3)				
12	HCl and Cl_2 controls implemented by limiting feed rate of total chlorine and chloride in all feedstreams; feed rate under Tier I limited to Tier I screening limits; feed rate under Tiers II and III	266.107(d)				
	limited to trial burn or compliance test feed rates; feed rate limits based on:	266.107(d)(1)				
		266.107(d)(2)				
	adjusted Tier I feed rate screening limits to account for site-specific dispersion modeling; how to determine these adjusted rates	266.107(e)				
	emissions testing for HCl and Cl_2 conducted using 266, Appendix IX procedures	266.107(f)				
	dispersion modeling conducted according to 266.106(h) provisions	266.107(g)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for permit enforcement purposes, compliance with 266.102 permit operating requirements regarded as 266.107 compliance unless evidence indicates otherwise; modification or revocation and re-issuance of permit under 270.41	266.107(h)				
SMALL QUANTITY ON-SITE BURNER EXEMPTION					
owners and operators that burn hazardous waste in on-site boiler or industrial furnace exempt from 266.108 requirements provided:	266.108(a)				
quantity of hazardous waste burned for a calendar month does not exceed limits shown in table entitled "Exempt Quantities for Small Quantity Burner Exemption" based on 266.106(b)(3) terrain-adjusted effective stack height; table	266.108(a)(1)				
maximum hazardous waste firing rate does not exceed 1% of total fuel requirements on a volume basis	266.108(a)(2)				
minimum heating value of 5,000 Btu/lb	266.108(a)(3)				
does not contain F020-F023, F026 or F027	266.108(a)(4)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
if mixed with non-hazardous waste, compliance with 266.108(a) quantity before mixing	266.108(b)				
equation for implementing 266.108(a)(1) quantity limits if burning in more than one exempt on-site boiler or industrial furnace	266.108(c)				
	266.108(d)				
one-time signed, written notification requirements for small quantity burner exemption	266.108(d)(1)				
	266.108(d)(2)				
	266.108(d)(3)				
maintain for at least 3 years sufficient records documenting quantity firing rate and heating value limits compliance, including quantity burned per calendar month and heating value	266.108(e)				
LOW RISK WASTE EXEMPTION					
waiver of 266.104(a) DRE standard if device is operated in conformance with 266.109(a)(1) and burning will not result in unacceptable adverse health effects as per 266.109(a)(2) procedures	266.109(a)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
operating requirements for device	266.109(a)(1)				
	266.109(a)(1)(i)				
	266.109(a)(1)(ii)				
	266.109(a)(1)(iii)				
	266.109(a)(1)(iv)				
procedures to demonstrate that hazardous waste burning will not pose unacceptable adverse public health effects	266.109(a)(2)				
	266.109(a)(2)(i)				
	266.109(a)(2)(ii)				
	266.109(a)(2)(iii)				
	266.109(a)(2)(iii)(A)				
	266.109(a)(2)(iii)(B)				
	266.109(a)(2)(iv)				
	266.109(a)(2)(iv)(A)				
	266.109(a)(2)(iv)(B)				
	266.109(a)(2)(iv)(C)				
conditions under which the 266.105 particulate matter standard is waived	266.109(b)				
	266.109(b)(1)				
	266.109(b)(2)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
WAIVER OF DRE TRIAL BURN FOR BOILERS					
boilers operating under 266.110 requirements and that do not burn F020-F023, F026 or F027 considered in compliance with 266.104(a) DRE standard, and trial burn to demonstrate DRE is waived; when burning hazardous waste:	266.110				
"primary fuel" defined; minimum of 50% primary fuel firing rate, determined on total heat or volume input basis	266.110(a)				
boiler load defined and not less than 40%	266.110(b)				
minimum as-fired heating value of 8,000 Btu/lb	266.110(c)				
conformance with 266.104(b)(1) carbon monoxide standard; boilers subject to 266.110 DRE waiver not eligible for 266.104(c) alternative carbon monoxide standard	266.110(d)				
boiler must be water-tube type that does not feed fuel using a stoker or stoker type mechanism	266.110(e)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
conditions under which hazardous waste shall be fired directly into primary fuel flame zone of combustion chamber with an air or steam, mechanical or rotary cup atomization system	266.110(f)				
	266.110(f)(1)				
	266.110(f)(2)				
	266.110(f)(3)				
	266.110(f)(4)				
STANDARDS FOR DIRECT TRANSFER					
266.111 regulations apply to boilers and industrial furnaces subject to 266.102 or 266.103 if direct transfer of hazardous waste from transport vehicle to boiler or industrial furnace without use of storage unit	266.111(a)				
for 266.111, terms have meanings given in 266.111(b)(1)	266.111(b)(1)intro				
"direct transfer equipment"	266.111(b)(1)				
"container"	266.111(b)(1)				
"tank systems" means direct transfer equipment when Subparts I and J of Parts 264 and 265 are referenced	266.111(b)(2)				
no direct transfer of pumpable hazardous waste from open-top container to boiler or industrial furnace	266.111(c)(1)				
direct transfer equipment requirements	266.111(c)(2)				

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	266.111(c)(3)				
	266.111(c)(3)(i)				
	266.111(c)(3)(ii)				
direct transfer of hazardous waste to boiler or industrial furnace conducted so that it does not result in any 266.111(c)(3)(i)-(vi) situation	266.111(c)(3)(iii)				
	266.111(c)(3)(iv)				
	266.111(c)(3)(v)				
	266.111(c)(3)(vi)				
conditions under which hazardous waste shall not be placed in direct transfer equipment	266.111(c)(4)				
appropriate controls and practices to prevent spills and overflows from direct transfer equipment or its secondary containment system	266.111(c)(5)				
	266.111(c)(5)(i)				
	266.111(c)(5)(ii)				
	266.111(d)				
	266.111(d)(1)				
requirements associated with area where containers are located	266.111(d)(2)				
	266.111(d)(3)				
direct transfer equipment must meet following requirements:	266.111(e)				
	266.111(e)(1)				
secondary containment requirements for new and existing equipment	266.111(e)(1)(i)				
	266.111(e)(1)(ii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
for existing direct transfer equipment without secondary containment, determination whether leaking or unfit for use; written assessment reviewed and certified by qualified, registered professional engineer in accordance with 270.11(d) by August 21, 1992	266.111(e)(2)(i)				
	266.111(e)(2)(ii)				
	266.111(e)(2)(ii)(A)				
	266.111(e)(2)(ii)(B)				
	266.111(e)(2)(ii)(C)				
	266.111(e)(2)(ii)(D)				
minimum considerations for assessment	266.111(e)(2)(ii)(E)				
if, due to 266.111(e)(2)(i)&(iv) assessment, direct transfer equipment found to be leaking or unfit for use, compliance with 265.196(a) and (b)	266.111(e)(2)(iii)				
inspection requirements	266.111(e)(3)(i)				
at least once each operating hour when transferring hazardous waste from container to boiler or industrial furnace	266.111(e)(3)(i)(A)				
	266.111(e)(3)(i)(B)				
	266.111(e)(3)(i)(C)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
inspect cathodic protection systems to ensure 265.195(b) compliance	266.111(e)(3)(ii)				
records of inspections maintained in operating record for at least 3 years	266.111(e)(3)(iii)				
265.192 compliance for design and installation of new ancillary equipment	266.111(e)(4)				
265.196 compliance for response to leaks or spills	266.111(e)(5)				
265.197 closure compliance, except 265.197(c)(2)-(4)	266.111(e)(6)				
13 REGULATION OF RESIDUES					
residue derived from burning or processing of hazardous waste is not excluded under 261.4(b)(4), (7) or (8) unless device and owner or operator meet the following requirements:	266.112				
	266.112(a)				
	266.112(a)(1)				
	266.112(a)(2)				
criteria the device must meet:	266.112(a)(3)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
demonstration by owner or operator that hazardous waste does not significantly affect residue by demonstrating conformance with either of two criteria:	266.112(b)				
comparison of waste-derived residue with normal residue for 261, Appendix VIII constituents; procedures to be used	266.112(b)(1)				
determination of concentrations of toxic constituents of concern in normal residue based on analyses of a minimum of 10 composite samples; determine upper 95% confidence level about the mean for the statistically-derived concentration; when to revise; how to determine the upper 95% confidence level	266.112(b)(1)(i)				
determination of concentrations of toxic constituents of concern in waste-derived residue based on analysis of samples composited over a period of not more than 24 hours; not significantly higher if doesn't exceed 266.112(b)(1)(i) normal residue concentration	266.112(b)(1)(ii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
concentration of non-metal toxic constituents of concern in waste derived residue must not exceed health-based limits specified in 266, Appendix VII; if no limit in Appendix VII, limit is 0.002 mg/kg or level of detection, whichever is higher	266.112(b)(2)(i)				
for metal constituents, in extract concentration obtained using 261.24 TCLP not to exceed 266, Appendix VII limits	266.112(b)(2)(ii)				
	266.112(c)				
	266.112(c)(1)				
records to document 266.112 compliance to be retained for 3 years; information to be recorded	266.112(c)(2)				
	266.112(c)(2)(i)				
	266.112(c)(2)(ii)				

APPENDIX I TO PART 266

TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR METALS					
Tier I and Tier II Feed Rate and Emissions Screening Limits for Carcinogenic Metals for Facilities in Noncomplex Terrain (see 56 FR 7728)	Appendix I/Table I-A				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcino 87nic Metals for Facilities in Noncomplex Terrain (see 56 FR 7229)	Appendix I/Table I-B				
Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Complex Terrain (see 56 FR 7729)	Appendix I/Table I-C				
Tier I and Tier II Feed Rate and Emissions Screening Limits for Carcinogenic Metals for Facilities in Noncomplex Terrain (see 56 FR 7230)	Appendix I/Table I-D				
Tier I and Tier II Feed Rate and Emissions Screening Limits for Carcinogenic Metals for Facilities in Complex Terrain (see 56 FR 7230)	Appendix I/Table I-E				

APPENDIX II TO PART 266

TIER I FEED RATE SCREENING LIMITS FOR TOTAL CHLORINE AND CHLORIDE					
Tier I Feed Rate Screening Limits for Chlorine for Facilities in Noncomplex and Complex Terrain (see 56 FR 7231)	Appendix II				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
APPENDIX III TO PART 266					
TIER II EMISSION RATE SCREENING LIMITS FOR FREE CHLORINE AND HYDROGEN CHLORIDE					
Tier II Emissions Screening Limits for Cl_2 and HCl in Non-complex Terrain (see 56 FR 7231-7232)	Appendix III				
Tier II Emissions Screening Limits for Cl_2 and HCl in Complex Terrain (see 56 FR 7232)	Appendix III				
APPENDIX IV PART 266					
REFERENCE AIR CONCENTRATIONS					
Constituents, CAS Nos. and RAC (see 56 FR 7232)	Appendix IV				
APPENDIX V TO PART 266					
RISK SPECIFIC DOSES					
Constituents, CAS Nos., Unit risk and RsD (see 56 FR 7232-7233)	Appendix V				
APPENDIX VI TO PART 266					
STACK PLUME RISE					
flow rates and exhaust temperatures (see 56 FR 7233-7234)	Appendix VI				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	APPENDIX VII TO PART 266					
	HEALTH-BASED LIMITS FOR EXCLUSION OF WASTE-DERIVED RESIDUES					
	Metals--TCLP Extract Concentration Limits (56 FR 7234)	Appendix VII				
	Nonmetals--Residue Concentration Limits (see 56 FR 7234)	Appendix VII				
	APPENDIX VIII TO PART 266					
	POTENTIAL PICs FOR DETERMINATION OF EXCLUSION OF WASTE-DERIVED RESIDUES					
	PICs Found in Stack Effluents (see 56 FR 7235)	Appendix VIII				
	APPENDIX IX TO PART 266					
	METHODS MANUAL FOR COMPLIANCE WITH BIF REGULATIONS					
14	This appendix will be published in the Federal Register in the near future	Appendix IX				
	APPENDIX X TO PART 266					
	GUIDELINE ON AIR QUALITY MODELS (Revised) (1986)					
14	This appendix will be published in the Federal Register in the near future	Appendix X				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM					
SUBPART B - PERMIT APPLICATION					
15 SPECIFIC PART B INFORMATION REQUIREMENTS FOR BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE					
owners and operators subject to 266.104-266.107 must conduct a trial burn and must submit a trial burn plan or results in accordance with 270.66	270.22(a)(1)				
waiver of trial burn to demonstrate conformance with a particular emission standard under 266.104-266.107 and 270.22(a)(2)-(a)(5)	270.22(a)(1)(i)				
data in lieu of a trial burn as 270.22(a)(6) specifies	270.22(a)(1)(ii)				
boiler owners and operators seeking to be permitted under 266.104(a)(4) and 266.110, must submit documentation showing boiler compliance with special operating requirements at 266.110; trial burn waived	270.22(a)(2)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
information that must be submitted for boilers and industrial furnaces seeking to be permitted under the low risk waste provisions of 266.104(a)(5) and 266.109(a) without a trial burn	270.22(a)(2)(ii)				
	270.22(a)(2)(ii)(A)				
	270.22(a)(2)(ii)(B)				
	270.22(a)(2)(ii)(C)				
	270.22(a)(2)(ii)(D)				
	270.22(a)(2)(ii)(E)				
information that must be submitted when seeking to be permitted under Tier I metals feed rate screening limits at 266.106(b)&(e) without a trial burn	270.22(a)(3)				
	270.22(a)(3)(i)				
	270.22(a)(3)(ii)				
	270.22(a)(3)(iii)				
	270.22(a)(3)(iv)				
	270.22(a)(3)(v)				
	270.22(a)(3)(vi)				
	270.22(a)(3)(vii)				
when seeking to be permitted under the low risk waste provisions of 266.109(b) which waives the particulate standard, submit documentation supporting 270.22(a)(2)(ii) and (a)(3) conformance	270.22(a)(4)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
16		270.22(a)(5)				
		270.22(a)(5)(i)				
		270.22(a)(5)(ii)				
	information to be submitted when seeking to be permitted under Tier I feed rate screening limits for total chloride and chlorine under 266.107(b)(1) and (e) provisions without a trial burn	270.22(a)(5)(iii)				
		270.22(a)(5)(iv)				
		270.22(a)(5)(v)				
		270.22(a)(5)(vi)				
		270.22(a)(5)(vii)				
	owner or operator may seek exemption from trial burn requirements demonstrating 266.104-266.107 conformance, by providing information from previous compliance testing of the device or compliance testing or trial burns of similar boilers or industrial furnaces; burning similar wastes under similar conditions 270.66 design and operation information required; conditions under which Director shall approve a permit application in lieu of a trial burn; additional information to be submitted	270.22(a)(6)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	270.22(a)(6)(i)				
	270.22(a)(6)(i)(A)				
	270.22(a)(6)(i)(B)				
for a waiver from any trial burn:	270.22(a)(6)(i)(C)				
for a waiver of the DRE trial burn, basis for selection of POHCs used in other burns which demonstrate 266.104(a) compliance; analysis should specify 261, Appendix VIII constituents in hazardous waste for which a permit is sought and any differences from POHCs for which data are provided	270.22(a)(6)(ii)				
	270.22(b)				
	270.22(b)(1)				
	270.22(b)(2)				
	270.22(b)(3)				
	270.22(b)(4)				
minimum information to be submitted for industrial furnaces with organic matter in raw materials requesting an alternative HC limit under 266.104(f)	270.22(b)(4)(i)				
	270.22(b)(4)(ii)				
	270.22(b)(5)				
	270.22(b)(6)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
when seeking to be permitted under 266.106(f) alternative metals implementation approach, submit documentation that ensures 266.106(c) or (d) compliance and how approach can be implemented and monitored; provide other information as Director finds necessary	270.22(c)				
describe automatic waste feed cutoff system, including any pre-alarm systems	270.22(d)				
use of direct transfer operations requires submittal of information supporting 266.111 conformance	270.22(e)				
demonstration of 266.112 conformance if claim is made that residues are excluded from regulation	270.22(f)				
SUBPART D - CHANGES TO PERMITS					
PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE					
paragraph heading is changed to "Newly regulated wastes and units"	270.42(g)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
add wording at end of paragraph regarding the continued management of hazardous waste in units newly regulated as hazardous waste management units	270.42(g)(1)				
insert "The unit" before "was in existence"; add "or newly regulated waste management unit" after "characterized waste"; add "or regulating the unit" at end of paragraph	270.42(g)(1)(i)				
insert "The permittee" before "submits"; insert "or unit" after "waste"	270.42(g)(1)(ii)				
insert "The permittee" before "is"; insert "applicable" before "standards"; change "Part 265" to "Parts 265 and 266 of this chapter"	270.42(g)(1)(iii)				
insert "the permittee" before "also"; remove "permit" from before "modification"; change "180 days after" to "180 days of"; add "or subjecting the unit to RCRA Subtitle C management standards" to end of paragraph	270.42(g)(1)(iv)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
17	insert "the permittee" before "certifies"; insert "each" before "such unit"; change "Part 265" to "requirements of Part 265 of this chapter for"; add ", or regulating the unit as a hazardous waste management unit" after "hazardous"; change "clarify" to "certify"; insert "all" before "these requirements"; change "shall lose" to "will lose"	270.42(g)(1)(v)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
change heading of L. to read "Incinerators, Boilers, and Industrial Furnaces"; in L.1.&L.2. replace "a waste feed rate limit, or an organic feed rate limit" with "a feedstream feed rate limit, a chlorine/ chloride feed rate limit, a metal feed rate limit, or an ash feed rate limit"; in L.3. replace "HCL" with "HCL/Cl_2 metals,"; in L.3.&L.4. insert ", boiler, or industrial furnace" after "incinerator"; in L.5.a. insert "or maximum" before "combustion gas temperature" and add "flue gas carbon monoxide and hydrocarbon concentration, maximum temperature at the inlet to the particulate matter emission control system, or operating parameters for the air pollution control system" after "chamber"; change L.6. heading to "Burning different wastes:"; in L.6.a. change "incineration" to "burning"; in L.6.a.&b. change all "to incinerate" to "to burn"; in 7.b. change "waste incineration" to "waste burning"; insert "nonhazardous waste" in L.8. before "fuel"	270.42/Appendix I			•	

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
SUBPART F - SPECIAL FORMS OF PERMITS					
PERMITS FOR BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE					
new boilers and industrial furnaces subject to 270.66(b)-(f); those under interim status standards of 266.103 subject to 270.66(g)	270.66(a)				
permit for new boiler or industrial furnace shall specify appropriate conditions for the following operating periods:	270.66(b)				
pretrial burn period described; Director must establish in Pretrial Burn Period of permit conditions, allowable hazardous waste feed rates and operating conditions; extension of period for up to 720 additional hours; permit may be modified to reflect extension as per 270.42	270.66(b)(1)				
submittal of statement with Part B that suggests operating conditions for 266.104-266.107 compliance during period, including restrictions on 266.102(e) operating requirements	270.66(b)(1)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
review of Part B materials and specification by Director of requirements sufficient to meet 266.104-266.107 performance standards based on engineering judgment	270.66(b)(1)(ii)				
for duration of trial burn, Director establishes conditions in permit to determine feasibility of compliance with 266.104-266.107 standards and to determine adequate 266.102(e) operating conditions; applicants must propose a trial burn plan as per 270.66(c) and submit with Part B	270.66(b)(2)				
for defined minimum period immediately following trial burn, during which submission and review of trial burn results and modification of permit by Director occurs, Director establishes operating requirements most likely to ensure compliance with 266.104-266.107 standards	270.66(b)(3)(i)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
submittal of statement with Part B that identifies operating conditions for 266.104-266.107 compliance during period, including restrictions on 266.102(e) operating requirements	270.66(b)(3)(ii)				
review and specification by Director of requirements sufficient to meet 266.104-266.107 performance standards based on engineering judgment	270.66(b)(3)(iii)				
for final period of operation, Director develops operating requirements in conformance with 266.102(e) and 266.104-266.107 standards; Director shall make necessary modifications to permit as per 270.42 based on trial burn results to ensure compliance	270.66(b)(4)				
information the trial burn plan must include; Director may require supplemental information	270.66(c)				
	270.66(c)(1)				
	270.66(c)(1)(i)				
analysis of each feedstream, as fired	270.66(c)(1)(ii)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	270.66(c)(2)				
	270.66(c)(2)(i)				
analysis of each hazardous waste, as fired	270.66(c)(2)(ii)				
	270.66(c)(2)(iii)				
	270.66(c)(3)				
	270.66(c)(3)(i)				
	270.66(c)(3)(ii)				
	270.66(c)(3)(iii)				
	270.66(c)(3)(iv)				
	270.66(c)(3)(v)				
	270.66(c)(3)(vi)				
detailed engineering description of boiler or industrial furnace	270.66(c)(3)(vii)				
	270.66(c)(3)(viii)				
detailed description of sampling and monitoring procedures	270.66(c)(4)				
detailed test schedule for each hazardous waste for which the trial burn is planned	270.66(c)(5)				
detailed test protocol	270.66(c)(6)				
description of, and planned operating conditions for, any emission control equipment to be used	270.66(c)(7)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
procedures for rapid stopping of hazardous waste feed and emissions control if an equipment malfunction	270.66(c)(8)				
other information Director finds necessary	270.66(c)(9)				
trial burn conducted to demonstrate conformance with 266.104-266.107 standards under an approved trial burn plan	270.66(d)(1)				
	270.66(d)(2)				
	270.66(d)(2)(i)				
	270.66(d)(2)(ii)				
findings under which the Director shall approve a trial burn plan	270.66(d)(2)(iii)				
	270.66(d)(2)(iv)				
submit to Director within 90 days of trial burn completion a certification that trial burn was carried out in accordance with approved plan and results of all 270.66(c) required determinations	270.66(d)(3)				
submit all data collected during any trial burn	270.66(d)(4)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
270.66(d) submissions must be certified by signature of person authorized to sign permit application or 270.11 report	270.66(d)(5)				
for DRE trial burn under 266.104(a), Director will specify trial POHCs; basis for specification	270.66(e)				
determinations to be made based on each trial burn:	270.66(f)				
quantitative analysis of specified materials in the feedstreams	270.66(f)(1)				
	270.66(f)(2)				
	270.66(f)(2)(i)				
determinations needed when a DRE trial burn is required under 266.104(a)	270.66(f)(2)(ii)				
	270.66(f)(2)(iii)				
quantitative analysis of stack gas and a computation showing conformance with the emission standard when a trial burn is required for chlorinated dioxins and furans under 266.104(e)	270.66(f)(3)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
quantitative analysis of stack gas and computations showing conformance with applicable emission standards when a trial burn is required for particulate matter, metals, or HCl/Cl_2 under 266.105, 266.106(c) or (d), or 266.107(b)(2) or (c)	270.66(f)(4)				
quantitative analysis of scrubber water, ash residues, other residues and products to estimate fate of trial POHCs, metals, and chlorine/chloride when a trial burn is required for DRE, metals or HCl/Cl_2 under 266.104(a), 266.106(c) or (d), or 266.107(b)(2) or (c)	270.66(f)(5)				
identification of sources of fugitive emissions and their means of control	270.66(f)(6)				
continuous measurement of CO, oxygen, and HC in stack gas	270.66(f)(7)				
such other information as Director specifies	270.66(f)(8)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
to determine feasibility of compliance with 266.104-266.107 performance standards and adequate operating conditions under 266.103, applicants of existing devices operated under interim status must either prepare and submit a trial burn plan and perform a trial burn or submit 270.22(a)(6) information; submit trial burn results with Part B application if plan approved before Part B submission; date for submission; requirements if submitting trial burn plan with Part B application	270.66(g)				
SUBPART G - INTERIM STATUS					
CHANGES DURING INTERIM STATUS					
add new paragraph regarding the addition of newly regulated units if a revised Part A permit application is submitted on or before the date the unit becomes subject to the new requirements	270.72(a)(6)				
add new paragraph regarding the addition of newly regulated units under 270.72(a)(6)	270.72(b)(7)				

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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
	TERMINATION OF INTERIM STATUS					
18	insert "which [h]as achieved interim status prior to November 8, 1984, interim status terminates" before "on November 8, 1989"	270.73(f)				
18	insert "which [h]as achieved interim status prior to November 8, 1984, interim status terminates" before "on November 8, 1992"	270.73(g)				

[1] Note that the technical corrections addressed by the August 27, 1991 (56 FR 42504; Revision Checklist 96) notice reverse the revisions made by this checklist. The August 27, 1991 language is the same as the July 1990 CFR language. Thus, States need not adopt these revisions as they would need to be changed back to the original CFR language when Revisi Checklist 96 is applied for.

[2] Note that this paragraph is designated as "266.102(d)(4)(D)" in the Federal Register (56 FR 7210). This is a typographical error; the correct designation is "266.102(d)(4)(iv)." See technical correction at 56 FR 32688 (July 17, 1991; Revision Checklist 94).

[3] Note that in the February 21, 1991 rule addressed by this checklist, the subparagraph designation was not italicized. This is a typographical error. This checklist corrects the error by italicizing the subparagraph designation. The August 27, 1991 (56 FR 42504; Revision Checklist 96) technical correction fixes this error.

[4] Note that the August 27, 1991 Federal Register which addressed the technical correction for this citation has a typographical error; the reference to "266.102(e)(4)(iii)(c)(*1*) and (*2*)" should be "266.102(e)(4)(iii)(C)(*1*) and (*2*)."

[5] Note that in the Federal Register for this rule, the subparagraph designation was not italicized. This is a typographical error. This checklist corrects the error by italicizing the subparagraph designation. The 56 FR 32688 (July 17, 1991; Revision Checklist 94) technical correction fixes this error.

[6] Note that the internal reference in the Federal Register (56 FR 7213) to "(c)(7)(ii)" is incorrect. The correct reference should be "(c)(5)" and is reflected in this checklist. See the technical correction at 56 FR 42512 (August 27, 1991; Revision Checklist 96).

SPA 11

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste in Boilers and Industrial Furnaces (cont'd)

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE

[7] Note that the internal reference in the Federal Register (56 FR 7214) is to "paragraph (b)(ii)(A)." This is a typographical error; the correct reference is to "paragraph (b)(2)(ii)(A)." See the technical correction at 56 FR 32689 (July 17, 1991; Revision Checklist 94).

[8] Note that the Federal Register (56 FR 7215) for this rule has a typographical error. The words "and recorded" should be inserted after "monitored." See the technical correction at 56 FR 42512 (August 27, 1991; Revision Checklist 96).

[9] Note that the internal reference in the Federal Register (56 FR 7218) is to "paragraph (1)." This is a typographical error; the correct reference is to "paragraph (l)." See the technical correction at 56 FR 32689 (July 17, 1991; Revision Checklist 94).

[10] Note that the internal reference in the Federal Register (56 FR 7220) is to "paragraph (a)." This is a typographical error; the correct reference is to "paragraph (a)(1)." See the technical correction at 56 FR 32689 (July 17, 1991; Revision Checklist 94). Also, "tetrra-" should be "tetra-."

[11] In the Federal Register for this rule, the designation for this subparagraph is 266.104(g)2. This is a typographical error; the correct designation is 266.104(g)(2). This checklist reflects the correct designation. See the technical correction at 56 FR 32689 (July 17, 1991).

[12] In the Federal Register for this rule, the designation for these subparagraphs is 266.107(d)(i) and 266.107(d)(ii) (see 56 FR 7225). This is a typographical error. The subparagraphs should be designated 266.107(d)(1) and 266.107(d)(2). This checklist reflects the correct designations. See technical corrections at 56 FR 32690 (July 17, 1991).

[13] In the Federal Register for this rule, the section designation for regulation of residues is 266.122 (see 56 FR 7227). This is a typographical error and the section should be designated 266.112. This checklist reflects the correct section number.

[14] See the July 17, 1991 (56 FR 32688; Revision Checklist 94) notice. Appendices IX and X are found on pp. 56 FR 32692 and 56 FR 32796, respectively.

[15] Note that this is the same section of code which contained the specific Part B information requirements for the Wood Preserving listing (55 FR 50450). Thus, the Part B boilers/industrial furnace requirements were added so that the Part B information requirements for drip pads were inadvertently removed by this present final rule. On July 1, 1991 (56 FR 30192, Revision Checklist 92) a technical correction was published moving the wood preserving requirements to 270.26.

[16] Note that 270.22(a)(5) has a typographical error. Subparagraph "(iv)" is incorrectly numbered as "(vi)." The correct number has been used in this checklist.

SPA

RCRA REVISION CHECKLIST 85: Burning of Hazardous Waste 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

[17] The paragraph following 270.42(g)(1)(v) in Federal code, i.e., 270.42(g)(2), is included in the Federal Register for this rule (56 FR 7237). However, no changes were made to the paragraph by this rule, so it has not been included in this revision checklist.

[18] Note that the Federal Register (56 FR 7239) for this rule has a typographical error. The word "as" after "which" should be "has." This checklist corrects that error. See technical correction at 56 FR 32692 (July 17, 1991).

FR 85 - B/F

05

federal register

Thursday
February 21, 1991

Part III

Environmental Protection Agency

40 CFR Part 260, et al.
Burning of Hazardous Waste in Boilers and Industrial Furnaces; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, 266, 270, and 271

[EPA/OSW-FR-91-012; SWH-FRL-3885-6]

RIN 2050-AA72

Burning of Hazardous Waste in Boilers and Industrial Furnaces

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Under this final rule, the Environmental Protection Agency (EPA) is expanding controls on hazardous waste combustion to regulate air emissions from the burning of hazardous waste in boilers and industrial furnaces. Currently, such burning is exempt from regulation. EPA is promulgating this final rule after considering public comment on rules proposed on May 6, 1987, plus the comments on EPA's supplemental notices of October 26, 1989 and April 27, 1990.

These rules control emissions of toxic organic compounds, toxic metals, hydrogen chloride, chlorine gas, and particulate matter from boilers and industrial furnaces burning hazardous waste. In addition the rules subject owners and operators of these devices to the general facility standards applicable to hazardous waste treatment, storage, and disposal facilities. Further, today's final rule subjects hazardous waste storage units at regulated burner facilities to part 264 permit standards. Burner storage operations at existing facilities are generally now subject only to interim status standards under part 265.

Finally, today's rule takes final action on two pending petitions for rulemaking: (1) based on a petition by Dow Chemical Company, EPA is designating halogen acid furnaces as industrial furnaces under § 260.10; and (2) based on a petition by the American Iron and Steel Institute, EPA is classifying coke and coal tar fuels produced by recycling coal tar decanter sludge, EPA Hazardous Waste No. KO87, as products rather than solid waste. The rule also makes several technical corrections to regulations dealing with loss of interim status for facilities that achieved interim status as of November 7, 1984.

EFFECTIVE DATE: This final rule is effective on August 21, 1991. Technical corrections to § 270.73 are effective on publication.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of August 21, 1991.

ADDRESSES: The official record for this rulemaking is identified as Docket Numbers F-87-BBFP-FFFFF and F-89-BBSP-FFFFF, and is located in the EPA RCRA Docket, room 2427, 401 M Street SW., Washington, DC 20460. The docket is available for inspection 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 up to 100 pages from the docket at no charge. Additional copies cost $.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline at: (800) 424-9346 (toll-free) or (703) 920-9810 locally. For information on specific aspects of this final rule, contact Shiva Garg, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (703) 308-8460.

EPA is planning to conduct six two-day implementation workshops beginning in mid February in the following cities: San Francisco, CA; Dallas, TX; Kansas City, KS; Atlanta, GA; Chicago, IL; and Philadelphia, PA. The purpose of the sessions is to explain responsibilities of owner/operators burning hazardous waste under this rule. The first day will be open only to government representatives involved in implementation, compliance, and enforcement of these regulations. The second day is open to the public. Preregistration is required to assure a reservation. Same day registration will be allowed as space is available. Interested parties should call 919-549-0722 to obtain further information and get on the mailing list for notices.

SUPPLEMENTARY INFORMATION:

Preamble Outline

Part One: Background
I. Legal Authority.
II. Overview of the Final Rule.
A. Controls for Emissions of Organic Compounds.
B. Controls for Emissions of Toxic Metals.
C. Controls for Emissions of Hydrogen Chloride and Chlorine Gas.
D. Emission Standard for Particulate Matter.
E. Permitting Procedures.
F. Controls During Interim Status.
G. Units Exempt from Air Emissions Standards.
H. Pollution Prevention Impacts.
III. Relationship to Other Rules.
A. Regulations to be Promulgated Under the New Clean Air Act.
B. April 27, 1990 Proposed Incinerator Amendments.
C. July 28, 1990 Proposed Amendment to Definition of Wastewater Treatment Unit to Exempt Sludge Dryers.
D. Land Disposal Restriction Standards.
Part Two: Devices Subject to Regulation
I. Boilers.
II. Industrial Furnaces.
A. Cement Kilns.
B. Light-Weight Aggregate Kilns.
C. Halogen Acid Furnaces.
1. Current Practices.
2. Designation of HAFs as Industrial Furnaces.
D. Smelting, Melting, and Refining Furnaces Burning Hazardous Waste to Recover Metals.
Part Three: Standards for Boilers and Industrial Furnaces Burning Hazardous Waste
I. Emission Standard for Particulate Matter.
A. Basis for Final Rule.
1. Alternatives Considered.
2. Basis for Standard.
B. Interim Status Compliance Procedures.
C. Implementation.
II. Controls for Emissions of Toxic Organic Compounds.
A. DRE Standard.
1. Selection of POHCs for DRE Testing.
2. Use of POHC Surrogates.
3. Waiver of DRE Trail Burn for Boilers Operating Under the Special Operating Requirements.
B. PIC Controls.
1. Use of a CO Limit to Control PICs.
2. Tier I PIC Controls: 100 ppmv CO limit.
3. Tier II PIC Controls: Limits on CO and HC.
4. Special Requirements for Furnaces.
5. Special Considerations for Cement Kilns.
C. Automatic Waste Feed Cutoff Requirements.
D. CEM Requirements for PIC Controls.
E. Control of Dioxin and Furnace Emissions.
III. Risk Assessment Procedures.
A. Health Effects Data.
1. Carcinogens.
2. Noncarcinogens.
B. Air Dispersion Modeling.
1. Option for Site-Specific Modeling.
2. Terrain-Adjusted Effective Stack Height.
3. Conservatism in Screening Limits.
4. GEP Stack Height.
5. Plume Rise Table.
6. Compliance by Manipulating Effective Stack Height.
7. Effect of HCl Emissions on Acid Rain.
8. Building Wake Effects.
C. Consideration of Indirect Exposure and Environmental Impacts.
1. Indirect Exposure.
2. Non-human Health Related Environmental Impacts.
D. Acceptable Risk Level for Carcinogens.
E. Use of MEI and Consideration of Aggregate Risk.
F. Risk Assessment Assumptions.
IV. Controls for Emissions of Toxic Metals.
A. Background Information.
1. Metals Standards under Other Statutes.
2. 1987 Proposed Rule.
3. 1989 Supplement to Proposed Rule.
B. How the Standards Work.
1. Tier III Standards.
2. Tier II Standards.
3. Tier I Standards.
C. Implementation.

1. Tier I Implementation.
2. Tier II Implementation.
3. Tier III Implementation.
4. Special Requirements for Furnaces that Recycle Collected Particulate Matter.
5. Trial Burns.
6. Monitoring and Analysis Requirements.
D. Interim Status Compliance Requirements.
V. Controls for Emissions of Hydrogen Chloride and Chlorine Gas.
A. Background Information.
B. Response to Comments.
1. Short-Term HCl RAC_2.
2. Need for Cl_2 Controls.
3. HCl Emission Test Procedures.
4. Technology-Based HCl Controls.
C. Implementation.
1. Emissions Testing.
2. Waste Analysis.
3. Interim Status Compliance Requirements.
VI. Nontechnical Requirements.
VII. Interim Status Standards.
A. Certification Schedule.
1. Certification of Precompliance.
2. Certification of Compliance.
3. Recertification.
4. Failure to Comply with the Certification Schedule.
5. Development of the Certification Schedule.
B. Limits on Operating Parameters.
C. Automatic Waste Feed Cutoff.
D. Sham Recycling Policy.
E. Submittal of Part B Applications.
F. DRE Testing.
G. Chlorinated Dioxins and Furans.
H. Special Requirements for Furnaces.
I. Special Metals Controls for Furnaces that Recycle Collected Particulate Matter.
J. Recordkeeping.
VIII. Implementation of Today's Rule.
A. Newly Regulated Facilities.
1. Definition of "In Existence".
2. Section 3010 Notification.
3. Part A Permit Application.
B. Interim Status Facilities.
C. Permitted facilities.
1. Amendment to § 270.42(g).
2. Procedures to Modify Permits.
D. Addition of Storage Units at Direct Transfer Facilities That Obtain Interim Status.
1. Unauthorized States.
2. Authorized States.
E. Compliance with BIF versus Incinerator Rules.
IX. Permit Procedures.
A. Part B Information.
B. Special Forms of Permits.
1. Permits for New Boilers and Industrial Furnaces.
2. Permit Procedures for Interim Status Facilities.
X. Exemption of Small Quantity Burners.
A. Response to Comments.
B. Basis for Today's Rule.
1. Composition of Hazardous Waste Stream.
2. Toxicity of Hazardous Constituents.
3. Destruction Efficiency.
4. Assumptions Regarding Metals and Chlorine in Waste Fuels.
C. How the Exemption is Implemented.
1. Use of Terrain-Adjusted Effective Stack Height.
2. Multiple Stacks.
D. Wastes Ineligible for Exemption.
E. Exemption of Associated Storage.
F. Notification and Recordkeeping Requirements.
XI. Exemption of Low Risk Waste from DRE Standard and Particulate Matter Emissions Standard.
A. Exemption from Compliance with the DRE Standard.
B. Exemption from Compliance with the Particulate Standard.
C. Eligibility Requirements.
D. How the Low-Risk Waste Exemption Works.
1. Constituents of Concern.
2. Estimation of Worst-Case Emissions.
3. Dispersion Modeling.
4. Acceptable Ambient Levels.
5. Constituents with Inadequate Health Effects Data.
XII. Storage Standards.
A. Permit Standards for Storage.
B. Consideration of Requirement for Liquid Waste Fuel Blending Tanks.
C. Standards for Direct Transfer Operations.
1. General Operating Requirements.
2. Inspections and Recordkeeping.
3. Equipment Integrity.
4. Containment and Detection of Releases.
5. Response to Leaks or Spills.
6. Design and Installation of New Equipment.
7. Closure.
XIII. Applicability of the Bevill Exclusion to Combustion Residues When Burning Hazardous Waste.
A. Basis for Applying the Bevill Exclusion to Derived-From Residues.
B. Evolution of Interpretations.
C. Case-by-Case Determinations.
1. Eligible Devices.
2. Two-Part Test.
D. Recordkeeping.
E. Other Considerations.
1. Generic Determinations.
2. Burning for Destruction.
Part Four: Miscellaneous Provisions
I. Regulation of Carbon Regeneration Units.
A. Basis for Regulating Carbon Regenerating Units as Thermal Treatment Units.
B. Definition of Carbon Regeneration Unit and Revised Definition of Incinerator.
C. Units in Existence on the Effective Date are Eligible for Interim Status.
II. Regulation of Sludge Dryers.
A. July 1990 Proposal.
B. Summary of Public Comments.
III. Classification of Coke and By-Product Coal Tar.
A. AISI Petition.
B. Process Description.
C. Basis for Approval of the AISI Petition.
IV. Regulation of Landfill Gas.
V. Definitions of Infrared and Plasma Arc Incinerators.
Part Five: Administrative, Economic, and Environmental Impacts, and List of Subjects
I. State Authority.
A. Applicability of Rules in Authorized States.
B. Effect on State Authorizations.
II. Regulatory Impacts.
A. Cost Analysis.
1. Background.
2. Revised Cost Analysis.
B. Regulatory Flexibility Act.
C. Paperwork Reduction Act.
III. List of Subjects.
Appendices.

Part One: Background

I. Legal Authority

These regulations are promulgated under authority of sections 1006, 2002, 3001 through 3007, 3010, and 7004 of the Solid Waste Disposal Act of 1970, as amended by the Resource Conservation and Recovery Act of 1976, the Quiet Communities Act of 1978, the Solid Waste Disposal Act Amendments of 1980, and the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. 6905, 6912, 6921 through 6927, 6930, and 6974.

II. Overview of the Final Rule

A. Controls for Emissions of Organic Compounds

Today's rule requires boilers and industrial furnances to comply with the same destruction and removal efficiency (DRE) standard currently applicable to hazardous waste incinerators: 99.9999% DRE of dioxin-listed waste, and 99.99% DRE for all other hazardous wastes. In addition, the rule controls emissions of products of incomplete combustion (PICs) by limiting flue gas concentrations of carbon monoxide (CO), and where applicable, hydrocarbons (HC) to ensure that the device is operated under good combustion conditions. Finally, emissions testing and health-risk assessment is required for chlorinated dioxins and furans for facilities meeting specified criteria where the potential for significant concentrations may exist.

B. Controls for Emissions of Toxic Metals

The rules establish emission limits for 10 toxic metals listed in appendix VIII of 40 CFR part 261 based on projected inhalation health risks to a hypothetical maximum exposed individual (MEI). The standards for the carcinogenic metals (arsenic, beryllium, cadmium, and chromium) limit the increased lifetime cancer risk to the MEI to a maximum of 1 in 100,000. The risk from the four carcinogens must be summed to ensure that the combined risk is no greater than 1 in 100,000. The standards for the noncarcinogenic metals (antimony, barium, lead, mercury, silver, and thallium) are based on Reference Doses (RfDs) below which adverse health effects have not been observed.

The standards are implemented through a three-tiered approach. Compliance with any tier is acceptable. The tiers are structed to allow higher emission rates (and feed rates) as the owner or operator elects to conduct more site-specific testing and analyses (e.g., emissions testing, dispersion modeling). Thus, the feed rate limits under each of the tiers are derived based on different levels of site-specific information related to facility design and surrounding terrain. Under Tier I, the Agency has provided very conservative waste feed rate limits in "reference" tables as a function of effective stack height and terrain and land use in the vicinity of the stack and assumed reasonable, worst-case dispersion. The owner or operator demonstrates compliance by waste analysis, not emissions testing or dispersion modeling. Consequently, the Tier I feed rate limits are based on an assumed reasonable, worst-case dispersion scenario, and an assumption that all metals fed to the device are emitted (i.e., no partitioning to bottom ash or product, and no removal by an air pollution control system (APCS)).

Under Tier II, the owner or operator conducts emissions testing (but not dispersion modeling) to get credit for partitioning to bottom ash or product, and APCS removal efficiency. Thus, the Agency has developed conservative emission rate limits in reference tables, again as a function of effective stack height and terrain and land use in the vicinity of the stack. The Agency also assumed reasonable, worst-case dispersion under Tier II.

Under Tier III, the owner or operator would conduct emissions testing and site-specific dispersion modeling to demonstrate that the actual (measured) emissions do not exceed acceptable levels considering actual (predicted) dispersion.

The standards are implemented through limits on specified operating parameters, including hazardous waste feed rate and metals composition, feed rate of metals from all feed streams, combustion chamber temperature, and APCS-specific parameters.

C. Controls for Emissions of Hydrogen Chloride and Chlorine Gas

The rules control emissions of hydrogen chloride (HCl) and free chlorine (Cl_2) under the same general approach as that used for metals. The owner and operator must comply with and implement the HCl and Cl_2 controls in the same manner as for metals.

D. Emission Standards for Particulate Matter

The rules limit particulate matter (PM) emissions of 0.08 gr/dscf, corrected to 7 percent oxygen (O_2). This is the same standard that currently applies to hazardous waste incinerators and is intended to supplement the risk-based metals controls. (Metals emissions are generally controlled by limiting feed rates of metals and controlling PM.) Compliance with the standard is demonstrated by emissions testing, and the standard is implemented by operating limits in the permit on parameters including: ash content of feed streams, feed rate of specific feed streams, and air pollution control system operating parameters. All boilers and industrial furnaces must comply with the standard; however, cement and aggregate kilns need not monitor the ash feed rate of all feed streams to demonstrate compliance with the standard given that particulate matter from these devices is generated primarily from raw materials. Instead, the rule provides that these devices must comply with the operating limits on the particulate matter control system to ensure continued operation at levels achieved during the compliance test (under interim status) or trial burn (under the part B permit application).

E. Permitting Procedures

The final rule requires similar permitting procedures for regulated BIFs that apply to hazardous waste incinerators. For example, owners and operators are required to submit a part B permit application for evaluation in order to be eligible for an operating permit. Permit applications will be called on a schedule considering the relative hazard to human health and enviroment the facility poses compared to other storage, treatment, and disposal facilities within the Director's purview.

F. Control During Interim Status

Today's final rule requires boilers and industrial furnaces that have interim status to comply with substantive emissions controls for metals, HCl, Cl_2, particulates, and CO (and, where applicable, HC and dioxins and furans). Owners and operators must certify compliance with the emissions controls under a prescribed schedule, establish limits on prescribed operating parameters, and operate within those limits throughout interim status.

G. Units Exempt from Air Emissions Standards

The rule conditionally exempts from regulation the following devices: (1) Boilers and industrial furnaces that burn small quantities of hazardous waste fuel (i.e., the small quantity burner exemption), and that operate the device under prescribed conditions; (2) smelting, melting, and refining furnaces that process hazardous waste solely for the purpose of metal reclamation and not partially for destruction or energy recovery; and (3) coke ovens if the only hazardous waste they process is K087.

The small quantity burner exemption—as provided in section 3004(q)(2)(B)—is a risk-based exemption specifically alluded to in the statute. The exemption is provided only to hazardous waste fuels generated on-site, and is conditioned on a number of requirements, including a one-time notification and recordkeeping.

The Agency is also providing a temporary exemption for metal reclamation furnaces from today's burner standards until we determine how best to apply rules designed for combusion process to noncombusion metal reclamation operations. (It should be noted that section 3004(q) requires EPA to issue rules controlling air emissions from devices burning hazardous waste for energy recovery by a specified date. Section 3004(q) does not apply to devices burning hazardous waste for the sole purpose of material recovery. Although EPA has authority to issue such regulations, the section 3004(q) deadline does not apply). To distinguish between waste that are processed solely for metal reclamation rather than (partial) destruction, the final rule considered a hazardous waste processed by a smelting, melting, or refining furnace with a total concentration of appendix VIII, part 261 toxic organic constituents exceeding 500 ppm to be burned at least partially for treatment or destruction. To distinguish between processing for material recovery and burning for energy recovery, the final rule considers a hazardous waste processed by a metal reclamation furnace with a heating value exceeding 5,000 Btu/lb to be burned at least partially for energy recovery. Metals reclamation furnaces claiming the exemption must notify the Agency, sample and analyze their hazardous wastes to document compliance with the conditions of the exemption, and keep records of such documentation.

Coke ovens are exempt from today's rule if the only hazardous waste they process is K087 as an ingredient to produce coke. Given that K087 is for practical purposes just like other materials used to produce coke and comes from the same process as these

other materials, it would be anomalous to assert RCRA control over the coking process.

H. Pollution Prevention Impacts

This rule provides an incentive to reduce the generation of metal and chlorine-bearing hazardous waste at the source given that the metals and HCl emissions controls will be implemented by additional requirements attendant to the disposal of those wastes, i.e., feed rate limits for individual metals and total chlorine. These requirements are, in essence, tied to the economics of disposing of given volumes of waste since feed rates depend, in part, on the volume of waste the facility operator needs to burn. Thus, the metals and HCl controls do not simply require a percent reduction in emissions, irrespective of the volume and rate of incoming waste streams. Rather, the controls are health-based and, thus, provide limits on emissions rates of metals and HCl that would be implemented by feed rate limits.

Waste generators who send their waste to industrial furnaces such as cement kilns and light-weight aggregate kilns that act as commercial waste management facilities will have the incentive to reduce the generation of metal and chlorine-bearing wastes because waste management fees are likely to increase for such waste given that the burner has a fixed metal and chlorine feed rate allotment (due to prescribed feed rates and facility operating conditions). Wastes with extremely high metals content may no longer be acceptable for burning in many cases unless the waste generator reduces the metals content of the waste. Any alternative for the disposal of such wastes may be unavailable or the costs of such treatment may be high enough to create the incentive to reduce waste generation rates at the source. This is a typical scenario for pollution prevention measures to be undertaken by waste generators.

Similarly, generators who burn their wastes on site also have the incentive to reduce the generation of metal and chlorine-bearing wastes given that the rule will provide a fixed feed rate allotment for their boiler or industrial furnace.

III. Relationship to Other Rules

A. Regulations to be Promulgated Under the New Clean Air Act

Title III of the recent Clean Air Act Amendments of 1990, amending section 112 of the Act dealing with hazardous air pollutants, potentially addresses many of the same sources that would be regulated under today's rule. That section requires the Agency to develop a list of major and area sources of hazardous air pollutants (a major source is a stationary source that has the potential to emit up to 10 tons per year of a hazardous air pollutant, or 25 tons per year of a combination of such pollutants, and area sources are other stationary sources emitting hazardous air pollutants), and to develop technology-based controls for such sources over specified time periods. See Clean Air Act, amended sections 112(c), and (d). Additional controls shall be imposed within eight years after promulgation of each of these technology-based standards, if such controls are needed to protect public health with an ample margin of safety, or to prevent adverse environmental effect. (Cost, energy, and other relevant factors must be considered in determining whether regulation is appropriate in the case of environmental effects.) In addition, if the technology-based standards for carcinogens do not reduce the lifetime excess cancer risk for the most exposed individual to less than one a million (10-6), then EPA must promulgate health-based standards. See amended section 112(f)(2)(A).

It is premature for the Agency to attempt to provide a definitive opinion on the relationship of these provisions to today's rule. Sources covered by the present rule may not ultimately be required to be further regulated under amended section 112. In this regard, amended section 112(n)(7) provides that if sources' air emissions are regulated under subtitle C, "the Administrator shall take into account any regulations of such emissions * * * and shall, to the maximum extent practicable and consistent with the provisions of this section, ensure that the requirements of such subtitle and this section are consistent." Thus, at a minimum, Congress was concerned about the potential for duplicative regulation and urged the Agency to guard against it. Since the Agency regards today's rules as protective (based on present knowledge), it may be possible to avoid further air emissions regulation. (EPA notes, however, that these sources will likely be listed as major sources, and the Agency will study whether further emissions controls are required in the course of implementing amended section 112.)

B. April 27, 1990 Proposed Incinerator Amendments

On April 27, 1990 (55 FR 17862), EPA proposed amendments to the existing hazardous waste incinerator standards of subpart O, part 264 to make the incinerator standards conform to the emissions standards being promulgated today for boilers and industrial furnaces burning hazardous waste. The proposed rule would add emission standards for products of incomplete combustion (i.e., carbon monoxide and hydrocarbon limits), metals, and hydrogen chloride and chlorine gas.

In the proposed rule for incinerators, EPA also proposed to revise or to add definitions for a number of thermal treatment devices: Industrial furnace, incinerator, plasma arc and infrared incinerators. Those definitions are being promulgated in today's rule. In addition, EPA proposed in the incinerator rulemaking to clarify the regulatory status of carbon regeneration units. Those clarifications are also promulgated in today's final rule.

Finally, EPA proposed to revise the definition of principal organic hazardous constituents (POHCs) used to demonstrate destruction and removal efficiency (DRE). The revised definition would allow the Director on a case-by-case basis to approve as POHCs compounds that are neither constituents in the hazardous waste nor organic. That revised definition of POHC is finalized in today's rule as a part of the DRE standard to control organic emissions from boilers and industrial furnaces.

C. July 18, 1990 Proposed Amendment to Definition of Wastewater Treatment Unit to Exempt Sludge Dryers

On July 18, 1990 (see 55 FR 29280), EPA proposed to clarify the regulatory status of sludge dryers to make it clear that sludge dryers that meet the definition of a tank and that were a part of a wastewater treatment unit were exempt from RCRA regulation even if they heretofore met the definition of an incinerator. Today's final rule promulgates a definition of sludge dryer and revises the definition of incinerator to explicitly exclude sludge dryers. See Part Four, section II of today's preamble.

D. Land Disposal Restriction Standards

In the May 6, 1987 proposal, the Agency indicated that once the present rules became final, the Agency would amend certain of the land disposal restriction standards that specified incineration as a treatment standard (at that time, the standard for HOCs under the California list rule), to also include burning in boilers and industrial furnaces. See 52 FR at 17021. Since that time, the issue has become more involved. In particular, significant issues regarding the relationship of the Bevill amendment and land disposal

restrictions exist (which the Agency in fact referenced in the rulemaking record to the California list rule when considering this issue). The Agency believes it inappropriate to try and resolve these issues in this proceeding, given the time constraints created by the District Court's order and the fact that this rulemaking does not deal principally with issues relating to the land disposal restrictions program. The Agency consequently plans to address these questions in a later proceeding and not to finalize the May 1987 proposal at this time.

Part Two: Devices Subject to Regulation

I. Boilers

EPA defines a boiler in § 260.10 as an enclosed device using controlled flame combustion and having the following characteristics: (1) The combustion chamber and primary energy recovery section must be of integral design; (2) thermal recovery efficiency must be at least 60 percent; and (3) at least 75 percent of the recovered energy must be "exported" (i.e., not used for internal uses such as preheating of combustion air or fuel, or driving combustion air fans or feed water pumps).

Today's final rule applies to all boilers burning hazardous waste for any purpose—energy recovery or destruction. (We note, however, that an existing boiler may not burn hazardous waste for destruction (i.e., waste that is not a fuel) before certifying compliance with the interim status emissions standards.)

Nonindustrial boilers are currently prohibited from burning hazardous waste unless they are operated in conformance with the incinerator standards of subpart O of part 264 or 265. On the effective date of today's rule, however, nonindustrial boilers burning hazardous waste will be subject to these boiler and industrial furnace rules. We note that nonindustrial boilers generally cannot burn hazardous waste until they receive an operating permit under today's rule (unless they are already operating under the incinerator standards). This is because the prohibition is not rescinded until the effective date of the rule, and a facility would have to be "in existence" with respect to hazardous waste burning on that date to be eligible for interim status.

EPA believes that approximately 925 boilers burn hazardous waste fuels. Approximately 600 of these boilers burn very small quantities of hazardous waste and will be conditionally exempt under the small quantity burner provision of today's rule. See § 266.108. (We note that these boilers burn less than one percent of the total hazardous waste currently being burned in boilers and industrial furnaces.) EPA also believes that approximately 200 boilers will stop burning hazardous waste because they burn quantities exceeding the small quantity burner exemption but do not burn enough waste to justify the cost of complying with today's rule. Thus, approximately 125 boilers will continue to burn hazardous waste and will be subject to the interim status and permit standards provided by §§ 266.102 and 266.103 of today's rule.

II. Industrial Furnaces

Under today's revised definition, EPA defines an industrial furnace in § 260.10 as those designated devices that are an integral component of a manufacturing process and that use thermal treatment to recover materials or energy. With the addition of halogen acid furnaces by today's rule, the Agency has designated 12 devices as industrial furnaces: Cement kilns; lime kilns; aggregate kilns (including light-weight aggregate kilns and aggregate drying kilns used in the asphaltic concrete industry); phosphate kilns; coke ovens; blast furnaces; smelting, melting, and refining furnaces; titanium dioxide chloride process oxidation reactors; methane reforming furnaces; pulping liquor recovery furnaces; and combustion devices used in the recovery of sulfur values from spent sulfuric acid. The definition also includes criteria and procedures for designating additional devices as industrial furnaces.

Any industrial furnace burning or processing any hazardous waste for any purpose—energy recovery, material recovery, or destruction—is subject to today's rule, with certain exceptions. Furnaces (like boilers) burning small quantities of hazardous waste fuel are exempt from regulation under § 266.108, coke ovens are exempt from regulation if the only hazardous waste they burn is Hazardous Waste No. K087, and regulation of smelters processing hazardous waste solely for material recovery is deferred (see discussion in section II.D).

The Agency believes that approximately 75 industrial furnaces burn over one million tons of hazardous waste annually. The regulated universe appears to comprise approximately 40 cement kilns, 16 light-weight aggregate kilns, and 15 halogen acid furnaces. Each of these types of furnaces is described below.

A. Cement Kilns

Cement kilns are horizontal inclined rotating cylinders, refractory lined and internally fired, to calcine a blend of 80% limestone and 20% shale to produce Portland cement. There is a wet process and a dry process for producing cement. In the wet process, the limestone and shale are ground wet and fed into the kiln in a slurry. In the dry process, raw materials are ground dry. Wet process kilns are longer than dry process kilns in order to facilitate water evaporation from the wet raw material. Wet kilns can be more than 450 feet in length. Dry kilns are more thermally efficient and frequently use preheaters or precalciners to begin the calcining process before the raw material is fed into the kiln.

Combustion gases and raw materials move counterflow in kilns. The kiln is inclined, and raw materials are fed into the upper end while fuels are normally fed into the lower end. Combustion gases thus move up the kiln counter to the flow of raw materials. The raw materials get progressively hotter as they travel the length of the kiln. The raw materials eventually begin to soften and fuse at temperatures between 2,250 and 2,700 °F to form the clinker product. Clinker is then cooled, ground, and mixed with other materials such as gypsum to form Portland cement.

Combustion gases leaving the kiln typically contain from 6 to 30% of the feed solids as dust. Particulate emissions are typically controlled with electrostatic precipitators or fabric filters (baghouses), and are often recycled to the kiln feed system.

Dry kilns with a preheater or precalciner often use a by-pass duct to remove from 5 to 30% of the kiln off-gases from the main duct. The by-pass gas is passed through a separate air pollution control system to remove particulate matter. By-pass dust is not reintroduced into the kiln system to avoid a build-up of metal salts that can affect product quality.

Some cement kilns burn hazardous waste fuels to replace from 25 to 75% of normal fossil fuels. Most kilns burn liquid waste fuels but several burn small (e.g., six gallon) containers of viscous or solid hazardous waste fuels. Containers have been fired into the upper, raw material end of the kiln and at the midpoint of the kiln.

Several cement companies have also expressed an interest in using solid hazardous waste such as contaminated soils as an ingredient to produce cement. Cement kilns that burn hazardous waste as an ingredient are regulated by today's rule.[1] Under

[1] See discussion in section VII.H of Part Three of the text.

today's rule, a facility may burn (or process) hazardous waste solely as a bona fide ingredient during interim status beginning with the effective date of the rule. If a waste is burned partially for destruction or energy recovery, however, it is not burned solely as an ingredient and special restrictions apply during interim status (see discussion below). EPA considers a waste to be burned at least partially for destruction if it contains a total of 500 ppm or more by weight of nonmetal hazardous constituents listed in appendix VIII, part 261. Further, EPA considers a waste to be burned at least partially for energy recovery if it has a heating value of 5,000 Btu/lb or more.

Today's rule does not allow burning of a waste for the purpose of destruction during interim status prior to certification of compliance (see § 266.103(c)) with all applicable emission standards. Further, the rule applies special requirements during interim status on owners/operators who feed hazardous waste into a kiln system at any location other than the "hot" end where product is discharged. Hazardous waste burned (processed) solely as an ingredient, however, is not subject to the special requirements because emissions from such burning would not pose an adverse effect on human health and the environment.[2]

B. Light-Weight Aggregate Kilns

Light-weight aggregate (LWA) describes a special use aggregate with a specific gravity much less than sand and gravel which is used to produce insulation and nonstructural and light-weight concrete. LWA is produced much like cement, but the feedstocks are special clays, pumice, scoria, shale, or slate.

The LWA kiln is configured much like a cement kiln. The raw material is crushed and introduced at the upper end of a rotary kiln. In passing through the kiln, the materials reach temperatures of 1,900 to 2,100°F. Heat is provided by a burner at the lower end of the kiln where clinker is discharged.

LWA kilns are also major sources of particulate emissions and are equipped with wet scrubbers, fabric filters, or electrostatic precipitators. Wet scrubbers dominated the industry until recently. Many facilities are now converting to dry systems to reduce the cost of residue management by recycling the collected dust into the kiln.

LWA kilns that burn hazardous waste fuel typically burn 100% liquid hazardous waste fuels.

C. Halogen Acid Furnaces

The Dow Chemical Company (DOW) filed a rulemaking petition with EPA on March 31, 1986, in accordance with the provisions of 40 CFR 260.20, requesting that EPA designate their halogen acid furnaces (HAFs) as industrial furnaces. HAFs are typically modified firetube boilers that process secondary waste streams containing 20 to 70 percent chlorine or bromine to produce a halogen acid product by scrubbing acid from the combustion gases. Currently HAFs that produce steam meet the definition of a boiler while HAFs that do not generate steam meet the definition of an incinerator even though they use hazardous waste as a fuel and as an ingredient to produce halogen acid product. Today's rule designates HAFs that do not generate steam as an industrial furnace for the reasons given below.

DOW petitioned the Agency to designate their HAFs as industrial furnaces after the Agency changed the definition of incinerator in 1985 from a "purpose of burning test" to a "design test" and developed new classifications for boilers and industrial furnaces. The Agency inadvertently did not designate HAFs as industrial furnaces at the time which potentially left certain HAFs operating not in compliance with the incinerator standards promulgated in 1981. Although HAFs (prior to today's rule) technically meet the definition of incinerator, the Agency has indicated its intention since receiving the DOW petition to correct the problem and to properly designate HAFs as industrial furnaces.

On May 6, 1987 (52 FR 17033), EPA proposed to grant this petition and to add halogen acid furnaces (HAFs) to the list of devices that are designated as industrial furnaces under 40 CFR 260.10. On April 27, 1990 (55 FR 17917), the Agency proposed changes to the proposed designation of HAFs as industrial furnaces. With modifications based on additional information and comments, today's rule adds HAFs to the list of devices that are included in the definition of an industrial furnace under 260.10.

In today's rule, EPA is defining an "industrial furnace" in 260.10 as an enclosed device that uses thermal treatment to recover (or produce) materials or energy as an integral component of a manufacturing process.[3] EPA has previously designated 11 devices as industrial furnaces: (1) Cement kilns; (2) lime kilns; (3) aggregate kilns (including light-weight aggregate kilns and aggregate drying kilns used in the asphaltic concrete industry); (4) phosphate kilns; (5) coke ovens; (6) blast furnaces; (7) smelting, melting, and refining furnaces; (8) titanium dioxide chloride process oxidation reactors; (9) methane reforming furnaces; (10) pulping liquor recovery furnaces; and (11) combustion devices used to recover sulfur values from spent sulfuric acid.

The industrial furnace definition in 260.10 also provides criteria and procedures for adding devices to the list. A device may be defined as an industrial furnace if it meets one or more of the following criteria: (1) The device is designed and used primarily to recover material products; (2) the device is used to burn or reduce raw materials to make material products; (3) the device is used to burn or reduce secondary materials as effective substitutes for raw materials in processes that use raw materials as principal feedstocks; or (4) the device is used to burn or reduce secondary materials as ingredients in industrial processes to manufacture material products.

As explained below, the basis for designating HAFs as industrial furnaces under § 260.10 is that HAFs are integral components of a manufacturing process, they recover materials and energy, and they meet two of the criteria (1 and 4) described above for classifying a device as an industrial furnace.

1. Current Practices

Information available to EPA indicates that at least 3 companies in the United States operate at least 30 devices that may be halogen acid furnaces. These devices typically process chlorinated or brominated secondary materials with 20 to 70 percent halogen content (by weight) to produce an acid product, either hydrogen chloride (HCl) or hydrogen bromide (HBr), both of which have a halogen content that ranges from 3 to

[2] This is because nonmetal toxic constituents will not be present in the waste at significant levels (i.e., less than 500 ppm) and metal emissions will be adequately controlled under today's rule by the air pollution control system irrespective of where the waste is fed into the kiln system.

[3] This definition of industrial furnace is the revised definition as noticed on April 27, 1990 (55 FR 17888). The previous definition read "an enclosed device using controlled flame combustion to recover materials or energy as an integral component of a manufacturing process." Public comments on the proposal are discussed in the Comment Response Document for the BIF Regulations. EPA revised the definition to include nonflame devices (i.e., by referring to thermal treatment) because controlled-flame devices and nonflame devices can have the same emissions and pose the same hazard to human health and the environment.

greater than 25 percent (by weight). These secondary materials typically have as-fired heating values of approximately 9,000 Btu/lb and are typically produced on site.

Some of the HAFs currently in use are modified firetube boilers that generate and export steam. These HAFs meet the definition of a boiler under § 260.10, and, thus, will be regulated as boilers. The remaining HAFs, although modified firetube boilers, do not generate steam and thus do not meet EPA's definition of a boiler. Today's rule classifies these nonboiler HAFs as industrial furnaces. For the remainder of this discussion, the term "HAF" refers to these nonboiler HAFs.

2. Designation of HAFs as Industrial Furnaces

a. Dow's Petition. On March 31, 1986, the Dow Chemical Company (DOW) filed a rulemaking petition with EPA in accordance with the provisions of 40 CFR 260.20, requesting that HAFs at Dow Chemical be designated as industrial furnaces. EPA proposed to grant this petition in the May 6, 1987 proposal. Today's rule includes HAFs in the definition of an industrial furnace under § 260.10. Further background discussion on DOW's petition is contained in the May 6, 1987 proposed rule.

b. May 1987 and April 1990 Proposed Rules. EPA proposed to designate HAFs as industrial furnaces for the reasons discussed in the May 6, 1987 proposed rule. To ensure that a particular device was an industrial furnace involved in *bona fide* production of acid [4] as an integral component of a manufacturing process, and was not an incinerator equipped with hologen emissions removal devices, the 1987 proposed HAF definition required that: (1) The furnace by located on site at a chemical production facility; (2) the waste fed to the device be halogenated; and (3) the acid product from the device contain at least 6 percent halogen acid.

Based on comments received on the 1987 proposal and on further consideration by the Agency, EPA proposed revisions to the HAF definition in the April 1990 notice. These revisions were proposed for two reasons: (1) To better clarify the differences between HAFs and incinerators equipped with wet scrubbers to control halogen acid emissions, and (2) to better reflect industry practice.

To ensure that a particular device is an integral component of a chemical manufacturing process, the April 1990 proposal included requirements that at least 50 percent of the acid product be used on site and that any off-site waste fed to the HAF be generated by a SIC 281 (inorganic chemicals) or SIC 286 (organic chemicals) process. To ensure that the waste is burned as a *bona fide* ingredient to produce the halogen acid product, the April 1990 proposal also required that each waste fed to the HAF have an "as-generated" halogen content of at least 20 percent. In addition, to better reflect industry practice, the 1990 proposal required that the acid product have a halogen acid content of 3 percent rather than 6 percent, an amount that still clearly distinguished the HAF acid product from incinerator scrubber water, which has an acid content of well below 1 percent. Finally, EPA proposed in April 1990 to list hazardous waste fed to a HAF as inherently waste-like to ensure that halogenated waste fed to a HAF (and the HAF itself) would be subject to regulation. This would preclude a claim that the secondary materials were used as ingredients to make a product, and, thus, not a solid waste under § 261.2(e)(1)(i).

c. Summary of Public Comments. Commenters on the 1987 and 1990 proposed rules objected to the requirements that 50 percent of the acid product be used on site and that any off-site waste feed be limited to SIC 281 or 286 processes. The commenters argued that minimum specifications on the halogen content of the feed and/or the acid content of the HAF product are sufficient to distinguish *bona fide* HAF operations from incinerator operations, and that the requirement that a substantial portion of the product be used on site serves only to limit the legitimate treatment of halogenated wastes and the sale of *bona fide* HAF products without being necessary to protect human health and the environment.

After consideration of these commenters' concerns, the Agency believes that both the proposed off-site restriction for waste fed to HAFs and the proposed on-site acid product use restriction are indeed unnecessary to ensure that HAFs are integral components of manufacturing processes. The Agency agrees with the commenters that the requirements specifying the minimum halogen content of the waste feed and the minimum halogen acid concentration of the HAF product are sufficient to ensure that HAFs are integral components of a manufacturing process (i.e., the process of halogen acid production). EPA is not adopting these proposed conditions given that air emissions from HAFs will be regulated under today's rule, that these proposed conditions were directed at how to classify these devices rather than how to ensure their safe operation, and that HAF operations (as properly controlled) are environmentally advantageous in that they utilize acid values rather than dispose them and therefore should not needlessly be discouraged. Today's rule, therefore, does not restrict the use of HAF waste feeds generated off site or require that any percentage of the acid product be used on site.

In today's rule, the Agency considers a *bona fide* HAF operation as one in which a secondary material with a minimum as-generated halogen content of 20 percent by weight is processed into an acid product with a minimum halogen content of 3 percent by weight. The acid product must be used in a manufacturing process either on site or off site. The Agency maintains that this approach will allow the legitimate processing of highly halogenated secondary materials into usable products but will still clearly distinguis HAF product acid from incinerator halogen acid scrubber water.

Upon review of other comments submitted on the 1987 and 1990 proposed rules, the Agency has identified several issues pertaining to HAFs that require clarification in the regulations. Specifically, these issues concern: (1) The regulation of chlorine emissions from HAFs, (2) the operation of HAFs under the special operating requirements (SOR) exemption for boilers, and (3) the designation of hazardous waste fed to HAFs as inherently waste-like material.

One commenter to the 1987 proposed rule requested that the Agency clarify its position on limiting inorganic halide salts in feedstocks to boilers and industrial furnaces. The Agency has established limits on emissions of HCl and Cl_2 from industrial furnaces, and a HAF operator, like any other industrial furnace operator, must comply with these HCl and Cl_2 emission standards. To demonstrate compliance under the Tier I feed rate screening limits, a HAF operator must include inorganic chlorine as part of the total chlorine fed to the device. The Agency believes that this requirement is justified because recen testing indicates that even thermally stable compounds such as NaCl are

[4] The Agency's concern is that devices capturing some HCl in scrubber effluent not automatically be classified as HAFs if they find a way to utilize the scrubber effluent. The HCl content of the effluent from wet scrubbers used to control HCl emissions from the incineration of chlorine-bearing waste is normally on the order of 1 percent of less. EPA does not consider such low HCl content scrubber water a *bona fide* product for purposes of designation as an industrial furnace even if the scrubber water is beneficially used in a manner that specifically relates to its HCl content.

converted with high efficiency to HCl under laboratory conditions that simulate incineration.[6]

Another commenter to the 1987 proposal stated that HAFs are unjustly excluded from the automatic waiver of a trial burn to demonstrate 99.99% destruction and removal efficiency (DRE) when operated under the special operating requirements (SORs). The Agency acknowledges the commenter's concern, but notes that all industrial furnaces, including HAFs, are ineligible for the automatic DRE trial burn waiver. The Agency stated in the preamble to the 1987 proposal that modified boilers that produce and export steam (and thus meet EPA's definition of boiler in § 260.10) would be regulated as boilers. In such a case, the unit may be eligible for the automatic waiver of the DRE trial burn, which applies only to boilers. Any halogen acid furnace that is a modified fire-tube boiler not meeting the definition of a boiler in § 260.10, however, would not be eligible for the automatic waiver. The Agency's reasons for applying the automatic DRE trial burn waiver only to boilers are discussed further in Section II.C.2.d of this preamble.

Several commenters expressed concern that the April 27, 1990 proposal required a minimum heating value of 5,000 Btu/lb for secondary materials fed to HAFs. Today's final rule does not require a minimum heating value on secondary materials fed to HAFs. Although the Agency understands that most wastes burned in HAFs have a heating value greater than 5,000 Btu/lb and, so, that HAFs are engaged in energy recovery as well as materials recovery, not all wastes meeting the minimum halogen limit also have a heating value normally associated with energy recovery. The Agency believes that HAFs need not be required to recover both material and energy values from every hazardous waste fed to the device to meet the definition of an industrial furnace, and that the regulations adopted today for HAFs ensure that they will be operated in a protective manner even if energy values are not recovered.

Commenter's misconceptions regarding a minimum heating value for secondary materials may have arisen from the Agency's proposal pursuant to § 261.2(d)(2) to list hazardous waste fed to HAFs as inherently waste-like material. In today's rule, the Agency is listing as inherently waste-like any secondary material fed to HAFs that is identified or listed as a hazardous waste under 40 CFR part 261, subparts C and D. Without such materials being designated as inherently waste-like, HAFs burning hazardous wastes solely as ingredients (i.e., wastes that have low heating value and therefore, are not burned partially for energy recovery) to produce an acid product might not be regulated because the material they are burning might not be a solid waste pursuant to § 261.2(e)(1)(i). However, HAFs that burn hazardous wastes with high heating values (i.e., greater than 5,000 Btu/lb), would be subject to today's rule even without listing them as inherently waste-like because these wastes are considered under § 261.2(e)(2)(ii) to be burned at least partially for energy recovery. For reasons discussed in the April 27, 1990 proposed rule (55 FR 17892), the Agency believes that such an inconsistent result would not provide adequate protection of human health and the environment (the wastes burned by HAFs are some of the most toxic generated and regulation of emissions from burning these wastes certainly is needed to protect human health and the environment). Moreover, there are significant elements of treatment associated with burning in HAFs: toxic organic compounds are destroyed rather than recovered, and the burning if conducted improperly could become part of the waste disposal problem. Because the materials burned in HAFs meet the criteria of § 261.2(d) for inherently waste-likely materials, EPA today is adding to the list of inherently waste-like materials under § 261.(d)(2) secondary materials fed to HAFs that are listed or identified as hazardous waste under subparts C or D of part 261. While HAFs will not be precluded from burning secondary materials with low heating values, today's listing will prevent the HAFs that burn this material and the material itself from being unregulated. As a result, in all cases, hazardous waste fed to HAFs, and the HAFs themselves, will be subject to hazardous waste regulations under today's final rule.

d. Basis for Designating HAFs as Industrial Furnaces. EPA has defined an industrial furnace in § 260.10 as any of the specifically-designated enclosed devices that are integral components of a manufacturing process and that use thermal treatment to accomplish recovery of materials or energy. To date, 11 types of devices have been designated as industrial furnaces. The industrial furnace definition also provides criteria for adding devices to the list. As discussed above, these criteria include: (1) The design and use of the device primarily to accomplish recovery of material products; (2) the use of the device to burn or reduce raw materials to make a material product; (3) the use of the device to burn or reduce secondary materials as effective substitutes for raw materials in processes using raw materials as principal feedstocks; and (4) the use of the device to burn or reduce secondary materials as ingredients in an industrial process to make a material product. As explained below, HAFs, meet the definition of an industrial furnace as well as two of the above criteria, (1) and (4), for designating additional devices as industrial furnaces.

HAFs are Integral Components of a Manufacturing Process. HAFs are commonly located on-site at large scale chemical manufacturing processes that reclaim primarily secondary materials generated on-site and that typically use the halogen acid product on-site. In these cases, the Agency believes the device should clearly be considered an integral component of the manufacturing process and, thus, eligible for designation as an industrial furnace. The situation is less clear when the device receives halogen-bearing secondary materials from off-site or if the halogen acid product is sent off-site. In these situations, the Agency believes, nonetheless, that the device should be considered an integral component of a manufacturing process and, thus, eligible for consideration as an industrial furnace provided that the device is located on the site of a manufacturing process and that the halogen acid product is used by a manufacturing process.

HAFs Recover Materials and Energy. EPA believes that HAFs recover materials and energy to produce a *bona fide* product. Production of halogen acid (a 3 to 20 percent halogen acid solution) from the combustion of chlorine-bearing secondary materials constitutes materials recovery in the context of the designation of HAFs as industrial furnaces. HAFs can also be considered to burn secondary material as ingredients in an industrial process to make a material product (i.e., the product halogen acid). As discussed above, chlorine-bearing secondary materials are burned to produce the halogen acid product for use in a manufacturing operation.

HAFs also recover energy. Most halogen-bearing secondary materials reclaimed in HAFs are burned partially for energy recovery because substantial, usable heat energy is released by the materials during combustion. The

[6] U.S. EPA, Laboratory Method to Estimate Hydrogen Chloride Emission Potential Before Incineration of a Waste, February 1990.

materials typically have an as-fired heating value of approximately 9,000 Btu/lb, and the heat released results in thermal degradation of chlorinated organic compounds to form HCl. Although under definitions in 260.10, energy recovery in a boiler is characterized by the recovery and export of energy, energy recovery in an industrial furnace need not involve any export of energy. Rather, energy recovery in an industrial furnace is based on the burning of materials with substantial heating values (greater than 5,000 Btu/lb) in a manner that results in the release of substantial usable heat energy. See 50 FR 49171–49174 (November 29, 1985).[6]

HAFs Meet Industrial Furnace Criteria. The Agency beleives that HAFs meet two of the above criteria (i.e., criteria (1) and (4)) for designating devices as industrial furnaces. EPA believes that restrictions on the halogen content of waste streams fed to HAFs and on the halogen content of the acid product ensure that the HAF is: (a) Designed primarily to recover halogen acid (and so is not engaged in incineration); and (b) used to burn secondary materials as ingredients in the process of halogen acid production to produce a material product (i.e., the product halogen acid).

Addition of HAFs to List of Industrial Furnaces. EPA believes that HAFs are integral components of a manufacturing process and that they are designed and operated to recover materials and energy. For these reasons EPA is today adding to the list of devices designated as industrial furnaces under § 260.10 HAFs defined as furnaces that: (1) Are located at the site of a manufacturing process; and (2) process hazardous wastes with a minimum as-generated halogen content of 20 percent by weight to produce an acid product with a minimum halogen content of 3 percent by weight and where the acid product is used in a manufacturing process.

e. Interim Status for HAFs. HAFs that are in existence on the effective date of today's rule are eligible for interim status like other boilers and industrial furnaces burning for energy or material recovery. Although certain HAFs may technically have met the amended definition of incinerator, EPA believes that there was legitimate confusion as to such unit's operating status. These devices would not have been incinerators under the original 1980 definition of incinerator because their primary purpose was not destruction of waste. When EPA amended that definition in 1985 to adopt a definition based on the unit's design rather than its operating purpose, the Agency did not intend to regulate HAFs as incinerators and noted that the regulatory change was not intended to (or expected to) affect the number and identity of regulated incinerator units. See 50 FR 625 (Jan. 4, 1985). Moreover, given that many HAFs met the definition of boiler, it would have been anomalous and unintended for some HAFs to be subject to full regulation and others to be unregulated (until the present rules were adopted). Given these circumstances, the Agency is finding pursuant to § 270.10(e)(2) that there was substantial confusion as to which HAF owners and operators were required to submit a part A application and that this confusion is attributable to ambiguities in the subtitle C rules. Accordingly, such owners and operators may submit part A applications by the effective date of today's regulation.

We note that this policy on interim status eligibility date does not apply to other devices that are currently subject to regulation as an incinerator but claim to be an industrial furnace subject to the BIF rule and its interim status eligibility date. An example is an aggregate kiln that currently burns hazardous waste for the purpose of treatment (destruction) and, so, is subject to the incinerator standards of subpart O, parts 264 and 265. There is no ambiguity about the regulatory status of such a device given that the Agency clearly intended for such burning to be subject to the incinerator standards, and the Agency's rules have always so stated. Thus, the date for interim status eligibility for such facilities is the 1981 date for incinerator interim status.

D. Smelting, Melting, and Refining Furnaces Burning Hazardous Waste to Recover Metals

In the October 1989 supplement to the proposed rule, EPA solicited further comment on an appropriate regulatory regime for smelting furnaces burning hazardous waste for the exclusive purpose of material recovery. See 54 FR 43733. This issue was closely connected with the question of jurisdictional limitations on the Agency's authority to regulate industrial furnaces burning secondary materials for material recovery, discussed under the rubric of indigenous wastes. *Id.* at 43731–32. The Agency noted generally that where it did not perceive jurisdictional limitations on its authority, it regarded regulation of organic emissions from smelting furnaces as unnecessary given the normal absence of organics in the material fed to the unit. We also indicated concern at the prospect of regulating emissions of metals that were not attributable to the processing of hazardous waste, and accordingly solicited comment as to a means of determining when burning of hazardous waste resulted in emissions in excess of those from processing other materials in the device. *Id.* at 43733. With respect to a test for determining when wastes are indigenous, the Agency reproposed a fairly broad test that would have had the effect of excluding many wastes and devices from the Agency's jurisdiction, but would have distinguished between wastes being burned for the purpose of conventional treatment, and for the purpose of material recovery treatment.

These proposals proved extremely controversial. Perhaps more importantly, after the proposal was issued, the question of indigenous waste was the partial subject of the District of Columbia Circuit Court of Appeals' decision *API* v. *EPA*, 906 F. 2d 726 (D.C. Cir. 1990). In that decision, the court stated that the Agency had been overly restrictive in interpreting the jurisdictional limitations imposed by the statutory definition of solid waste based upon the court's earlier opinion in *American Mining Congress* v. *EPA*, 824 F. 2d 1177 (D.C. Cir. 1987). That earlier opinion, the court held, is limited to situations involving continuous recycling processes that are not part of the waste disposal problem, and certainly does not mandate the type of indigenous principle that the Agency discussed in the 1989 notice. 906 F. 2d at 740–41. The court accordingly remanded and directed the Agency to rethink whether any type of indigenous principle is warranted given the court's clarification of its earlier opinion.[7] *Id.* at 741.

The court's opinion, as well as the many comments on this issue, raise complex issues that EPA has not yet resolved. (In this regard, the Agency notes that the mandate in section 3004(q) to regulate facilities burning hazardous waste for energy recovery as may be necessary to protect human health and the environment does not

[6] We note as discussed previously in the text that, although all hazardous wastes fed to a HAF must have an as-generated halogen content of at least 20%, all such wastes need not have a heating value of 5,000 Btu/lb.

[7] Technically, the court remanded the Agency's decision not to formally adopt a treatment standard under the land disposal restrictions program for the residue from processing a waste the Agency had indicated would be indigenous to a particular type of metal recovery furnace. *Id.* at 740. EPA has since indicated, in motions filed with the court, that it views the interim treatment standard based on stabilization as applying in all cases where the residue remains a hazardous waste.

apply to devices burning for the purpose of material recovery, H. Rep. No. 198, 98th Cong., 1st Sess. 40, and so the court-ordered December 31, 1990 issuance date does not apply.) In particular, the Agency is presently studying the question of jurisdiction as part of a comprehensive effort to determine if the Agency's rules on recycling should be amended (either as a regulatory matter or as part of RCRA reauthorization). In the interim, however, the Agency does not believe it prudent to apply regulations to a whole potential class of devices and wastes that the Agency has not fully evaluated (since these situations would have been excluded from regulation under the proposal). See provision for conditional deferral of smelting, melting, and refining furnaces under § 266.100(c). In addition, because EPA has placed most of its efforts into issuing the mandated portion of these regulations as soon as possible, the Agency has not resolved the questions of how to regulate raised in the 1989 notice even for the class of smelting furnaces where authority would have existed under the proposed view of indigenous waste. The issue of whether material recovery is a form of "treatment" is also presently submitted for decision to a panel of the DC Circuit in *Shell Oil* v. *EPA* (No. 80-1532), and the Agency believes it prudent to await the court's ruling.

Another reason for deferring regulation of these devices is that the Agency wishes to study further whether regulation under the Clean Air Act may be more appropriate than RCRA regulation. Smelting, melting, and refining furnaces have been traditional subjects of Clean Air Act regulation, and with the advent of amended section 112 of the Clean Air Act Amendments of 1990, technology-based controls on toxic air emissions are likely to apply to these devices. Given that in many instances the principal risks potentially posed by air emissions from these devices would come from the nonhazardous waste portion of feed (see 54 FR at 43733), and that Clean Air Act regulation may result in control of individual toxics, the Agency believes that further study of the most appropriate means of regulation is warranted. (The Agency specifically requests information on other devices that may burn hazardous waste solely for metal recovery. EPA will use such information to consider whether the deferral for smelting, melting, and refining furnaces should be broadened provided that the principles stated here apply to the other devices as well.)

At the same time, EPA is concerned that this deferral not become a license for sham recycling activities, or for operations motivated by conventional treatment objectives rather than recovery purposes. Accordingly, the Agency has crafted this deferral narrowly. First, only smelting, melting, and refining furnaces (as used in the § 260.10 definition of "industrial furnace") burning hazardous waste solely to recover metals would be eligible for this deferral. In the unlikely event that one of these devices would be used to recover organics or nonmetal inorganics, EPA believes that substantial amounts of organics would be destroyed showing that the purpose of the activity was either conventional treatment or energy recovery. (The Agency notes specifically that it intends to include as a smelting, melting, or recovery furnace the types of high temperature metal recovery devices used as the basis for the land disposal prohibition treatment standard for waste KO61, and other similar devices.)

Second, sham recovery operations would be viewed as conventional treatment operations and would require a permit to control emissions. Although it is difficult to quantify when operations are sham, two fundamental notions are that any waste involved must contain economically viable amounts of metals to recover (the best objective measure would be the same or greater levels of metal as in normal nonhazardous feed stocks), and that the person recovering the metal be in the business of producing metals for public sale (whether to an ultimate user or for further processing or manufacture). See also 53 FR at 522 (Jan. 8, 1988). The limitations on Btu level and levels on toxic organics discussed below are further efforts to ensure that only *bona fide* metal recovery activities be deferred from emissions regulation at this time.

Third, today's regulations are deferred only when these devices burn (process) hazardous waste exclusively for metal recovery and not partially for destruction or energy recovery as well. To implement this policy, today's rule provides that a waste with a heating value of 5,000 Btu/lb or more (either as-generated or as-fired) is burned (at least partially) as a fuel. The heating value limit is based on the Agency's long standing sham recycling policy (48 FR 11157 (March 16, 1983)) that wastes with a heating value of 5,000 Btu/lb or more are considered to be fuels. See also 50 FR at 49171-173 (Nov. 29, 1985) (partial burning for energy recovery is covered by section 3004(q) and Btu-rich wastes are burned at least partially for that purpose).

Finally, only wastes that contain less than 500 ppm total toxic organic constituents listed in appendix VIII, part 261, will be considered to recover metals. EPA believes that it is important to have an objective measure to determine when burning is for metal recovery, and that a 500 ppm level is within the zone of reasonable values that the Agency could select for this purpose. As noted in the supplemental proposal in a closely related context, a 500 ppm level for total toxic organic constituents reasonably distinguishes wastes destined for material recovery from wastes burned for nonrecovery purposes because: (1) It represents a concentration of material far exceeding trace levels (generally measured in single digit parts per million (ppm) or tens of ppm); (2) this level of hazardous constituents could create an incremental health risk if burned inefficiently, or with inadequate emission controls; and (3) this level is high enough to indicate that an objective of burning is waste treatment—destroying nontrace level organics—as opposed to material recovery. (The Agency's earlier proposal dealt with the question of when a waste might be considered to be indigenous to an industrial furnace burning for material recovery, and considered the issue of whether these devices were burning for a material recovery purpose, and proposed the 500 ppm level adopted in this rule as a means of objectively ascertaining that purpose. 54 FR 43731.)

In order to be informed of persons claiming this deferral, and in order to decrease potential abuse of the deferral, the Agency is requiring that all persons notify the Agency if they assert that their smelting, melting, or refining furnaces are deferred from regulation when burning hazardous wastes because the purpose of the activity is metal recovery. In addition, all such persons have to keep records documenting the basis for the claim (i.e., that the wastes meet the Btu and total toxic organic constituent thresholds, the wastes contain recoverable levels of metals, and the device is indeed engaged in producing a metal product for public use). Sampling and analysis procedures specified in SW-846 must be used to make these determinations. These conditions are consistent with existing § 261.2(f) which requires that all persons claiming to be exempt or excluded from regulation because of a recycling activity to have the burden of proof demonstrating that they are entitled to the exemption or exclusion. In addition, the Agency notes that a consistent recommendation of state and regional officials at the Agency's recent

public meetings on the regulatory definition of solid waste was to provide notification and recordkeeping so that regulatory officials know that a person is operating in an exempt status in order to verify their claim. The Agency is acting on these recommendations in this rule.

The Agency also notes that the delisted from rule could apply to the residues from metal recovery if metals are being recovered from listed hazardous wastes. EPA believes this to be implicit from the remand in *API* v. *EPA* discussed earlier. The Court indicated that the Agency's explanation for not establishing a treatment standard for the slag residue from processing waste K061 was erroneous, and remanded the case to the Agency to reconsider its explanation. 906 F. 2d at 740–42. Implicit (or perhaps explicit) in this holding is the fact that the Court viewed the residue as a hazardous waste still coming under the terms of the K061 land disposal prohibition (the Court referred repeatedly to "k061 slag" and mentioned the derived from rule as the basis for the slag being a hazardous waste, *id.* at 742), at least until the Agency provides a different explanation as to why the slag might not be a hazardous waste. Thus, because EPA has not yet provided a new explanation regarding the indigenous principle (as explained above), at the present time, EPA views residues from metal recovery of listed hazardous wastes are considered to be derived from treatment of hazardous waste and thus hazardous themselves unless some other principle (such as the Bevill amendment, or in some cases, status under an authorized state program) operates to achieve a different result.

Finally, the Agency notes that the deferral applies only to the furnace itself. The hazardous waste is subject to transportation and storage controls prior to introduction into the furnace. See § 266.100(c).

The deferral of regulation of emission standards does not apply to cement kilns, aggregate kilns, and HAFs that burn hazardous waste for purposes other than energy recovery. The Agency has studied these devices carefully and determined that the regulatory standards in today's rule are appropriate for these devices when they burn hazardous wastes for a purpose other than energy recovery. Consequently, the Agency sees no reason to defer emission standards for these types of units.

Part Three: Standards for Boilers and Industrial Furnaces Burning Hazardous Waste

Today's rule establishes controls for emissions of particulate matter, toxic organic compounds, toxic metals, and hydrogen chloride and free chlorine. Those controls are discussed below.

EPA notes that in some cases, today's rule potentially requires limitations on the content of nonwaste input to a boiler or industrial furnace that is burning hazardous waste. For example, compliance with the limits for metals, PM, and HCl/Cl_2 requires controls not only on the hazardous waste input but also potentially controls on other fuels and industrial furnace feedstocks. EPA has adopted this approach not to regulate the nonwaste input to these devices, but rather to ensure that burning hazardous waste in the device does not pose unacceptable risks to human health and the environment. These limitations function as operating conditions on the unit to ensure compliance with the hazardous waste emission standards. For example, unless limitations are established on nonwaste parameters, owners and operators could initially demonstrate compliance by burning clean raw materials along with hazardous waste, and then change their raw material input in a manner that causes emissions to increase significantly. In addition, the approach adopted today allows owners and operators maximum flexibility in demonstrating compliance with the emission standards by allowing adjustments to nonwaste input as a means of achieving compliance. The alternative of demonstrating compliance only through alteration of hazardous waste feed is not only less flexible, but would create enormous administrative difficulties (and add significant expense) for both regulated entities and Agency permit writers. (For example, stack monitoring might no longer be a feasible means of demonstrating compliance because one could not ascertain what portions of the emissions are attributable to burning hazardous waste.) For these reasons, we think the approach adopted today is the most sensible means of demonstrating compliance.

I. Emission Standard for Particulate Matter

Boilers and industrial furnaces that burn hazardous waste may emit substantial quantities of particulate matter (PM). (Emissions of particulate matter can have adverse effects on human health and the environment even if toxics are not adsorbed on the particulate matter. However, the Agency's chief concern in this rule is control of adsorbed toxics.) Because toxic metals and organic compounds may adsorb onto smaller size PM that can be entrained in the lungs, unregulated particulate emissions could pose a significant threat to human health. Although there may be limitations to the health-based standards, the metals and organic emissions standards promulgated in today's rule provide protection of public health based on current knowledge about toxic pollutants and available risk assessment methodologies. The PM control standard promulgated today will provide additional protection by ensuring that adsorbed metal and organics are removed from stack gas with the PM.

In today's rule, EPA is establishing a standard for boilers and industrial furnaces which limits particulate emissions to 0.08 gr/dscf (grains/dry standard cubic foot) corrected to 7% oxygen. This limit was chosen because it provides a common measure of protection from particulate emissions from boilers, industrial furnaces, and incinerators burning hazardous waste. This standard may be redundant for: (1) A new, large capacity facility assigned to a specific source category which is governed by a New Source Performance Standard (NSPS); (2) a waste burning facility located in a non-attainment area subject to State Implementation Plan (SIP) standards; (3) a facility with standards for metals and HCl emissions that result in particulate emissions below 0.08 gr/dscf; and (4) a facility subject to a stricter standard based on Best Available Control Technology (BACT) imposed pursuant to the Clean Air Act's Prevention of Significant Deterioration (PSD) program. In such cases, the device would be subject to the more stringent particulate matter standard, not the RCRA 0.08 gr/dscf standard, and the additional burden of demonstrating compliance with the applicable particulate matter standard concurrently with the applicable emissions standards in today's rule for organic compounds, metals, and acid gases will not be substantial. We believe, however, that there are many situations where a BIF is either not currently subject to a particulate matter standard, or the standards is higher than the RCRA 0.08 gr/dscf standard.

The Agency has considered lowering the particulate standard to take advantage of technology advances made in air pollution control and to be consistent with the proposed standard of 0.015 gr/dscf for municipal waste incinerators. (We note that the proposed

standard for MWIs also served as a surrogate to control emissions of toxic metals. 54 FR 52219. In contrast, today's rule has separate emission standards for each toxic metal.) We are not prepared to do that at this time, however, because we have not conducted the studies to establish an appropriate PM standard that represents best demonstrated technology (BDT). Although many boilers and industrial furnaces may be able to achieve a PM standard lower than 0.08 gr/dscf (in fact, the PM NSPS for specific types of BIFs is lower than 0.08 gr/dscf), we are not certain that all BIFs can meet a standard of 0.015 gr/dscf. This is because some industrial furnaces have a very high (uncontrolled) particulate loading due to entrained particles of raw materials. Examples are cement kilns and light-weight aggregate kilns. Hence, a single PM standard of 0.015 gr/dscf cannot now be promulgated.

The Agency firmly believes that the 0.08 gr/dscf PM standard, when used as a supplement to the risk-based metal controls provided by today's rule, provides protection of human health and the environment. Given that hazardous waste burned in BIFs could contain virtually unlimited concentrations of toxic metals, the Agency believes that risk-based standards are needed to supplement the PM standard for hazardous waste burning irrespective of whether the PM standard represents best-demonstrated technology. Even under a PM standard as low as 0.015 gr/dscf, a large fraction of the PM emitted from a hazardous waste combustion device could be comprised of toxic metals that could result in substantial health risk.

Nonetheless, the Agency will consider if additional PM controls are warranted to control emissions of toxic metals. In that evaluation, the Agency will consider whether the additional controls, if any, should be promulgated in the future under the new Clean Air Act. See discussion in section III.A of part One of this preamble. Finally, we note that permit writers also could impose a lower PM standard where facts warrant, pursuant to the omnibus permit authority in section 3005(c)(3).[8]

[8] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

A. Basis for Final Rule

Particulate matter (PM) is controlled from combustion sources to limit emissions of toxic metals and PM per se (i.e., because of human health and ecological impacts associated with PM that does not contain toxic metals). In the May 6, 1987 proposed rule, EPA suggested that a PM emission standard was not needed for boilers and industrial furnaces because the risk-based metals controls provide adequate control of metals emissions. The Agency reasoned that a standard intended to control PM per se would be more appropriately applied to these sources under authority of the Clean Air Act rather than RCRA.

EPA received numerous comments on the May 6, 1987 proposed rule suggesting the need for a particulate standard for boilers and furnaces burning hazardous waste. Many commenters believed that, notwithstanding the risk-based metals controls, unregulated PM emissions with adsorbed toxic metals and organic compounds could pose a significant heath risk. In addition, three commenters suggested that EPA address the issue of particulate control during soot-blowing cycles when levels of particulate emissions are 4 to 7.2 times the level of emissions under normal operation. The Agency carefully considered these comments and subsequently determined that the risk-based metals standards should be supplemented with a PM standard to provide a common measure of control for metals. This decision was based in part on a consideration of commenters' concerns about the limitations of risk-based metals standards. See 54 FR 43720–21. Hence, the Agency subsequently proposed a particulate emissions standard of 0.08 gr/dscf (grains/dry standard cubic foot) corrected to 7% oxygen in the October 26, 1989 supplement to the proposed rule. The standard would be applicable to all boilers and industrial furnaces not governed by a more stringent (NSPS or SIP) standard.

1. Alternatives Considered. In selecting the standard for boilers and industrial furnaces, the Agency considered the following alternatives: (1) Apply the current NSPS standard for steam generators burning waste; (2) apply the applicable NSPS; or (3) apply the existing hazardous waste incinerator standard. These options are discussed in the 1989 supplemental notice (54 FR 43720).

Many commenters supported the proposed particulate standard of 0.08 gr/dscf. Several commenters, however, opposed this limit, arguing against imposing a standard appropriate for incinerators on boilers and furnaces. Still other commenters suggested that the 0.08 gr/dscf limit did not go far enough in protecting the public health. These respondents argued for a lower limit comparable to that the Agency proposed for municipal waste incinerators.

The Agency continues to believe that the 0.08 gr/dscf PM standard, when used as a supplement to the risk-based metal controls provided by today's rule, provides substantial protection of human health and the environment.

2. Basis for Standard. Today's rule promulgates the proposed particulate emission limit of 0.08 gr/dscf because, as a supplement to the risk-based metals controls, it provides a common measure of protection from particulate emissions from boilers, industrial furnaces, and incinerators burning hazardous waste. In addition to providing control of particulate metals and adsorbed organic compounds, the 0.08 gr/dscf standard should also ensure that the Clean Air Act's National Ambient Air Quality Standard (NAAQS) for particulates is achieved in most cases. An analysis of existing sites shows that emissions of particulates at 0.08 gr/dscf could result in MEI levels of up to 30% of the maximum daily PM_{10} (particulate matter under 10 microns) NAAQS (150 mg/m^3). If background particulate levels at a site are high (i.e., the site is in a attainment area), particulate emissions from the device should also be addressed as part of the State Implementation Plan (SIP) (as they are now for hazardous waste incinerators in particulate non-attainment areas). Therefore, although the 0.08 gr/dscf standard may not ensure compliance with the NAAQS in every situation, this issue will be addressed by the SIP since the facility would be, by definition, in a non-attainment area for particulate emissions.

B. Interim Status Compliance Procedures

Facilities operating under interim status must comply with the PM emission standard. By the effective date of the rule, owners/operators must submit a certification of precompliance that documents their use of engineering judgment to show that, considering feed rates of ash from all feed streams, partitioning of ash to bottom ash or product, and the PM removal efficiency of the air pollution control system (APCS), PM emissions are not likely to exceed the 0.08 gr/dscf limit. Owners and operators must also establish and provide with the precompliance

certification limits on feed rates of ash in ... streams consistent with those used ... determine that emissions of particulate matter are not likely to exceed the standard. The facility may not exceed these feed rates during interim status (unless amended by a recertification of precompliance). Further, within 18 months (unless extended) of promulgation, owners/operators must conduct emissions testing and certify that emissions do not exceed the limit. See section VII in part F of this preamble for more information.

C. Implementation

Owners/operators must demonstrate compliance with the PM standard using Methods 1–5 of 40 CFR part 60, appendix A. The compliance test for certification during interim status and the trial burn for facilities applying for a RCRA operating permit must be representative of worst-case operating conditions with respect to particulate emissions that will occur during operation of the facility (i.e., because limits on operating conditions applicable for the remainder of interim status will be based on operating conditions during the compliance test).

The PM standard is implemented by limiting the feed rate of ash from all feed streams (i.e., hazardous waste, other fuels, raw materials) and by limits on APCS-specific operating parameters. The limits are established during interim status based on the compliance test, and in the operating permit based on the trial burn.

The final rule gives special consideration to cement and light-weight aggregate kilns because their raw material feed streams contain the vast majority of the ash input and resulting PM. Therefore, owners/operators of cement kilns and light-weight aggregate kilns are not required to monitor ash feed rates of feed streams. We emphasize, however, that cement kilns and lightweight aggregate kilns, like all BIFs, are still required to demonstrate conformance with the PM emission standard during a compliance test (under interim status) or trail burn (under a part B application). The Agency believes that the capacity limit on the facility (expressed in appropriate units such as raw material feed rate) and the limits on the air pollution control system (APCS) operating parameters applicable during both interim status and under a subsequent operating permit will ensure that cement and light-weight kilns continuously comply with the PM standard.[9]

II. Controls for Emissions of Toxic Organic Compounds

Burning hazardous waste that contains toxic organic compounds (i.e., organic compounds listed in appendix VIII of 40 CFR part 261) under poor combustion conditions can result in substantial emissions of the toxic compounds originally present in the waste as well as other compounds, due to partial but incomplete combustion of the constituents in the waste. The quantity of toxic organic compounds emitted depends on the concentrations of the toxic compounds in the waste, the waste firing rate (i.e., the percentage of total fuel provided by the hazardous waste to the boiler or industrial furnace), and the combustion conditions under which the waste is burned. The risk posed by the emissions depends on the quantity and toxicity of the compounds emitted and on the ambient levels to which persons are exposed. Hypothetical risk assessments show that under poor combustion conditions that achieve only 99 percent or 99.9 percent destruction and removal efficiency (DRE) of organic compounds, risks to the maximum exposed individual (MEI) from unburned carcinogenic organics found in hazardous waste can result in increased lifetime cancer risks of 10^{-4}.[10]

The Agency is controlling the emissions of toxic organic compounds from boilers and industrial furnaces that burn hazardous waste with two performance standards. First, a 99.99 percent destruction and removal efficiency (DRE) standard for principal organic hazardous constituents (POHCs) in waste feeds will ensure that constituents in the waste are not emitted at levels that could pose significant risk in virtually all scenarios of which the Agency is aware.[11] Second, limits on flue gas concentrations of carbon monoxide (CO) and, where specified, hydrocarbons (HC) will ensure that combustion devices operate continuously at high combustion efficiency and emit products of incomplete combustion (PICs) at levels that will not pose adverse effects on public health and the environment. The basis for these standards is discussed below.

A. DRE Standard

As proposed, the Agency is promulgating a 99.9999% DRE standard [12] for those acutely hazardous wastes listed because they contain dioxin [13] (and waste mixed with those wastes), and a 99.99 percent DRE performance standard for all other wastes. This standard is protective, it can be readily achieved by boilers and industrial furnaces, and it will ensure that the Agency's controls are consistent for all combustion devices (boilers, industrial furnaces, and incinerators) that pose similar risks.

Hypothetical risk assessments have shown that a 99.99 percent DRE standard for POHCs is protective of risks posed by emissions of organic constituents in the waste in virtually every scenario of which the Agency is aware.[14] (EPA considers elsewhere in this notice the issue of products of incomplete combustion.) Increased lifetime cancer risks to the maximum exposed individual (MEI) from an incinerator operating at 99.99 percent DRE would generally be 10^{-6} or less. Threshold (i.e., noncarcinogenic) organic compounds also would not be expected to be present in emissions from hazardous waste burned in boilers and industrial furnaces at levels that could pose a health hazard under the 99.99 percent DRE standard.

EPA is aware, however, that the DRE standard does not directly control the mass emission rate (e.g., pounds per hour) of unburned toxic organic constituents in the waste. Although three are hypothetical situations in which risks from POHCs could be significant under a 99.99 percent DRE standard (e.g., boilers or industrial furnaces located in urban areas burning high volumes of waste with high concentrations of highly potent carcinogenic organics), the Agency is not aware that any such situations are

[9] We note, moreover, that some boilers and many industrial furnaces are already subject to a particulate matter (PM) standard under a NSPS, SIP, or PSD program and the applicable PM standard is generally more stringent than the 0.08 gr/dscf standard provided by today's rule. Thus, these devices are already under a regulatory compliance program for a PM standard. We note further that the more stringent PM standard applies.

[10] Engineering-Science. Background Information Document for the Development of Regulations to Control the Burning of Hazardous Waste in Boilers and Industrial Furnaces. Volume III. January 1987 (NTIS # PB 87 173865).

[11] Except that 99.9999% DRE is required for dioxin-listed hazardous waste.

[12] The proposed formula for calculating DRE has been revised in the final rule (see § 268.104(a)) to make it mathematically correct considering use of significant figures.

[13] EPA Hazardous Wastes FO20, FO21, FO22, FO23, FO26, and FO27.

[14] Engineering Science, op. cit.

actually occurring. If, however, during the permit process, it appears that a high-risk scenario may exist, permit officials may use the omnibus permit authority[15] of section 3005(c)(3) of the Resource Conservation and Recovery Act (RCRA) codified at § 270.32(b)(2) to develop permit requirements, as necessary, to protect human health and the environment (e.g., by requiring a 99.9999 percent DRE, by limiting the feed rate of particular toxic compounds, or by setting a mass emissions rate).

1. Selection of POHCs for DRE Testing

In the April 27, 1990 proposed rule to amend the incinerator standards (55 FR 17890), EPA outlined the considerations to be made by applicants and permitting officials in selecting POHCs for DRE trial burns. Given that the DRE implementation procedures for boilers and industrial furnaces (BIFs) are identical to those for incinerators, the discussions in the incinerator proposed rule are pertinent to this rule.

A major factor in selecting a POHC for DRE testing is its incinerability relative to other toxic organic compounds. A number of indices can be used to predict incinerability including heat of combustion, autoignition temperature, thermal stability under excess oxygen conditions, and thermal stability under low oxygen (substoichiometric) conditions. An incinerability ranking based on thermal stability at low oxygen concentrations ($TSLoO_2$) shows promise and is currently seeing widespread use in incinerator permits. A number of commenters responded to EPA's request for comment on the use of the $TSLoO_2$ index for POHC selection. In general, they raised no problems with use of the index. Their main concern appeared to be that EPA choose one index and apply it consistently.

The Agency, however, is not requiring the use of a particular index. Due to the various "failure modes" different organic compounds are susceptible to during the destruction process in a combustion device, and the evolving state of knowledge in this area, the Agency feels that the POHC selection process is technically complex, and that it should involve a number of considerations, rather than simply one incinerability ranking. Thus, EPA instead recommends that permit writers and applicants consider these indices and other relevant factors and use their judgment and applicable guidance on a case-by-case basis to select POHCs for the trial burn.

2. Use of POHC Surrogates

A number of laboratory-scale, pilot-scale, and field-scale tests have been conducted to investigate the use of nontoxic tracer surrogates (e.g., sulfur hexafluoride (SF_6)) rather than POHCs selected from appendix VIII of part 261. Sulfur hexafluoride, in particular, shows promise as a conservative tracer surrogate for compounds which are susceptible to the thermal failure mode (i.e., it is difficult to destroy unless sufficiently high temperatures are reached). It is readily available commercially, and is inexpensive and nontoxic. POHCs that are listed on appendix VIII, especially in situations where spiking is required to increase concentrations in a waste for DRE testing, are often difficult to obtain, are expensive, and are a health hazard to operators. Sampling and analysis techniques for SF_6 are well documented because of its long use as a tracer gas for monitoring ambient air and are more straightforward (simpler) and less expensive than sampling techniques for appendix VIII, part 261, compounds (e.g., VOST and MM5).

Numerous commenters responded to EPA's request for information on an approach for simplifying and standardizing DRE testing. Commenters supported standardization of DRE testing provided the approach is equitable for all boilers, industrial furnaces, and incinerators. Comments were received in support of all three approaches proposed by EPA ("POHC soup," surrogates, and specific waste analysis). Commenters generally supported use of surrogates in lieu of extensive waste analysis for design of DRE tests. Other commenters suggested using a limited number of major waste constituents as POHCs, such as carbon tetrachloride, perchloroethylene, trichloroethylene, and monochlorobenzene, until it can be shown that a universal surrogate, such as sulfur hexafluoride (SF_6), is comparable in demonstrating DRE performance. Sulfur hexafluoride was recommended by some commenters as a good surrogate choice based on the high accuracy of results with the compound and ease of use.

However, since the April 27 proposed rule, data have become available showing cases where other organic compounds were more difficult to destroy than SF_6 under conditions of low oxygen. This is consistent with theory, since SF_6 can be destroyed under conditions of high temperature and low oxygen relatively easily compared to compounds which need oxygen to decompose. Thus, although SF_6 appears to show promise as a surrogate for testing the thermal failure mode because of its stability at high temperatures, it does not appear to be adequate as a "universal" surrogate, since it does not test for low oxygen or "mixing" failure.

Nevertheless, today's rule explicitly allows the use of surrogate, nontoxic compounds for selection as POHCs for DRE testing. As for any other type of POHC, the use of such compounds must be approved on a case-by-case basis by permit officials based on technical support provided by the applicant. The applicant's trial burn plan must adequately document the correlation between the DRE of the surrogate compound and the DREs of the appendix VIII compounds anticipated to be burned at the facility under the facility's permit.

3. Waiver of DRE Trial Burn for Boilers Operating Under the Special Operating Requirements

In 1987, the Agency proposed to waive the trial burn requirement to demonstrate DREs for boilers that operate under special operating requirements (SOR). The SOR required that, in addition to meeting the proposed 100 ppmv CO limit, a qualifying boiler must: (1) Burn at least 50 percent fossil fuel in the form of oil, gas, or coal; (2) operate at a load of at least 25 percent of its rated capacity; (3) burn hazardous waste fuel with an as-fired heating value of at least 8,000 Btu/lb; and (4) inject the hazardous waste fuel through an acceptable atomization firing system.

The SOR were based on the results of nonsteady-state boiler testing. From these results, the Agency believed that boilers operating under the SOR would maintain a hot, stable flame conducive to maintaining high combustion efficiency, resulting in maximum destruction of organic constituents in the hazardous waste fuel. The Agency believed that these boilers would achieve at least 99.99 percent DRE, and therefore, a trial burn to demonstrate DRE would not be necessary.

The Agency continues to believe that boilers operating under the SOR will achieve 99.99 percent DRE. However, based on comments received on the proposed SOR and on further examination of the previous steady-

[15] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

state and nonsteady-state boiler test results, the Agency has made the following modifications to the SOR:

(1) Limit eligibility for the waiver to nonstoker, watertube boilers;

(2) Revise the requirement that the boiler fire 50 percent fossil fuel or fuels derived from fossil fuel to include tall oil, to allow permit officials to approve on a case-by-case basis other nonhazardous fuels with combustion characteristics comparable to fossil fuel, and to require for all such primary fuels (i.e., fossil fuels, tall oil, and other fuels approved on a case-by-case basis) a minimum heating value of 8,000 Btu/lb;

(3) Clarify that the hazardous waste fuel fired must have an as-fired heating value of 8,000 Btu/lb and require that each fuel fired in the burner where hazardous waste is fired must have an as-fired heating value of 8,000 Btu/lb;

(4) Increase the minimum load requirement from 25% to 40%; and

(5) Eliminate the lower viscosity requirements for the hazardous waste and decrease the upper viscosity limits for the hazardous waste to 300 seconds, Saybolt Universal (SSU), measured at the as-fired temperature of the fuel.

As proposed in 1987, boilers with a trial burn waiver under the SOR must meet the Tier I CO limit of 100 ppmv [18] and must comply with all other requirements of the final rule (e.g., metals standards, PM limit).

The revised SOR are presented below, along with the basis for the revisions.

a. The Boiler Must Be a Nonstoker, Watertube Boiler. Commenters stated that the nonsteady-state testing of only three stoker and firetube boilers is insufficient to determine whether 99.99 percent DRE would always be achieved under the SOR. Commenters also maintained that the stoker and firetube boilers tested were not representative of all types and sizes.

The Agency agrees that there is limited data demonstrating that stoker and firetube boilers can achieve 99.99% DRE under the SOR. In the Agency's steady-and nonsteady-state testing, only three firetube boilers and one stoker boiler were tested under steady-state conditions, and one stoker boiler was tested under nonsteady-state conditions. The remainder of the boilers tested were watertube boilers.

The results from one of the firetube boiler tests generally support the ability of firetube boilers to achieve 99.99 percent DRE, but this boiler was specially designed to combust hazardous waste. The Agency is concerned whether more conventionally designed firetube boilers could easily achieve this level of DRE. DREs could not be calculated at one of the other firetube boiler tests due to inadequate waste feed levels, and sampling and analytical problems occurred at the third firetube boiler test. The stoker boiler tested under steady-state conditions did not demonstrate 99.99 percent DRE. In addition to the limited data for these boiler types, a greater potential exists for poor distribution of combustion gases and localized cold spots in firetube and stoker boilers that can result in poor combustion conditions. This is because these boilers generally burn fuels with a large and variable particle size on a bed, thus, making even distribution of combustion air difficult. Therefore, the final rule precludes stoker or firetube boilers from the automatic waiver of a DRE trial burn.

b. A Minimum of 50 Percent of the Fuel fired to the Boiler Must Be High Quality "Primary" Fuel Consisting of Fossil Fuels or Fuels Derived From Fossil Fuels, Tall Oil, or, if Approved on a Case-By-Case Basis, Other Nonhazardous Fuel Comparable to Fossil Fuel, and All Such Primary Fuels Must Have a Minimum As-Fired Heating Value of 8,000 Btu/lb. Thirteen commenters found the 50 percent fossil fuel requirement to be overly restrictive. In particular, one commenter proposed that the requirement be rephrased to allow the burning of no more than 50 percent hazardous waste in mixtures such that nonhazardous waste fuel supplements can be fired. Another commenter suggested eliminating the fossil fuel requirement for wastes that have heating values comparable to fossil fuels. Eleven commenters supported the burning of high quality non-fossil fuels, such as tall oil (i.e., fuel derived from vegetable and rosin fatty acids) and the by-products derived from the fractional distillation of tall oil. Many of these commenters said they have burned these materials and claimed they have heating values and combustion characteristics similar to fossil fuels. Three commenters requested that the burning of wood wastes as a primary fuel be allowed. One of these commenters presented the results from six trial burns for wood waste boilers which demonstrated that combustion zone temperatures in these types of boilers are consistent, and that a hot, stable flame conducive to the destruction of organic constituents in the waste is present under these conditions.

Based on the comments and information presented regarding the use of tall oil (i.e., tall oil burns like commercial fuel oil), the Agency is revising the 50% primary fuel requirement to include tall oil. Also, the Agency believes that the combustion of other nonhazardous fuels that have heating values of at least 8,000 Btu/lb (representing the lower heating value range of most sub-bituminous coals), and combustion characteristics similar to fossil fuels, will ensure a hot, stable flame conducive to the destruction of organic constituents in the waste. An owner/operator who is planning to burn such a fuel supplement must present information on the supplement's combustion characteristics for the Director's review. Concerning wood wastes, the Agency continues to believe that these wastes may not provide the hot, stable combustion zone conditions needed to achieve 99.99 percent DRE. Due to the higher flue gas moisture, excess air, CO levels, and lower furnace temperatures accociated with wood firing, the potential for less than 99.99 percent DRE exists. Therefore, boilers that fire wood wastes must demonstrate DRE capabilities through a trial burn.

The 50 percent minimum primary fuel requirement, on a total heat or volume input basis, whichever results in the greater volume of primary fuel, also is needed to ensure appropriate combustion zone conditions. This limit was based on the maximum levels of hazardous waste burned in the boilers tested by EPA under nonsteady-state conditions.

Finally, the Agency recognized that the term "fossil fuel" can include peat or other fuels with heating values below 8,000 Btu/lb. Because the test data used to support the waiver were from boilers fired with primary fuels with heating values higher than 8,000 Btu/lb, the final rule applies the minimum 8,000 Btu/lb as-fired heating value limit to all fuels, including fossil fuels, used to meet the minimum 50% primary fuel requirement.

c. Boiler Load Must Be at Least 40 Percent. Several commenters addressed the proposed minimum load level of 25 percent. Only one commenter considered it to be too low. This commenter advocated an 80 percent load requirement unless high efficiency combustion can be demonstrated at the trial burn. One commenter considered the 25 percent requirement to be arbitrary, but within current practice. Another commenter recommended that the level be more flexible for multiple burner boilers. One commenter

[18] Boilers complying with the Tier II PIC controls where CO levels exceed 100 ppmv are not eligible for the automatic waiver of the DRE trial burn. This is because the DRE test data used to support the waiver was obtained for boilers operating at CO levels below 100 ppmv.

recommended that the requirement to maintain a boiler load of 25 percent be eliminated if the Btu value of the wastes burned is equivalent to that of coal thereby providing the heat input necessary to sustain normal combustion operations.

Boiler testing conducted at a load as low as 26 percent has demonstrated that certain boilers can achieve 99.99 percent DRE when operated at low loads. However, due to concerns related to flame stability, combustion control, and heat transfer effects associated with load turndown on some boilers, the Agency has raised the boiler load limit from 25 percent to 40 percent of design load. Operation of some boilers at loads of less than 40 percent can result in significantly higher excess air levels and localized decreases in flame temperatures. In addition, most of the boilers tested to develop the operating requirements operated at loads above 40%. Therefore, limiting the boiler to 40% is more consistent with the available test data. If an owner/operator expects to operate a unit at a lower load while firing hazardous waste, a trial burn to demonstrate 99.99 percent DRE is required.

d. The Heating Value of the Hazardous Waste Fuel Must Be at Least 8,000 Btu/lb, As-Fired, and Each Fuel Fired in a Burner Where Hazardous Waste Is Fired Must Have a Heating Value of at Least 8,000 Btu/lb, As-Fired. Eleven commenters expressed concern that the "as-fired" requirement proposed in 1987 will require the blending of wastes that have heating values of less than 8,000 Btu/lb with other wastes and/or the primary fuel before atomization. Four commenters documented a number of problems with blending low Btu wastes, including immiscibility and other mixing problems, increased quantity of materials requiring handling, difficulty of controlling feed during unit upsets, and impracticality for coal-fired systems. Five commenters requested that the heating value be determined on a total-burner basis, as a composite of primary fuel and waste. Three additional commenters recommended that the minimum heating value of wastes be lowered to 5,000 Btu/lb.

The Agency agrees that waste fuel blending can present problems in some instances. However, the Agency is concerned that allowing low Btu wastes to be fired separately from the fuel and then atomized in the flame region of the burner might make it difficult to ensure good atomization, proper feed system operation, and, consequently, adequate combustion of the hazardous waste. Therefore, the 8,000 Btu/lb requirement, which represents the lower range of heating values of fossil fuels, applies to the as-fired heating value of the hazardous waste and to the as-fired heating value of any other fuel fired in the same burner with the hazardous waste.[17]

If hazardous waste with a heating value below 8,000 Btu/lb [18] is mixed with the "primary" fuel to meet the as-fired minimum heating value for hazardous waste of 8,000 Btu/lb, that quantity of primary fuel may not be counted toward the 50% primary fuel requirement. This is because the purpose of requiring 50% of the fuel to be "primary" fuel is to ensure a hot, stable flame to combust the hazardous waste. If a portion of the primary fuel is blended with the hazardous waste to increase the heating value of the hazardous waste as-fired, then that portion of the primary fuel is not providing the hot, stable flame.

The following example shows how this requirement will work. Suppose a boiler is fired with 70% primary fuel and 30% hazardous waste, and that half of the primary fuel is blended with the hazardous waste to achieve an as-fired heating value of 8,000 Btu/lb. This boiler would not be eligible for the automatic waiver of the DRE trial burn because it is fired with only 35% primary fuel (half of the 70%) that is not blended with the hazardous waste to meet the minimum as-fired heating value limit of 8,000 Btu/lb.

e. The Hazardous Waste Must Be Fired with an Atomization System. Seven commenters argued that lower viscosity limits are unnecessary. Three commenters stated that it is common to atomize wastes well below 150–200 SSU, and that No. 2 oil has a viscosity of 32.6–37.9 SSU at 100 °F. One commenter indicated that the upper viscosity limits appear high for the atomization systems specified. One commenter disagreed and said that the high limits are in the correct range. Six commenters expressed concern that the particle size limits are overly restrictive. One commenters stated that diverse waste streams can be handled to achieve good destruction without particle size limits. Another commenter disagreed with EPA by stating that they are not familiar with nozzles designed for particle sizes as small as 200 mesh. Three commenters said the waste viscosity should be left to the discretion of the owner/operator since it is industry practice to operate at viscosities which provide optimum atomization.

Based on the commenters' arguments, the Agency has eliminated the lower viscosity requirements and reduced the upper limit to 300 SSU (Seconds, Saybolt Universal) measured at the as-fired temperature of the hazardous waste. We eliminated the lower level because, after consideration of comments and re-evaluation, we believe that the concern stated at proposal—formation of a fog at low viscosity levels which could result in poor combustion conditions—is not likely to occur. At proposal, the Agency established upper viscosity limits ranging from 300 to 5,000 SSU, depending on the type of atomization system. Commenters noted that, as a practical matter, wastes with as-fired viscosities greater than 300 are not fired in an atomization system. These modifications will give facilities the flexibility to preheat wastes before atomization and are consistent with general industry practice for good atomization.

Regarding particle size limits the final rule establishes the proposed limits. When high pressure air or steam atomizers, low pressure atomizers, or mechanical atomizers, 70% of the waste must pass a 200 mesh (74 micron) screen. When a rotary cup atomizer is used, 70% of the waste must pass a 100 mesh (150 micron) screen. These mesh sizes are consistent with the design droplet size of the atomizers.

Owners/operators of boilers who propose to fire hazardous waste outside these viscosity and particle size limits must conduct a DRE trial burn.

B. PIC Controls

The burning of hazardous waste, like virtually any combustion process, results in emissions of incompletely burned organic compounds, or products of incomplete combustion (PICs). PICs can be unburned organic compounds that were present in the waste, thermal decomposition products resulting from organic constituents in the waste, or compounds synthesized during or immediately after combustion. If a device is operated under poor combustion conditions, substantial emissions of PICs can result (even if

[17] We note that the 8,000 Btu/lb minimum heating value also applies to the "primary" fuel that must comprise at least 50% of the boiler's fuel requirements. However, the remainder of the boiler's fuel requirements may be provided by hazardous waste and other fuels. There are no restrictions on the other fuels unless they are fired in the same burner with the hazardous waste. In that case, those other fuels, like the hazardous waste and "primary" fuel, must have a minimum heating value of 8,000 Btu/lb.

[18] We note that, as discussed elsewhere in the text, the sham recycling policy stays into effect until an existing facility certifies compliance with the emissions standards (see § 266.103(c)). Thus, until that time, hazardous waste burned in a BIF must have an as-generated heating value of 5,000 Btu/lb, unless the waste is burned solely as an ingredient.

99.99% DRE is demonstrated for POHCs; this just means that the POHC is not being emitted in its original form). However, it should be noted that estimates of risk to public health resulting from PICs, based on available emissions data, indicate that PIC emissions do not pose significant risks when BIFs and incinerators are operated under good combustion conditions.

Nonetheless, the Agency is concerned about the potential health risk from PICs because the available information has serious limitations. It is very difficult to identify and quantify emissions of thousands of different compounds, some of which are present in minute quantities. Although elaborate and expensive sampling and analytical techniques have been developed that can identify many PICs, many others cannot be identified and quantified with current techniques. Further, health effects information adequate to conduct a health risk assessment considering exposure via direct inhalation is not currently available on many organic compounds that may be emitted from combustion systems. Finally, the available public health and environmental risk assessment tools are incomplete. Data are currently available to conduct indirect exposure analyses (e.g., exposure via the food chain, drinking water, dermal exposure) on only a few organic compounds, and it will be some time before the Agency will be able to quantify impacts on ecological resources on a site-specific basis for purposes of establishing emissions standards.

Given the limited information about the hazards that PIC emissions may pose, EPA believes it is prudent to require that boilers and industrial furnaces operate at a high combustion efficiency to minimize PIC emissions.

EPA is promulgating today a two-tiered approach to control PICs as discussed in the October 29, 1989, supplemental notice (54 FR 43721-28). Under Tier I, CO is limited to 100 ppmv. Under Tier II, the Agency is providing an alternative standard. The facility need not meet the 100 ppmv CO limit provided the facility can demonstrate that the hydrocarbon (HC) concentration in the stack gas does not exceed a good operating practice-based limit of 20 ppmv. The alternative CO limit under Tier II must be established during the test burn based on the average over all runs of the highest hourly rolling average for each run.

1. Use of a CO Limit to Control PICs.

Generally accepted combustion theory holds that low CO flue gas levels combined with low CO flue gas levels combined with low excess oxygen levels indicate a boiler, industrial furnace, or incinerator is operating at high combustion efficiency. Operating under high combustion efficiency helps to ensure minimum emissions of unburned (or incompletely burned) organics. In the first stage of the combustion of hazardous waste fuel, the POHCs thermally decompose in the flame to form other, usually smaller, compounds termed products if incomplete combustion. In this first stage of combustion, these PICs also decompose to form CO.

The second stage of combustion involves the oxidation of CO to CO_2 (carbon dioxide). The CO to CO_2 step is the slowest (rate-controlling) step in the combustion process because CO is considered to be more thermally stable (difficult to oxidize) than other intermediate products of the combustion of hazardous waste constituents. Because fuel is being fired continuously, these combustion stages occur simultaneously.

Thus, in the waste combustion process, the "destruction" of POHCs is independent of flue gas CO levels. CO flue gas levels cannot be correlated with DREs for POHCs, and may also not *correlate* well with PIC destruction. Although some emissions data indicate a weak correlation between CO and PICs, the data generally indicate that there is a relationship between the two parameters: When CO is low, PIC emissions are relatively low. The converse may not hold: when CO is high, PICs may or may not be high.

Low CO is an indicator of the status of the CO to CO_2 conversion process, the last rate-limiting oxidation process. Because oxidation of CO to CO_2 occurs after the destruction of a POHC and its (other) intermediates (PICs), the absence of CO is a useful indication of POHC and PIC destruction. The presence of high levels of CO in the flue gas is a useful indication of inefficient combustion, and at some level of elevated CO flue gas concentration, is an indication of the failure of the PIC and POHC destruction process.

EPA believes it is necessary to limit CO levels to levels that are indicative of high combustion efficiency because the precise CO level that indicates significant failure of the PIC and POHC destruction process is not known. In fact, this critical CO level may depend on site-specific and event-specific factors (e.g., fuel type, fuel mix, air-to-fuel ratios, and the rate and extent of changes in these and other factors that affect combustion efficiency). EPA believes that limiting CO levels is also reasonable because: (1) It is a widely practiced approach for monitoring combustion efficiency—some boilers and industrial furnaces are already equipped with CO monitors, and many are equipped with flue gas oxygen monitors; (2) the monitors may pay for themselves through fuel savings resulting from operation of the boiler or industrial furnace closer to maximum combustion efficiency; and (3) well-designed and well-operated boilers and industrial furnaces can readily be operated in conformance with either the 100 ppmv CO limit under Tier I, or the 20 ppmv HC limit under Tier II.

2. Tier I PIC Controls: 100 ppmv CO Limit

a. Basis for the 100 ppmv CO Limit. The May 6, 1987 proposed rule would have applied the same CO emission limits to all boilers and industrial furnaces: a lower limit of 100 ppmv over an hourly rolling average and a 500 ppmv limit over a 10-minute roiling average. The hazardous waste feed would be shut off automatically if either limit was exceeded. However, the hazardous waste would be cutoff immediately once the 500 ppmv limit was exceeded while the waste feed would be cutoff within 10 minutes if the 100 ppmv limit was exceeded. Further if the hazardous waste feed was cutoff more than 10 times in a month, the proposed rule would have prohibited further hazardous waste burning pending review and approval by enforcement officials. The lower limit of 100 ppmv was selected as representative of steady-state high efficiency combustion conditions resulting in PIC emissions that would not pose a significant risk. The higher limit of 500 ppmv was proposed to limit the frequency of emission spikes that inevitably accompany routine operational "upsets," such as load changes and start-ups of waste firing.

While two commenters stated that the proposed 100 ppmv CO limit is arbitrary, six commenters supported the Tier I CO limit of 100 ppmv. One commenter supported both the 100 ppmv CO limit over an hourly rolling average, and the 500 ppmv CO limit over a 10-minute rolling average. Three additional commenters also expressed support for the 500 ppmv CO limit over a 10-minute rolling average. Three other commenters supported a 500 ppmv CO limit over an hourly rolling average, and stated that a maximum 1,000 ppmv CO limit can be included in addition to a 10-minute average.

Many commenters opposed the CO trigger limits and associated limits on the number of waste feed cutoffs

proposed in May 1987. Primarily, commenters objected to one set of CO emission limits as applicable to all boilers and industrial furnaces. Further, they argued that PIC emissions will not be significant if, when the waste feed is cutoff, the combustion chamber temperatures are maintained while the waste remains in the chamber. Six commenters argued that the trigger limits will result in increased NO_x emissions. One commenter stated that NO_x and CO cannot be lowered simultaneously, and added that many low NO_x boilers may not be able to meet these CO limits. As an alternative, one commenter stated that a higher Tier I CO limit should be allowed for less toxic emissions; however, this commenter did not provide an alternative approach for identifying the toxicity of emissions. One commenter suggested that EPA retain two alternatives to the CO standard: establishing an alternative standard based on nonmethane, ethane hydrocarbon (NMEHC) emissions, and a case-by-case risk assessment approach.

As a result of these and other comments and further evaluation, EPA is promulgating the Tier I limits based on a maximum hourly rolling average CO limit of 100 ppmv, corrected to 7 percent flue gas oxygen content. If this limit is exceeded, the hazardous waste feed must be automatically and immediately cutoff. The final rule does not restrict the number of waste feed cutoffs because: (1) Combustion chamber temperatures must be maintained after a cutoff; and (2) the number of cutoffs will be minimized by allowing CO concentrations to be averaged over a 60-minute period (i.e., the hourly rolling average) and by the recommended use of pre-alarms to provide time to remedy the problem or to allow a staged waste cutoff before reaching the CO limit. Nonetheless, the Agency retains the authority to limit the frequency of cutoffs as the facts warrant. See § 266.102(e)(7)(ii). The final rule does not include the proposed 500 ppmv rolling average over a 10-minute limit on CO because we do not believe it is needed given that the final rule requires immediate waste feed cutoff when the 100 ppmv hourly rolling average limit is exceeded. In addition, several commenters argued that the 500 ppmv limit was arbitrary.

In addition, EPA is promulgating alternative (Tier II) standards (discussed below), as discussed in the October 1989 supplemental notice, for control of PIC emissions from boilers and industrial furnaces. The Agency believes that the alternative controls will allow facilities flexibility in meeting both the PIC controls and NO_x emissions standards (imposed under different regulatory authorities) simultaneously. The Agency believes that the alternative, Tier II standards for control of PIC emissions are needed to address issues and concerns raised by commenters on the proposed rule.

The 100 ppmv CO limit promulgated today for Tier I is indicative of steady-state (i.e., normal), efficient combustion conditions. The time-weighted average for the CO limit is provided to accommodate the CO spikes that inevitably occur during routine "upsets," such as when hazardous waste fuel firing starts, when there is a load change on an industrial boiler, or when the composition of fuels varies. Given that CO is a sensitive indicator of overall combustion conditions, and that it may be a conservative indicator of POHC and PIC destruction, EPA is implementing CO control limits based on time-weighted averages of exceedances rather than implementing fixed CO limits. Fixed limits that do not acknowledge inevitable CO spikes and that do not give owners and operators time to adjust combustion conditions actually could result in greater emissions of PICs because each time hazardous waste firing is interrupted, CO concentrations increase, and emissions of incompletely burned organics may also increase. (Note, however, that there is a requirement to maintain combustion chamber temperature after a waste feed cutoff while waste remains in the chamber that is intended to minimize HC emissions after a cutoff.) Thus, any controls on CO must balance the effects of organic emissions that may result from overly stringent CO limits that require frequent waste feed interruptions with the effects of emissions resulting from less stringent controls that acknowledge inevitable CO spikes.

The Agency has considered whether the 100 ppmv CO limit is, in fact, too stringent given that we acknowledge the limit was chosen from within the range of reasonable values that may be considered indicative of good combustion conditions—50 to 250 ppmv. We attempted to obtain CO/time profiles from a number of well-operated devices to determine the percentage of time the facilities operated within particular CO ranges.[19] We thought to use this data to predict the frequency of waste feed cutoffs that would be required at various CO limits. Unfortunately, the analyses could not be conducted because the facilities we evaluated were operating under specific CO limits and their CO levels never exceeded those limits when burning hazardous waste. We found that the facilities learned to comply with the CO limits they had to meet.

Moreover, we believe that the 100 ppmv CO limit is reasonable for a number of reasons. Not only is it within the range of CO levels that are indicative of good combustion conditions, but the Agency believes that it is not too low because: (1) It is higher than the technology-based 50 ppmv CO level EPA requires for boilers burning waste PCBs (see 40 CFR part 761); (2) it is higher than the CO limits included in many hazardous waste incinerator permits; [20] (3) the Agency explicitly encourages the use of pre-alarms to minimize the frequency of automatic waste feed cutoffs; [21] and (4) the limit is implemented on an hourly rolling average basis which allows and minimizes the effects of short-term CO spikes.

We also note that the Agency may soon promulgate regulations for municipal waste combustors (MWCs) that, among other controls, may limit CO concentrations to 50, 100, or 150 ppmv (as proposed), depending on the type of MWC, over a four hour rolling average and dry-corrected to 7% oxygen. The MWC limits are technology-based—they represent levels readily achievable by well-designed and well-operated units. EPA does not believe that the MWC limits present a conflict with the 100 ppmv (with provisions for an alternative higher limit if HC concentrations are less than 20 ppmv) limit for BIFs under today's rule. The Agency is confident that the BIF rule is protective because the Agency has determined that, when CO levels are less than 100 ppmv, PIC emissions do not pose significant risk. Thus, although the 100 ppmv limit is not a best demonstrated technology-based limit (many BIFs (and hazardous waste incinerators) readily operate at CO levels well below 100 ppmv), the 100

[19] Energy and Environmental Research Corporation, "Guidance on Metal and PIC Emissions from Hazardous Waste Incinerators", Final Report, September 21, 1990.

[20] We note that the Agency proposed on April 27, 1990 to apply to hazardous waste incinerators the same CO/HC limits that today's rule applies to BIFs.

[21] If the CO limit is "too low" for a given facility's design and operating conditions, then frequent waste feed cutoffs may occur. Frequent waste feed cutoffs may actually increase PIC emissions because the resulting perturbation to the combustion system may upset the temperature, oxygen, fuel relationships needed for complete combustion.

ppmv CO limit will ensure protection of human health and the environment.

As stated above, the CO limits are based on a flue gas oxygen content of 7 percent. One commenter indicated that EPA's reasoning for using the CO correction of 7 percent oxygen is not clear. The commenter believes the 7 percent correction factor is unfair for thermal units which, under normal conditions, need to operate at oxygen levels greater than 7 percent, yet operate with low levels of CO and HCs. EPA believes that correcting CO levels for flue gas oxygen content is necessary because without this correction, high CO flue gas concentrations could be diluted by high rates of excess oxygen. In today's rule, EPA is requiring that CO be corrected to a flue gas oxygen content of 7 percent because the majority of boilers and industrial furnaces achieve high combustion efficiency at optimum flue gas oxygen levels ranging from 3 percent to 10 percent. The optimum oxygen level to achieve high combustion efficiency for a given device will vary depending on factors such as fuel mix and boiler load. In general, large combustion devices (in terms of heat input capacity) have optimum oxygen requirements on the low end of the range of oxygen content, while smaller units require higher oxygen levels. EPA believes that a correction level of 7 percent is reasonable since this oxygen level is in the middle of the range of typical operation for all devices and since the majority of devices burning hazardous waste fuels have moderate heat input capacities (e.g., 20–150 MM Btu/hr). In addition, 7 percent oxygen is the reference level for the existing particulate standard for hazardous waste incinerators under 40 CFR 264.343(c).

Moreover, the oxygen level to which CO values are corrected is not significant since the CO levels for all facilities are corrected to a common basis. If the oxygen correction level were changed from 7% to some other value, then theoretically, the CO limit would have to be adjusted accordingly, and the effect on individual facilities would remain the same.

b. Implementation of the 100 ppmv CO Limit. The procedures used to implement the 100 ppmv CO limit are discussed below, including oxygen and moisture correction, format of the limit, and compliance with the limit.

Oxygen and Moisture Correction. The CO limit under Tier I (and Tier II) is on a dry gas basis corrected to 7 percent oxygen. The oxygen correction normalizes the CO data to a common basis, accounting for the variation in design and operation of the various combustion devices. In-system leakage, facility size, and waste feed type are other factors that cause oxygen concentrations to vary widely in flue gases and were considered in selection of the oxygen correction factor. The correction for moisture normalizes the CO data that results from the different types of CO monitors used at facilities (e.g., extractive, in situ, etc.). EPA's evaluation indicates that application of the oxygen and moisture corrections can change measured CO levels by a factor of two in some cases.

Measured CO levels must be corrected continuously for the amount of oxygen in the stack gas according to the formula:

$$CO_c = CO_m \times 14/(E - Y)$$

Where:

CO_c is the corrected concentration of CO in the stack gas, CO_m is the measured CO concentration according to guidelines specified in Methods Manual for Compliance with the BIF Regulations (Methods Manual) [22], E is the percentage of oxygen contained in the air used for combustion, and Y is the measured oxygen concentration on a dry basis in the stack. Oxygen must be measured at the same stack location at which CO is measured under procedures that are also provided in the Methods Manual.

Format of the CO Limit. EPA proposed that the CO limits be implemented under either of two alternative formats, the hourly rolling average format or the time-above-a-limit format. Under this approach, applicants would select the preferred approach on a case-by-case basis. Comments were received in support of both alternative formats. Based on further evaluation of the two formats and for reasons explained below, EPA is requiring use of the hourly rolling average format for compliance with this rule.

Under the hourly rolling average format, a facility must measure and record CO levels as an hourly rolling average. This approach allows instantaneous CO peaks without requiring a cutoff provided that at other times during the previous hour CO levels were correspondingly below the limit. This approach requires a CO monitoring system that can continuously measure and adjust the oxygen correction factor and compute the hourly rolling averages.

Under the proposed time-above-a-limit format, dual CO limits would be established in the permit: the first as a never-to-exceed limit and the second as a lower limit for cumulative exceedances of no more than a specified period of time in an hour. These limits and the time duration of the exceedances would be established on a case-by-case basis by equating the mass emissions (peak areas) in both the formats (time-above-a-limit and hourly rolling average formats) so that the regulation would be equally stringent in both cases. The instruments needed for the time-above-a-limit format would include a CO monitor, a recorder, and a timer that could indicate the cumulative time of exceedances in every clock hour, at the end of which it would be recalibrated (manually or electronically). Oxygen would not be measured continuously in this format; instead an oxygen correction factor would be determined from operating data collected during the trial burn. Subsequently, oxygen correction factors would be determined annually or at more frequent intervals specified in the facility permit.

EPA has re-examined the time-above-the-limit format in light of several comments received and has decided to delete this alternative in today's final rule because:

1. Since a facility would not be required to measure oxygen continuously under this format, there would be no assurance that a facility would be operated reasonably close to the oxygen level at which it operated during the trial burn. Even with a daily determination of an oxygen correction factor, there would be the possibility of "gaming" by the facility (operating the facility at low oxygen levels during the short test period when the oxygen is measured, getting a favorable correction factor established on the basis, and thereafter letting the facility operate at high oxygen levels). Since the major advantage of this format was the cheaper cost due to the omission of the oxygen monitoring requirement, adding continuous oxygen monitoring to this format would remove this advantage as well; and

2. The proposed computations for converting hourly rolling averages to this format would be cumbersome, inexact, and above all, very restrictive. To obtain a conservative conversion, a permit writer would have to assume that CO levels will remain at the established never-to-exceed limit for the full specified time in the hour, and at the lower established limit the rest of the time. The CO limits obtained by these computations would be very restrictive. As an example, a conversion of a Tier I limit of 100 ppmv hourly rolling average for a facility having a single CO excursion of 4-minutes duration in which the peak level was 1,000 ppmv, would result in a permit specifying that for the remaining 56 minutes, CO could not exceed 34 ppmv, a very restrictive limit. For example, a CO profile of 30 ppmv for 55 minutes and 40 ppmv for the remaining 5 minutes would result in a violation.

[22] U.S. EPA, *Methods Manual for Compliance with the BIF Regulations*, December 1990. Available from the National Information Service NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4600. The document number is PB 91-120-003.

Compliance with the Tier I CO Limit. The Agency considered a number of alternative approaches for evaluating CO readings during trial burns to determine compliance with the 100 ppmv limit, including: (1) The time-weighted average (or the average of the hourly rolling averages); (2) the average of the highest hourly rolling averages for all trial burn runs; or (3) the highest hourly rolling average. The time-weighted average alternative provides the lowest CO level that could reasonably be used to determine compliance, and the highest hourly rolling average alternative provides the highest CO level that could reasonably be used. EPA is requiring the use of the most conservative of these approaches, the highest hourly rolling average approach, for interpreting trial burn CO emissions for compliance with the 100 ppmv Tier I limit. (This approach is conservative because trial burn CO levels are compared to the maximum CO allowed under Tier I—100 ppmv.) EPA believes this conservative approach is reasonable since compliance with the Tier I CO limit allows applicants to avoid the Tier II requirement of evaluating HC emissions to provide the additional assurance (or confirmation) that HC emissions do not exceed levels representative of good operating practice.

3. Tier II PIC Controls: Limits on CO and HC

a. Need for Tier II PIC Controls. Commenters indicated that several types of boilers and many cement kilns will not be able to meet the (Tier I) 100 ppmv CO limit proposed in May 1987 even though HC concentrations will not be high at elevated CO levels. For example, boilers that burn residual oil or coal typically operate with CO emission levels above the Tier I 100 ppmv CO limit because of inherent fuel combustion characteristics, equipment design constraints, routine transient combustion-related events, requirements for multiple fuel flexibility, and requirements for compliance with NO_x emission standards established under the Clean Air Act. Attempts to reduce CO emissions from these devices to meet the Tier I limit could prove unsuccessful. In addition, there is a possibility that thermal efficiency could be adversely affected if these attempts are successful.

Similarly, industry and trade groups for the cement industry voiced strong opposition to the 100 ppmv CO limit for cement kilns. These commenters indicated that some cement kilns, especially modern precalciners, routinely emit CO above the Tier I 100 ppmv limit. In general, commenters indicated that while the Tier I limit may be appropriate for combustion devices in which only fuel (fossil or hazardous waste) enters the combustion chamber, it is inappropriate for cement kilns and other product kilns in which massive amounts of feedstocks are processed. These feedstocks can generate large quantities of CO emissions which are unrelated to the combustion efficiency of burning the waste and fuel. Whereas all the CO from boilers and some industrial furnaces is combustion-generated, the bulk of the CO from product kilns can be the result of process events unrelated to the combustion conditions at the burner where wastes are introduced.[23] Therefore, limiting CO emissions from these combustion devices to the Tier I 100 ppmv level may be difficult and may not be warranted as a means of minimizing risk from PICs.

In summary, commenters argued that these are specific instances and classes of combustion devices for which the Tier I CO limit would be difficult or virtually impossible to meet, and thus this limit is inappropriate since EPA has not established a direct correlation between CO emissions, PIC emissions, and health risks.

In light of these concerns, commenters suggested that EPA establish CO limits for specific categories of combustion devices based on CO levels achieved by units operating under best operating practices (BOP). The Agency considered this approach but determined that equipment-specific CO trigger limits would be difficult to establish and support and would not necessarily provide adequate protection from PIC emissions. Nonetheless, EPA believes that the CO limits should be flexible to avoid major economic impacts on the regulated community since no direct correlation has been established between exceeding the 100 ppmv CO limit and increasing health risks from PIC emissions. EPA believes, however, that at some elevated CO level PIC emissions would pose significant risk. At this time, EPA is unable to identify a precise CO trigger level since the trigger level may vary by the type and design of the combustion device and the fuel mix used in the device. Consequently, EPA has established a two-tiered approach to control PICs. Under Tier I, CO is limited to 100 ppmv or less, as discussed above. Under Tier II, CO levels can exceed 100 ppmv provided that the owner or operator demonstrate that the HC concentration in the stack gas does not exceed a good operating practice-based limit of 20 ppmv (except that the Director may establish under § 266.104(f) an alternative HC limit for furnaces that feed raw material containing organic matter and, thus, cannot meet the 20 ppmv limit).

Under Tier II, the CO limit for a facility is based on the levels achieved during a successful compliance test. The Agency originally proposed two alternative approaches for establishing HC emission limits under the Tier II waiver: a health-based approach and a technology-based approach. These two alternatives and EPA's rationale for selecting the technology-based approach for the final rule are discussed below. Before moving to those discussions, however, it may be useful to summarize the conclusions of an evaluation by EPA's Science Advisory Board of the proposed PIC controls.

b. Comments by EPA's Science Advisory Board (SAB). We present below a summary of SAB's conclusions [24] on the scientific support for EPA's proposed PIC controls and EPA's response:

- *SAB*: The Agency has not documented that PICs from hazardous waste combustion can cause significant health risk to human health or the environment.

—*EPA Response:* While the Agency agrees that available data do not show that PICs are likely to pose a significant health risk, EPA's emissions testing to date has been able to identify and quantify only as much as 60% of the organic compounds being emitted during any test. During many of EPA's tests, less than 5 to 10% of organic emissions were characterized. The Agency is concerned that this large fraction of uncharacterized organic emissions could be comprised of compounds that can pose significant health risk. Therefore, the Agency believes that PICs have the potential to present a hazard and should be controlled.

- *SAB:* It is prudent to control PICs given the inability to show that they do not pose a health risk because of limitations of sampling and analytical techniques and health and environmental impact assessment data and methodologies.

[23] For example, CO can be generated from the trace levels of organic matter contained in the raw materials as the materials move down the kiln from the "cold" feed end to the "hot" end where the fuel and waste is fired and the product is discharged.

[24] U.S. EPA, "Report of the Products of Incomplete Combustion Subcommittee of the Science Advisory Board", Report #EPA-SAB-EC-90-004, January 1990.

—*EPA Response:* The Agency agrees. Additional emissions testing cannot be used to determine if, in fact, PICs can pose significant risk because the sampling and analytical techniques are not available to identify the unknown compounds. Moreover, even if the techniques were available, health effects data are not likely to be available for the compounds so that a risk assessment could not be conducted.

• *SAB:* The use of CO and HC to ensure high combustion efficiency seems to be a reasonable approach to control PIC emissions.

• *EPA Response:* The Agency agrees.

• *SAB:* Under the Tier II controls when CO exceeds 100 ppmv, HC should be monitored continuously.

—*EPA Response:* The Agency agrees. Today's final rule requires continuous HC monitoring under the Tier II controls (see § 266.104(c)) when CO levels exceed 100 ppmv, and for certain industrial furnaces irrespective of CO level (see §§ 266.104(d) for permit furnaces and 266.103(a)(5) for furnaces operating under interim status).

• *SAB:* There is no scientific support for the health-based approach to establish HC limits on a site-specific basis based on a calculated "unit risk" value for total HC and stack gas monitoring of HC concentrations.

—*EPA Response:* The final rule does not allow the use of the proposed health-based approach to control HC. HC are controlled under the technology-based limit of 20 ppmv. See § 266.104(c).

• *SAB:* The risk assessment procedures are adequate, however, to show that the technology-based HC limit of 20 ppmv appears to be protective of human health.

—*EPA Response:* The Agency agrees.

• *SAB:* The agency should show that the proposed limits for CO and HC do not result in frequent automatic waste feed cutoffs that may increase PIC emissions.

—*EPA Response:* See discussion in section B.2.a above.

Thus, the SAB supported the overall reasonableness of the course adopted in this rule to control potential risks from emissions of PICs.

c. Health-Based Approach for HC Limits. Under the Tier II health-based approach, the Agency proposed to allow applicants to demonstrate that PIC emissions from combustion devices pose an acceptable risk (i.e., less that 10^{-5}) to the maximum exposed individual (MEI). Under this approach, EPA proposed to require that applicants quantify HC emissions during trail burns and assume that all hydrocarbons are carcinogenic compounds with a unit risk value that would be calculated based on available data. The HC unit risk value would be 1.0×10^{-6} m³/ug and would represent the adjusted 95th percentile weighted (i.e., by emission concentration) average unit risk of all the hydrocarbon emission data in EPA's database of field testing of boilers, industrial furnaces, and incinerators burning hazardous waste. The weighted unit risk value for HC considers emissions data for carcinogenic PICs (e.g., chlorinated dioxins and furans, benzene, chloroform, and, carbon tetrachloride) as well as data for PICs that are not suspected carcinogens and are considered to be relatively nontoxic (e.g., methane, and other C1 as well as C2 hydrocarbons.[25]

The Agency proposed to implement this provision by back-calculating an acceptable HC emission rate (and, based on stack gas flow rates, a HC concentration) from the acceptable ambient level based on the calculated "total HC" unit risk value discussed above and allowing an incremental cancer risk of 1 in 100,000.

A number of commenters supported the health-based approach while several others pointed out that the approach was seriously flawed. EPA's Science Advisory Board reviewed the approach as discussed above and concluded that the site-specific, health-based approach of controlling HC was not scientifically supportable.

Upon re-evaluation, EPA believes that basing the HC limit on a health-based approach is not supportable and, thus, has not selected this approach for the final rule. Given the limited data base on the types and concentrations of PICs emitted over a range of operating conditions, we are concerned that the potency value that the proposed approach would apply to the total mass of hydrocarbons emitted may not be appropriate. It is not clear whether the proposed potency value may overstate or understate the risk posed by HC emissions. In addition, we are concerned that we do not fully understand what types of hydrocarbon emissions are actually detected by the continuous monitoring equipment. For example, as we discussed at proposal, certain halogenated compounds are under reported by the HC detection system. Finally, as we noted at proposal, the proposed risk-based approach could allow extremely high HC concentrations—concentrations clearly indicated of combustion upset conditions.

d. Technology-Based Approach: 20 ppmv HC Limit. Under the technology-based approach, the Tier I CO limit of 100 ppmv will not have to be met if HC levels in the stack gas do not exceed a good operating practice-based limit of 20 ppmv [26] (measured on an hourly rolling average basis, reported as propane, dry corrected to 7% oxygen). As noted above, EPA developed this technology-based approach because of current scientific concerns (seconded by the SAB) related to a health-based approach. In addition, the health-based approach could allow HC levels of several hundred ppmv, levels that are clearly indicative of "upset" combustion conditions. The approach, as noted above, lacks a firm scientific basis and could allow facilities to operate under upset conditions. EPA would not authorize such operations unless reasonably certain they would not pose a significant risk to human health and the environment. Such reasonable certainty does not exist here.

One commenter agreed that the PIC standard should be protective without imposing a technology "fix." Although EPA believes the development of a health-based approach is a step in the right direction, the Agency is concerned about whether the health-based Tier II approach is adequately protective given the limited database on PIC emissions and the uncertainty as to what fraction of organic emissions would be detected by the HC monitoring system. Despite the limitations of the HC health risk assessment methodology, EPA believes (and the SAB concurs) it is reasonable to use this methodology to predict whether a technology-based limit appears to be protective. Accordingly, EPA used the health risk assessment methodology to show that a 20 ppmv HC limit would not result in an incremental lifetime cancer risk to the hypothetical maximum exposed individual greater than 1 in 100,000.

The final rule establishes limits for both CO and HC under the Tier II PIC controls. The CO limit is established as the average over all runs of the highest hourly rolling average for each run of the compliance test or trial burn. To demonstrate compliance with the HC limit, the highest hourly rolling average HC level during the compliance test or

[25] Additional information on the development of the unit risk factor can be found in U.S. EPA, Background Information Document for the Development of Regulations for PIC Emissions from Hazardous Waste Incinerators, October 1988.

[26] As discussed at proposal, the 20 ppmv limit represents a demarcation between good and poor combustion conditions based on HC emissions data from 24 facilities. The 20 ppmv limit is not based on best operating practice. A *best* operating practice limit would be set a level on the order of 5 ppmv.

trial burn cannot exceed 20 ppmv (except as otherwise provided for furnaces feeding raw materials containing organic matter), reported as propane, corrected to 7% oxygen on a dry basis.

The Agency considered whether to establish provision for a case-by-case waiver of the 20 ppmv HC limit based either on health-risk assessment or technical feasibility (i.e., feasibility of providing combustion conditions to minimize fuel-generated HC). The final rule does not provide for a waiver of the 20 ppmv HC limit as an indicator of good combustion conditions and minimum fuel-generated PIC emissions. (The final rule does, however, allow the Director to establish under the part B permit proceedings an alternative HC limit for industrial furnaces (e.g., cement kilns, light-weight aggregate kilns) to account for hydrocarbons that are emitted from trace levels of organic matter in the raw material. Any alternative HC limit established for a furnace will ensure that fuel-generated hydrocarbons (hazardous waste and other fuels) are less than 20 ppmv by establishing the HC limit based on HC concentrations when the system is designed and operated under good combustion conditions without burning hazardous waste.[27] See section II.B.5 of Part Three of this preamble for more discussion of the alternative HC limit for industrial furnaces.)

EPA did not provide a waiver of the HC limit in the final rule because: (1) The Agency believes, and SAB concurs, that a site-specific, health risk assessment approach to establishing HC limits (e.g., a waiver of the 20 ppmv limit) is not scientifically supportable; and (2) a technology-based waiver is not supportable because well-designed and operated hazardous waste combustion devices can readily meet a 20 ppmv HC limit.

Several commenters disagreed with EPA that both CO and HC should be monitored, stating that it is unnecessary to monitor CO if HC is monitored. The Agency continues to believe that it is reasonable to require both CO and HC monitoring when CO levels exceed 100 ppmv. When CO levels exceed the Tier I level, the facility is not operating at high combustion efficiency and the potential for high PIC emissions exists. The Agency believes that, since CO monitoring is a widely practiced approach for improving and monitoring combustion efficiency, and since CO emission levels may respond more quickly to process upsets than HC levels, the apparent redundancy in requiring both CO and HC monitoring is warranted to ensure protection of human health.

Another commenter added that HC monitoring could be supplemented by frequent testing for common PICs that respond poorly to HC monitors, such as carbon tetrachloride, formaldehyde, perchlorethylene, and chlorobenzene. At this time, the Agency believes that continuous HC monitoring combined with CO monitoring is adequate in most cases to detect when the facility is operating under combustion upset conditions (this is another reason, however, that monitoring both CO and HC is reasonable when CO levels exceed the level normally indicative of good combustion—100 ppmv). We note that, as discussed in section II.D below the final rule requires a hot HC monitoring system (i.e., unconditioned gas sample heated to a minimum of 150 °C) which ensures minimum loss of organic compounds. Nonetheless, the Agency is currently developing sampling and analytical techniques to continuously monitor indicator organic compounds such as those suggested by the commenter.

e. Basis for Final Rule. EPA believes that the 20 ppmv HC limit in the final rule for the Tier II PIC controls is representative of an HC limit that distinguishes between good and poor combustion conditions. (When a facility operates under poor combustion conditions, PIC emissions can increase and may result in adverse health effects to exposed individuals.) This HC limit is within the range of values reported in the Agency's data base for hazardous waste incinerators, boilers, and industrial furnaces that burn hazardous waste, and the limit is also protective of human health based on risk assessments conducted for 30 incinerators. See 54 FR 43723. Under Tier II, HC must be monitored continuously, recorded on an hourly rolling average basis, reported as ppmv propane, and corrected to 7 percent oxygen on a dry basis. In addition, CO must be monitored continuously, corrected to 7 percent oxygen on a dry basis, recorded on an hourly rolling average basis, and may not exceed the limit established during the test burn (i.e., the average over all runs of the highest hourly rolling average for each run).

4. Special Requirements for Furnaces

The final rule provides several special requirements for industrial furnaces stemming from the fact that: (1) Some industrial furnaces, notably cement kilns, are not able to meet the 20 ppmv HC limit because trace levels of organic matter in raw materials can emit substantial levels of hydrocarbons; and (2) the PIC controls may not be protective for furnaces (e.g., cement kilns and mineral wool cupolas) that feed hazardous waste at locations other than where normal fuels are fired. These special requirements are discussed below.

a. Alternative HC Limit. EPA requested comment on whether alternative HC limits may be appropriate for certain industrial furnaces. See 54 FR 43724 (Oct. 26, 1989) A number of commenters[28] requested that EPA allow cement kilns, light-weight aggregate kilns, and lime kilns that cannot meet the 20 ppmv HC limit because of the hydrocarbons generated by trace levels of organic materials in the normal raw materials to establish a site-specific alternative HC limit that does not allow HC levels when burning hazardous waste to be significantly higher than when burning normal fuels, processing normal raw materials, and producing normal products in a system that is designed and operated to minimize hydrocarbon concentrations in stack gas. Nineteen commenters pointed out that baseline HC emission levels from cement kilns can be attributed to the naturally-occurring raw materials that are used in the production of cement. Use of shale as a raw material, for example, can result in HC emissions from kerogens in the shale. Use of fly ash as a source of iron and silica could result in increased CO emissions from partial oxidation of free carbon in the fly ash. Commenters claim that approximately 6 to 10 cement plants may not be able to comply with the HC limit of 20 ppmv even though they generate minimal HC from sources other than raw materials (e.g., hazardous waste fuels, other fuels, organic compounds in slurry water). The organic compounds in normal raw materials would not ordinarily be hazardous, so that their emissions (e.g., through volatilization) would not raise the types of concerns normally addressed by RCRA.[29]

[27] We note that this approach should limit fuel-generated hydrocarbon concentrations to well below 20 ppmv because fuel-generated hydrocarbons from a well-designed and operated cement or light-weight aggregate kiln should not exceed 5 ppmv.

[28] In addition to comments on the October 26, 1989 supplement to the proposed rule, see minutes of the EPA meetings with the Cement Kiln Recycling Coalition of April 17, 1990; May 23, 1990; June 4, 1990; June 20, 1990; July 19, 1990; and October 10, 1990. See also minutes of the EPA meeting with Southdown, Inc. on May 11, 1990, and the letter from the Cement Kiln Recycling Coalition to Bob Holloway, EPA, dated June 15, 1990.

[29] We note, however, that nonhazardous organic constituents in feedstreams may be partially

Continued

The Agency believes that it will be possible in some situations to develop an approach on a case-by-case basis to effectively implement an alternative HC limit under the principle stated above. (If the 20 ppmv HC limit were health-based, the Agency would be more reluctant to develop an alternative to it. Given, however, that the limit is a measure of combustion efficiency, the Agency believes it reasonable to develop an alternative means for this class of furnaces to demonstrate combustion efficiency.) The Agency considered a number of approaches to establish an alternative HC level and determined in the time available that none appeared to be workable in all situations. The Agency is therefore adopting a more individualized approach in the present rule that allows permit writers to establish an alternative HC limit (i.e., a HC limit that exceeds 20 ppmv) in a facility's operating permit, and allows permit writers to grant an extension of time to comply with the HC limit during interim status, based on the following showings: (1) For cement kilns, the kiln is not equipped with a by-pass duct that meets the requirements of § 266.104(f)(1); (2) the applicant demonstrates that the facility is designed and operated to minimize hydrocarbon emissions from fuels and raw materials; (3) the applicant develops an approach to effectively monitor over time changes in the operation of the facility that could reduce baseline HC levels—for example, changes in raw materials, fuels, or operating conditions—which could result in establishing a new baseline and corresponding adjustment of the HC limit; and (4) the applicant demonstrates that the hydrocarbon emissions are not likely to pose a significant health risk. See § 266.104(f)(2). We explain these provisions in more detail below, along with an explanation of which provisions apply during interim status and which are part of permit application and issuance.

Interim Status Facilities. Today's rule requires facilities operating in interim status to comply with CO and, if required, a 20 ppmv HC limit within 18 months of the rule's date of promulgation. The rule provides for a case-by-case extension from these requirements (as well as the particulate, metals, and HCl/Cl_2 standards) "if compliance is not practicable for reasons beyond the control of the owner or operator." See § 266.103(c)(7)(ii). The situation where a furnace may be unable to achieve the 20 ppmv HC limit because of organics present at baseline conditions (i.e., when the facility is designed and operated to minimize HC emissions from raw materials and fuels while producing normal products under normal operating conditions and when no hazardous waste is burned) may be eligible for the extension of time provided the following conditions are satisfied:

1. The applicant for the extension of time must have submitted a complete part B permit application. The application must include the following information pertinent to the question of an alternative HC limit: (a) Documentation that the system is designed and operated to minimize HC emissions from all sources when the baseline level is established and when hazardous waste is burned; (b) documentation of the baseline HC flue gas concentrations when the facility is operated to minimize HC emissions and when feeding normal raw materials and normal fuels to produce normal products under normal operating conditions and when not burning hazardous waste; (c) a test protocol to confirm the baseline HC (and CO) level; (d) a trial burn protocol to demonstrate that, when hazardous waste is burned, HC (and CO) concentrations do not exceed the baseline level; and (e) a procedure to show if and when HC emissions from nonhazardous waste sources may decrease (in which case, the overall HC limit might be adjusted downward after a new baseline is established). See § 270.22(b). (The substantive basis for these requirements is explained in more detail below.)

2. During interim status, the applicant must not only conduct emissions testing when burning hazardous to certify compliance with all remaining emissions controls—dioxins and furans, PM, metals, and HCl/Cl_2—but also establish and comply with interim limits on CO and HC presented in the part B permit application as levels the applicant has determined by testing (without burning hazardous waste) are baseline levels. We note that the Director may not have time during the review of the extension request (and a preliminary review of the part B application) to confirm the adequacy of the interim CO and HC limits proposed by the applicant. Moreover, to do so would require the types of oversight of test protocols, emissions testing, and review of data that will be applied under the permit process. Thus, the interim limits are subject to revision based on (confirmation) testing in support of the operating permit. Nonetheless, EPA believes that establishing interim CO and HC limits and requiring the owner/operator to comply with them until a permit is issued (or denied) is reasonable and provides a measure of protection of human health and the environment.

It should be noted that the Agency does not believe that it is possible to establish an alternative HC limit during interim status. This is because the level of interaction between an applicant and permit writer over evaluation of the various protocols to establish a HC baseline and determine when it should be reduced, plus conducting test burns to confirm the HC baseline and that HC levels do not increase when hazardous waste is burned, plus conducting a health risk assessment for organic emissions when hazardous waste is burned are beyond the scope of interim status. Consequently, the rule is structured so that the alternative HC limit (if warranted) would be established as part of the permit, and the interim status certification of compliance deadline can be extended, if the Director finds this is warranted, while the permit is being processed. The Director may also make the extension of time conditional on the time estimated to process the permit application or other factors, and can be conditioned on operating conditions than ensure the facility will operate in a manner that protects human health and the environment. Any such condition would be embodied in an interim status extension determination that is enforceable as a requirement of subtitle C (much as conditions in a closure plan are enforceable), and would be documented in an administrative record for the determination.

3. Cement kilns with a by-pass duct meeting the requirements of § 266.104(g)(2) are ineligible for an extension. The rule precludes cement kilns operating with a by-pass duct from eligibility for the extension of the certification of compliance date for compliance with the CO and HC limit, as well as for obtaining an alternative HC limit in a permit.

Fully Permitted Facilities. The Director may establish an alternative HC limit in the facility's operating permit provided that the applicant meets the following requirements. Information and data documenting compliance with these requirements must be included in the part B permit application. See § 270.22(b). First, the applicant must document in the permit application that facility is designed and operated to minimize HC emissions from all sources, including raw materials and fuels. Examples of situations where the system is not designed and operated to minimize HC (and CO) levels during baseline testing are when: (1) Coal is mixed with raw material which is fed into a cement kiln preheater such that the coal can contribute to HC emissions; (2) cement kiln slurry water contains enough organic compounds to significantly contribute to HC emissions; (3) waste fuels such as tires are burned in a manner that could contribute to HC emissions; (4) the furnace is not operated and designed to minimize emissions of hydrocabons emitted from raw material (in general, the more quickly the raw material is exposed to elevated temperatures, the lower the hydrocarbon emissions); and (5) normal fuels are not burned under good combustion conditions.

Second, the applicant must provide in the permit application baseline fuel data

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combusted to form hazardous products of incomplete combustion.

CO and HC levels. These proposed baseline levels also serve as interim values under which the facility must operate under a conditional time extension for certification of compliance with the HC standard until permit issuance (or denial). The proposed baseline levels must be supported by emissions testing under baseline conditions (i.e., when the facility is designed and operated to minimize HC emissions from raw materials and fuels while producing normal products under normal operating conditions and when no hazardous waste is burned). Baseline levels must be determined from test data as the average over all valid runs of the highest hourly rolling average value for each run. This is the same approach specified by the rule to determine limits on other operating parameters (e.g., maximum feed rate limits, maximum temperatures, etc). EPA believes that this approach is workable for cement kilns [30] given that commenters have asserted that when hazardous waste is burned, hydrocarbon levels do not increase and often decrease. As discussed in section II.E of Part Three of the preamble, HC levels from a cement kiln with HC levels of 66 to 70 ppmv when burning coal decreased to 38 to 63 ppmv when burning hazardous waste fuel. If the facility cannot install continuous monitors for HC (and CO and oxygen) in time to conduct these baseline tests prior to submittal of the permit application (which must be sufficiently prior to 13 months after promulgation of the rule to give the Director time to consider whether to grant the time extension), the facility may use portable monitors. We note that the HC monitoring system must be a hot, unconditioned system. In addition, we note that different baseline values may be necessary for different modes of operation if the baseline HC (or CO) level changes significantly under those modes of operation. Examples are when the raw material mix is changed to make a different cement product or when different fuels are burned.

Third, the applicant must develop emissions testing protocols to: (1) Confirm the baseline HC and CO levels proposed in the permit application (and under which the facility must operate in interim status upon receipt of an extension of time to comply with the HC limit and until an operating permit is issued (or denied)); and (2) to demonstrate that, when hazardous waste is burned, HC and CO levels do not exceed baseline levels (and emissions of other pollutants do not exceed allowable levels). If a baseline HC or CO level is to be established for more than one mode of operation, a baseline confirmation test (comprised of at least three valid runs) must be run for each mode.

Fourth, the applicant must develop an approach to effectively monitor over time changes in the operation of the facility that could significantly reduce baseline HC or CO levels. If baseline levels are significantly reduced, then the alternative HC and CO limits that apply when burning hazardous waste must also be reduced. Such changes could include: (1) Changes in the concentration of organic matter in raw materials; (2) changes in the concentration of organic matter in the raw material mix due to changes in the mixture of raw materials needed to produce different types of product; (3) changes in fuels; and (4) changes in the concentration of organic compounds in slurry water used for a wet cement kiln. The approach must be workable and enforceable.

EPA is requiring this condition in order to avoid establishing a high baseline which is then reduced without also lowering the HC limit, potentially allowing the hazardous waste to be burned under poor combustion conditions creating high, but undetected, HC levels (i.e., hazardous waste could be burned under poor combustion conditions and could be emitting high HC levels even though the HC limit was not exceeded). (The Agency notes that the problem of establishing a HC baseline and for determining when the baseline might change for this type of industrial furnace is more difficult than determining when the raw material baseline changes in documenting when co-combustion of hazardous waste with raw materials in a Bevill device might affect the composition of residues. See section XIII of Part Three of the preamble. This is because, in the case of the HC baseline, not only must the raw materials' and fuels' composition be monitored, but the units design and operating conditions as well to determine whether the baseline has changed. Thus, the rule provides for more interaction in establishing baseline conditions and determining when they change for assessing alternative HC limits for cement kilns than it does when making determinations as to whether co-combustion of hazardous waste can remove residues from eligibility for exclusion under the Bevill amendment.)

Finally, EPA is concerned that hazardous waste burning may affect the type and concentration of organic compounds emitted from an industrial furnace that has elevated HC concentrations attributable to raw materials. For example, the chlorine in the hazardous waste may result in higher concentrations of chlorinated organic compounds. Therefore, the rule requires the owner or operator, as part of the permitting process, to use state-of-the-art emissions testing procedures and risk assessment to demonstrate that organic emissions are not likely to pose unacceptable health risk. The owner or operator must conduct emissions testing during the trial burn to identify and quantify the organic compounds listed in appendix VIII, part 261, that may be emitted using test procedures specified by the Director on a case-by-case basis. As noted above, although EPA does not believe such risk-based approaches to be adequate as the basis for a national risk-based PIC standard, we think the approach is part of the best means of assuring that cement kilns combust hazardous waste fuels properly in those instances where HC levels are greater than 20 ppmv as a result of organics in normal raw material feed.

Two sampling and analysis approaches that the Director may use are discussed below. One protocol involves the following steps to identify and quantify concentrations of organic compounds in stack emissions:

1. Sample volatile organic compounds using the VOST train of Method 0030 as prescribed in SW-846. Analytical work is conducted using GC/MS according to Method 5040 in SW-846.

2. Sample semi-volatile organic compounds using the sampling train prescribed in Method 0010 in SW-846. Analytical work is conducted using GC/MS according to Method 8270 in SW-846.

3. Sample aldehydes and ketones using an impinger train with 2-4-di-nitro-phenyl hydrazine. (2-4-DNPH) in the impinger solution as prescribed in Method 0011 in the *Methods Manual*, and analysis of impinger solution by high performance liquid chromatography (HPLC) as specified in "Analysis for Aldehydes and Ketones by High Performance Liquid Chromatography" in the *Methods Manual*.

Another protocol is a screening approach that has been described in the literature [31] that uses the following protocols as specified in SW-846:[31]

[30] Although any industrial furnace that cannot meet the 20 ppmv HC limit because of organic matter in raw material is eligible to apply for an alternative HC limit, only one commenter expressed concern that industrial furnaces other than cement kilns may not be able to meet the 20 ppmv HC limit.

[31] Johnson, Larry, et al., "Screening Approach for Principal Organic Hazardous Constituents and Products of Incomplete Combustion", JAPCA Journal, Volume 39, No. 5, May 1988.

1. Soxhlet extraction sample preparation;
2. Gas chromatography (GC) coupled with flame ionization detector (FID), or mass spectrography (MS) screening;
3. Total chromatographic organics (TCO) and gravimetric (GRAV) procedures; and
4. High performance liquid chromatography-ultraviolet/MS (HPLC-UV/MS) screening and compound identification.

To select an appropriate protocol, the Director will consider the state-of-the-art of sampling and analytical techniques and the expected nature of organic emissions considering emissions data or other information.

We note that, under this PIC risk assessment, emission rates must also be determined for the 2,3,7,8-chlorinated tetra-octa congeners of chlorinated dibenzo-*p*-dioxins and dibenzofurans (CDDs/CDFs) using Method 23, "Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans (PCDFs) from Stationary Sources" in Methods Manual for Compliance with the BIF Regulations (Methods Manual), incorporated in today's rule as appendix IX of part 266. The risks from these congeners must be estimated using the 2,3,7,8-TCDD toxicity equivalence factor prescribed in "Procedures for Estimating the Toxicity Equivalence of Chlorinated Dibenzo-p-Dioxin and Dibenzofuran Congeners" in Methods Manual.

The owner or operator must then conduct dispersion modeling to predict the maximum annual average ground level concentration of each such organic compound. On site ground level concentrations must be considered if a person resides on-site; otherwise, only off-site concentrations may be considered. Dispersion modeling must be conducted in conformance with EPA's Guideline on Air Quality Models. EPA's "Hazardous Waste Combustion Air Quality Screening Procedure" provided in Methods Manual, or EPA's Screening Procedures for Estimating Air Quality Impact of Stationary Sources. The Methods Manual and the Guideline on Air Quality Models are incorporated in today's rule as appendices IX and X, respectively, to part 266. The Screening Procedures document is incorporated by reference in § 260.11.

Stack heights exceeding good engineering practice (GEP, as defined in 40 CFR 51.100(ii)) may not be used to predict ground level concentrations. See section V.B.1.c of Part Three of this preamble.

If the owner or operator applies for an alternative hydrocarbon limit for more than one industrial furnace such that emissions from the furnaces are from more than one stack, emissions testing must be conducted on all such stacks and dispersion modeling must consider emissions from all such stacks.

To demonstrate that the noncarcinogenic organic compounds listed in appendix IV of the rule do not pose an unacceptable health risk, the predicted ground level concentrations cannot exceed the levels established in that appendix.

To demonstrate that the carcinogenic organic compounds listed in appendix V of the rule do not pose an unacceptable health risk, the sum of the ratios of the predicted ground level concentrations to the levels established in the appendix cannot exceed 1.0. This is because the acceptable ambient levels established in appendix V are based on a 10^{-6} risk level. To ensure that the summed risk from all carcinogenic compounds does not exceed 10^{-6} (i.e., 1 in 100,000) the sum of the ratios described above must be used. (We note that the 2,3,7,8-TCDD toxicity equivalency factor is to be used to estimate the risk from 2,3,7,8-chlorinated CDDs/CDFs, and the risk from these congeners must be added to the risk from other PICs to ensure that the summed risk does not exceed 1 in 100,000.)

To demonstrate that other compounds for which the Agency does not have adequate health effects data to establish an acceptable ambient level are not likely to pose a health risk, the predicted ambient level cannot exceed 0.1 $\mu g/m^3$. This is the 5th percentile lowest reference air concentration for the compounds listed in appendix IV of the rule.

b. Feeding Waste at Locations other than the Hot End. If hazardous waste is fed into an industrial furnace at locations other than the "hot" end where the product is normally discharged and where fuels are normally fired, the rule requires the owner/operator to monitor HC irrespective of whether CO levels do not exceed the Tier I limit of 100 ppmv and to comply with special restrictions during interim status. These provisions are discussed below.

Mandatory HC Monitoring.[32] Except as indicated below, facilities that fire hazardous waste into an industrial furnace at locations other than the "hot" end where the product is normally discharged and where fuels are normally fired must comply with the HC limit even if CO levels do not exceed the Tier I limit of 100 ppmv. See § 266.104(d). This is because the Agency is concerned that the hazardous waste could conceivably be fired at a location in a manner such that nonmetal compounds in the waste may be merely evaporated or thermally cracked to form pyrolysis by-products rather than completely combusted. If so, little CO may be generated by the process and, thus, monitoring CO alone would not ensure that HC emissions were minimized.

However, if hazardous waste is burned (or processed) solely as an ingredient, HC monitoring is not automatically required because emissions of nonmetal compounds are not of concern. This is because the metals emissions controls will ensure that metals emissions do not pose a hazard. (The rule establishes the restrictions discussed below because we are concerned that the interim status controls on *organic* emissions may not be protective when hazardous waste is fed at locations other than the "hot" end of a furnace.) See discussion in section VII.H of Part Three of this preamble for when a waste is considered to be burned solely as an ingredient.[33]

Interim Status Restrictions. In addition to requiring HC monitoring when hazardous waste is fed into a furnace at locations other than the "hot" end where the product is discharged and where fuels are normally fired, today's rule applies other restrictions to hazardous waste burning during interim status. See § 266.103(a)(5). The hazardous waste may not be fed at any location where combustion gas temperatures are less than 1800 °F, and the owner or operator must demonstrate that adequate oxygen is present to combust the waste. In addition, for cement kilns, the hazardous waste must be fed into the kiln itself. These requirements are provided to ensure adequate destruction of the waste given that the DRE standard (which requires a demonstration by trial burn that organic constituents in the waste are destroyed)

[32] Continuous HC monitoring is required for a furnace if hazardous waste is fired at any location other than the "hot", product discharge end where fuels are normally fired irrespective of the CO level in stack emissions (i.e., irrespective if CO levels are lower than the Tier I limit of 100 ppmv) and irrespective of whether furnace off-gas is passed through another combustion chamber.

[33] Regulated entities have indicated that there is substantial confusion over the terms "use as an ingredient" and "material recovery". Under the RCRA hazardous waste regulatory program, EPA considers a hazardous waste to be burned or processed as an ingredient if it is used to produce a product. EPA considers a hazardous waste to be burned or processed for material recovery if one or more constituents of the waste is recovered in a product.

is not applicable during interim status. Like the requirement for mandatory HC monitoring, however, these restrictions do not apply if the hazardous waste is burned (processed) solely as an ingredient. For further discussion, see section VII.H of Part Three of this preamble.

5. Special Considerations for Cement Kilns

a. Monitoring in the By-Pass Duct of a Cement Kiln. The final rule provides that cement kilns with by-pass ducts may monitor CO and, if required, HC concentrations in the by-pass duct. Most precalciner and some preheater kilns are equipped with by-pass ducts where a portion (e.g., 5–30%) of the kiln off-gas is diverted to a separate air pollution control system (APCS) and, sometimes, a separate stack. A portion of the kiln gases are so diverted to avoid a build-up of metal salts that can adversely affect the calcination process. Dust collected from the by-pass APCS is usually disposed of while dust collected from the main APCS is usually recycled back into the kiln to make the clinker product.

Several comments were received regarding sampling at cement kilns. Five commenters suggested that HC (and CO) measurements should be allowed in the by-pass duct rather than in the main stack because: (1) The by-pass gas is representative of the kiln off-gas; and (2) this approach would preclude the problem of nonfuel HC emissions from the raw material exceeding the 20 ppmv limit. The raw material would be heated and partially calcined in the precalciner or preheater and HC from that process would be emitted from the main stack. The by-pass duct draws the kiln off-gas prior to the precalciner or preheater and, so, would not be affected by that process.

Another commenter specifically supported monitoring CO (and HC, if required) only in the bypass duct provided that hazardous waste is fed only to the kiln and not to the preheater or precalciner.

The Agency conducted testing [34] at a cement kiln to gather information relevant to the issue of HC monitoring in the bypass duct for preheater and precalciner cement kilns. The data showed that the gases in the bypass duct are representative of the combustion of waste in the kiln.

Based on this test data and public comment, the final rule allows CO and, where required, HC monitoring in the bypass duct of a cement kiln provided that: (1) Hazardous waste is fired only into the kiln (i.e., not at any location downstream from the kiln exit relative to the direction of gas flow); and (2) the bypass duct diverts a minimum of 10% of kiln off-gas. See § 266.104(g). The 10% diversion requirement is based on engineering judgment that, at this level of kiln-gas diversion, the bypass gas will be representative of the kiln off-gas. Industry representatives indicate [35] that the bypass duct capacity of most facilities actively involved in burning hazardous waste exceeds the 10% limit.

b. Use of Hazardous Waste as Slurry Water for Wet Cement Kilns. Some kiln operators have inquired as to what regulatory standards apply, if any, if hazardous wastes are used as slurry water. The Agency does not regard the practice as an excluded form of recycling. The Agency has long been skeptical of claims that hazardous wastes are "recycled" when they substitute for very commonly available and economically marginal types of raw materials. In particular, the Agency has been skeptical that liquid hazardous wastes serve as a substitute for water. Cf. 48 FR at 14489 (April 4, 1983). In the case of hazardous waste used as slurry water, the hazardous constituents in the waste are ordinarily unnecessary to the claimed recycling activity and are being gotten rid of through the slurrying process. Given the possibility of hazardous levels of air emission is high, the practice certainly can be part of the waste disposal problem. Consequently, the Agency regards such practice as a form of waste management subject to regulation under today's rule.

EPA considered prohibiting the use of hazardous waste as slurry water for wet cement kilns because of concern that toxic organic constituents in the waste could be volatilized and emitted without complete combustion. The final rule does not prohibit using (or mixing) hazardous waste with slurry water because we believe that the controls provided by the rule both during interim status and under a RCRA operating permit adequately address the hazard that the practice may pose.

If hazardous waste is fed into any industrial furnace during interim status at a location other than the hot, product discharge end, combustion gas temperatures must exceed 1800 °F at the point of introduction, and the owner or operator must document that adequate oxygen is present to combust organic constituents in the waste. See discussion above. EPA believes that these restrictions will, as a practical matter, preclude use of hazardous waste in slurry water during interim status.

Although these restrictions on hazardous waste burned at locations other than the hot end of an industrial furnace do not apply under a RCRA operating permit, the permit proceedings will ensure that organic constituents in a hazardous waste that is fed into the kiln in slurry water (or in the slurry itself) will be destroyed. The Director will require that toxic nonmetal constituents in the waste are destroyed to a 99.99% destruction and removal efficiency, and that adequate oxygen is present to completely destroy the organic compounds.

C. Automatic Waste Feed Cutoff Requirements

Today's rule requires that boilers and industrial furnaces combusting hazardous waste be equipped with automatic waste feed cutoff systems to limit emissions of hazardous compounds during combustion "upset" situations and to ensure stable combustion conditions. The automatic waste feed cutoff system must be connected to the CO and HC monitoring system, such that an exceedance of a CO or HC limit would trigger a cutoff of the waste feed. Additionally, the automatic waste feed cutoff system must engage when other key operating conditions deviate from specified unit operating limits, which are determined during compliance testing or which are based on manufacturer specifications. See §§ 266.102(e)(7)(ii) and 266.103(g).

Some commenters disagreed with the proposed automatic waste feed cutoff requirements. One commenter argued against any waste feed cutoffs for light-weight aggregate kilns. Six commenters expressed concern that waste feed cutoffs would increase the instability of the combustion conditions and would possibly increase air emissions. Three commenters requested a controlled waste feed reduction over several minutes rather than an automatic waste feed shutoff. Three commenters suggested different levels of CO emissions be set for waste feed cutoffs.

The Agency acknowledges that there can be performance and other problems associated with automatic waste feed cutoffs, and recognizes that they may be undesirable for some applications. For example, when the facility operates without the use of hazardous waste fuel use of fossil fuel is increased, and the opportunity is lost for safe disposal of hazardous waste. Further, HC emissions may actually increase if the automatic waste feed cutoff is triggered frequently

[34] U.S. EPA, "Emissions Testing of a Precalciner Cement Kiln at Louisville, Nebraska", November 1990.

[35] Letter dated August 16, 1990, from Dr. Michael von Seebach, Southdown, Inc., to Dwight Hlustick, EPA.

even though combustion chamber temperatures must be maintained while hazardous waste or residues remain in the combustion chamber. However, the Agency continues to believe that automatic waste feed cutoff systems are necessary to avoid adverse effect on human health and the environment that could result if hazardous waste is fired into the device when it is operating under combustion upset conditions.

To address the concerns raised by commenters, EPA recommends installing pre-alarm systems that alert an owner/operator of potential problems and provide time either for corrective measures to be taken or for a staged cutoff of the hazardous waste feed. Thus, the use of pre-alarms should minimize waste feed cutoffs. In addition, we have included in the rule some additional requirements related to waste feed cutoffs and restarts, as discussed below.

One commenter stated that cutoffs are inappropriate for combustion devices where the waste is destroyed immediately upon injection into the combustion chamber (e.g., devices that burn liquid wastes), or if the combustion conditions supported by the waste fuel continue to destroy residual waste after waste feed cutoff. The Agency continues to believe that the best method for returning a combustion system to good operating conditions, thereby minimizing unacceptable emissions, is to stop the input of hazardous waste. Further, the burden associated with automatic cutoffs should not be substantial because frequent automatic waste feed cutoffs should not occur given that the parameters tied into the automatic cutoff system may be monitored on an hourly rolling average basis (which allows high values to be offset by low values) and that the Agency recommends the use of pre-alarms to warn the operator of a pending cutoff (which may give the operator time to take corrective measures to avoid an automatic cutoff).

In the event of a waste feed cutoff, monitoring for CO and HC (and other operating parameters for which limits in the permit are based on a rolling average basis) must continue, and the waste feed cannot be restarted until CO and HC levels (and levels of the other parameters) come within allowable limits. See § 266.102(e)(7)(ii). (For permit operating conditions not established on a rolling average basis, the Director will specify, on a case-by-case basis, an adequate period of time during which the parameters must remain within permit limits to demonstrate steady-state operation prior to restarting the hazardous waste feed.) In addition, consistent with the April 27, 1990 incinerator amendments proposal, the provision of the final boiler and industrial furnace rule requiring compliance with the permit operating conditions states that compliance must be maintained at any time there is waste in the unit. See § 266.102(e)(1). This language clarifies that activation of the automatic waste feed cutoff does not relieve the facility of its obligation to comply with the permit conditions if there is waste remaining in the unit (such as in a rotary kiln). Thus, for example, the air pollution control system must continue to be operated within the applicable permit conditions.

Furthermore, after a cutoff, the temperature in the combustion chamber must be maintained at levels demonstrated during the compliance test for as long as the hazardous waste or residue remains in the combustion chamber. The Agency believes this temperature requirement will help ensure that hydrocarbon emissions will be minimized after a cutoff.

To comply with this requirement, the operating permit must specify the minimum combustion chamber temperature after a waste feed cutoff while waste remains in the combustion chamber. An uninterruptable burner using auxiliary fuel (i.e., nonhazardous waste fuel) of adequate capacity may be needed to maintain the temperature in the combustion chamber(s) and to allow destruction of the waste materials and associated combustion gases left in the system after the waste feed is automatically cut off. The safe startup of the burners using auxiliary fuel requires approved burner safety management systems for prepurge, pilot lights, and induced draft fan starts. If these safety requirements preclude immediate startup of auxiliary fuel burners and such startup is needed to maintain temperatures (i.e., if the combustion chamber temperatures drop precipitously after waste feed cutoff), the auxiliary fuel may have to be burned continuously on "low fire" during nonupset conditions.

Furthermore § 266.102(e)(7)(ii)(B) requires that the combustion gases must continue to be routed through the air pollution control system as long as waste remains in the unit. One effect of this clarifying requirement, in combination with the requirement to maintain compliance with permit conditions as long as there is waste in the unit, is that opening of any type of air pollution control system bypass stack while there is waste in the boiler or furnace would be a violation of the permit (unless the facility demonstrates compliance with the performance standards during the trial burn, with vent stack open).

Although we believe that such emergency bypass stacks are not prevalent on boilers and industrial furnaces, our discussion of this topic in the preamble to the incinerator amendments at 55 FR 17890 (April 27, 1990) would also apply to any boiler or industrial furnace with such a bypass or vent stack. We received a number of comments from the incinerator industry expressing concern that use of a bypass stack for safety purposes would be considered a violation. We agree that there can be mitigating circumstances to warrant the use of a bypass stack and do not discredit their use as a safety device. However, the Agency continues to believe that the facility can and should implement measures to minimize situations where use of the emergency vent stack is necessary.

One commenter stated that the use of hazardous waste should be prohibited during startup or shutdown periods for a cement kiln until normal operating temperatures are achieved. The final rule does not restrict hazardous waste burning during kiln startup or shutdown provided that the compliance (or trial burn) covers those periods of operations. In other words, hazardous waste may be burned during startup and shutdown if the facility demonstrates conformance with the standards during those operations.

Another commenter argued that accurate measurement of combustion chamber temperature for some combustion devices will be difficult. Because of this difficulty, the final rule does not require that this temperature be directly measured in the combustion chamber if an owner/operator can demonstrate to permitting officials that the combustion chamber temperature correlates with a more easily measured downstream gas temperature.

One commenter agreed with EPA's revised proposal not to limit the number of automatic waste feed cutoffs, but disagreed with EPA's requirement that combustion chamber temperatures must be maintained at the levels that occurred during the trail burn for the duration of time that the waste remains in the combustion chamber. This commenter believed that electric utility boilers and other burning devices will have difficulty in accurately measuring combustion chamber temperatures. For this reason, the commenter suggested that waste feed cutoffs alone be used to control HC emissions rather than requiring that combustion chamber

temperatures be maintained. EPA believes that the flexibility that the final rule allows for monitoring combustion chamber temperature and in setting the frequency of waste feed cutoffs as discussed above should address this commenter's concerns.

Another commenter supported the proposed 10 times per month limit on the number of automatic waste feed cutoffs and the proposed requirement that any facility exceeding that frequency would be required to cease burning hazardous waste, to notify the Director, and not to resume burning hazardous waste until reauthorized by the Director. Another commenter supported monthly cutoff limits because they would provide an incentive for the facility to take corrective measures to preclude frequent cutoffs. Some commenters stated that this requirement is overly restrictive.

After careful consideration, EPA has decided to modify this requirement for the following reasons: (1) The Agency does not have data indicating a specific frequency of cutoffs which would be unacceptable at all boilers and furnaces given that the combustion chamber temperature and other conditions are maintained as described above; (2) the Agency believes that operating costs associated with cutoffs will provide sufficient incentive to encourage owners/operators to minimize automatic waste feed cutoff incidents; and (3) the recommended use of pre-alarm systems will reduce the number of waste feed cutoffs. However, the final rule allows the Director to use his discretion to determine whether a limit on the frequency of cutoffs is warranted at a specific facility.

Waste Feed Restarts. Today's rule provides that when the automatic waste feed cutoff is triggered by a CO limit or when applicable, an HC exceedance, the waste feed can be restarted only when the hourly rolling average CO/HC levels meet the permitted limits (e.g., 100 ppmv for CO under Tier I).

The Agency proposed two alternative approaches for restarting the waste feed when a cutoff is triggered by a CO exceedance: (1) Restart the waste feed after an arbitrary 10-minute time period to enable the operator to stabilize combustion conditions; or (2) restart the waste feed after the instantaneous CO level meets the hourly rolling average limit. Eight commenters supported restarting the waste feed after the instantaneous CO level meets the permit limit. Five commenters suggested that waste feed can be restarted once the instantaneous CO level meets the hourly rolling average limit. The Agency considered the comments, but continues to believe that allowing a waste feed restart after the hourly rolling average equals or falls below the permitted limit is preferable. After the waste feed is cutoff, the facility will be burning nonhazardous waste (typically fossil fuel), which should result in CO and HC levels well below the allowable limits. Therefore, the hourly rolling average should fall below the permitted limit within a relatively brief period of time. Allowing the waste feed to be restarted when the instantaneous CO level has dropped to the permitted level may not be desirable, because restarting the waste feed immediately may trigger another cutoff due to a CO spike when the waste feed is restarted.

Three commenters supported the proposed approach to require the HC hourly rolling average to be met before restarting the waste feed cutoff because of a HC exceedance. Three commenters opposed this approach. Instead, these commenters suggested a 10-minute waiting period be used. EPA considered these comments but continues to believe that meeting the hourly rolling average is a conservative approach and is appropriate after a HC exceedance, because the HC is a better surrogate for toxic organic emissions than CO.

D. CEM Requirements for PIC Controls

The final rule promulgates the proposed performance specifications for continuously monitoring CO, HC, and oxygen. See Methods Manual for Compliance with the BIF Regulations, incorporated as appendix IX of part 266 in today's rule. The performance specifications for HC monitoring, however, include specifications for both hot and cold monitoring. Although hot monitoring is generally required by the final rule, cold monitoring may be used for interim status facilities if they certify compliance with the emissions standards within 18 months of promulgation of the rule. Even if cold monitoring is used to certify initial compliance, however, hot monitoring is required for these facilities when they recertify compliance and when they are issued a RCRA operating permit.

One commenter stated that an HC monitoring system is readily available for continuous emissions monitoring (CEM), while five commenters maintained that HC analyzers have serious operational problems. Several commenters requested that alternate HC CEM methods be allowed, specifically monitors with non-dispersive infra-red (NDIR) detectors rather than the required flame ionization detector (FID). One commenter noted that EPA has not validated the FID method for HC analysis nor has it provided any critical discussion of the current methods of HC analysis.

The Agency considered the use of NDIR detectors for HC monitoring but believes that NDIR systems have limitations compared to FID systems. EPA believes that FID systems are more sensitive than NDIR systems and that an equivalent response is not found with NDIR detectors. The final rule requires the use of FID detectors for HC monitoring.

Four commenters recommended monitoring nonmethane hydrocarbons (NMOC) as opposed to "total" HC because methane, which is predominately emitted from fuel sources, has a high FID response factor. Furthermore, these commenters would like EPA to require testing for specific PICs that respond poorly to HC monitors during test burns. One commenter stated that HC monitors can be varied easily to detect NMOC. EPA does not agree with either suggestion. The Agency is requiring HC monitoring to indicate whether the device is operating under good combustion conditions. We acknowledge that the largest fraction of organic compounds that the HC monitoring system required by the final rule will detect for facilities operating under good combustion conditions will be compounds that are relatively nonhazardous (e.g., methane). In addition, some hazardous compounds, particularly highly chlorinated compounds) will be under-reported. Thus, although the promulgated approach would not be adequate for the purpose of assessing the risk that HC may pose from a given facility, the approach is adequate for its intended purpose—a measure of whether the facility continues to operate within good combustion conditions. This is because EPA's emissions testing has shown that when combustion conditions deteriorate, the compounds that are readily detected by the promulgated HC monitoring system increase correspondingly.

In addition, if a NMOC system were used, the 20 ppmv HC limit would have to be lowered to account for the methane fraction that would no longer be counted. Commenters did not provide support for so adjusting the proposed HC limit. Further, the Agency is concerned that NMOC detectors may not be able to provide continuous data due to the time required for methane separation. The Agency has also found that HC CEMs are more durable than NMOC CEMs, and thus less prone to reliability problems. As a result, the Agency has concluded that HC CEMs are more likely to provide a continuous

indication of combustion conditions than is possible with an NMOC monitor.

Hot Versus Cold HC Monitoring Systems. Except as indicated below, the final rule requires the use of a hot or unconditioned HC monitoring system that must be maintained at a temperature of at least 150 °C until the sample gas exits the detector. See performance specifications in Methods Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266). Given, however, that the technology has just recently been demonstrated [36] to be continuously operational on hazardous waste combustion devices, the final rule allows the use of a conditioned gas monitoring system during the initial phase of interim status operations. Facilities in interim status that certify compliance with the emission standards for metals, HCl, Cl_2, particulate matter, CO and HC within 18 months of promulgation of the final rule may use a conditioned gas system. Facilities that elect to obtain the automatic 12-month extension (or a case-by-case extension) of the 18-month certification deadline, however, may not use a conditioned gas system because the additional time provided by the extension will also provide time to install an unconditioned HC monitoring system. These facilities must demonstrate compliance with the HC limit using an unconditioned gas monitoring system. Further, facilities that certify initial compliance using a conditioned gas (cold) system must use an unconditioned gas (hot) system when they recertify compliance within three years of certifying initial compliance.

EPA is requiring the use of a hot monitoring system because it represents best demonstrated technology given that a larger fraction of HC emissions can be detected with a hot system. As discussed at proposal, a hot HC monitoring system can detect a substantially larger fraction of hydrocarbon emissions than a cold system. This is because the cold system uses a gas conditioning system that removes semi- and nonvolatile hydrocarbons and a substantial fraction of water-soluble volatile hydrocarbons.

EPA received numerous comments regarding gas conditioning (heated versus unheated) for HC monitoring. Eight commenters are in favor of gas conditioning. The purpose of gas conditioning is to remove moisture from the combustion gases that can degrade instruments or plug sample lines. Sample conditioning, however, can also remove some of the water soluble hydrocarbons and the semi- and nonvolatile hydrocarbons in the flue gas such that methane and other nonhazardous volatile hydrocarbons are frequently the dominant constituents measured by the detector. Some commenters were concerned that fewer PICs would be detected by a conditioned (i.e., cooled) monitoring system. However, one commenter stated that even though the constituents contributing most of the hypothetical risk are relatively nonvolatile they are relatively nondetectable through an unconditioned (heated) monitoring system because of their halogen content.

As discussed at proposal, the Agency is using HC monitoring to implement the technology-based HC limit of 20 ppmv as an indicator of good combustion conditions. The HC monitor is not used in an attempt to quantify organic emissions for risk assessment purposes. Emissions testing has shown that during combustion upset conditions, both the hot and cold HC monitoring systems detect an increase in HC levels because under upset conditions there is a substantial increase in hydrocarbon compounds that are readily detected by either monitoring system.[37]

One commenter suggested that, rather than specifying a range of 40–64 °F for operation on the conditioner as proposed, a specific conditioning temperature (32 °F) should be required to precisely define the conditioned sampling procedure. We agree that a minimum temperature should be specified rather than the range. The final rule allows a conditioned monitoring system during the initial phase of interim status, and requires that the sample gas temperature must be maintained at a minimum of 40 °F at all times prior to discharge from the detector. EPA selected a minimum temperature of 40 °F from the range of 40 to 64 °F to ensure that moisture was effectively removed from the gas sample to preclude plugging and fouling problems with the monitoring system.

Three commenters suggested that the HC limit of 20 ppmv be re-examined because gas conditioning temperatures or other changes in the measurement method may influence the amount of HC measured. Given that the 20 ppmv limit is based primarily on test burn data using heated (i.e., unconditioned) monitoring systems, the Agency considered lowering the 20 ppmv limit when a cold (i.e., conditioned) monitoring system is used. (Limited field test data indicate that a heated system would detect from 30% to 400% more of the mass of organic compounds than a conditioned system.) We believe, however, that the 20 ppmv HC limit is still appropriate when a conditioned system is used because: (1) The data correlating heated vs conditioned systems are very limited; (2) the data on HC emissions are limited (and there apparently is confusion in some cases as to whether the data were taken with a conditioned or unconditioned monitoring system); and (3) the Agency's risk methodology is not sophisticated enough to demonstrate that a HC limit of 5 or 10 ppmv using a conditioned system rather than an unconditioned system is needed to protect human health and the environment. The SAB [38] also concurs with this view. (More detailed responses to comments on this issue are found in a separate background document.)

E. Control of Dioxin and Furan Emissions

For facilities that may have the potential for significant emissions of chlorinated dibenzodioxins and dibenzofurans (CDD/CDF), the final rule requires emissions testing for both interim status and new facilities to determine emissions rates of all tetra-octa congeners, calculation of a toxicity equivalency factor, and dispersion modeling to demonstrate that the predicted maximum annual average ground level concentration (i.e., the hypothetical maximum exposed individual) does not exceed levels that would result in an increased lifetime cancer risk of more than 1 in 100,000.[39] The Agency considers a facility to have the potential for significant CDD/CDF emissions if it is equipped with a dry particulate matter control device (e.g., fabric filter or electrostatic precipitator)

[36] Entropy Environmental Inc., "Evaluation of heated THC Monitoring Systems for Hazardous Waste Incinerator Emission Measurement". Draft Final Report. October 1990; and Shamat, Nadim, et al., "Total Hydrocarbon Analyzer Study", Paper presented at the 83rd Water Pollution Control Federation Conference in Washington, DC, October 8, 1990.

[37] EPA is requiring the use of a hot, unconditioned HC monitoring system (except under certain circumstances during the initial phase of interim status) because hot systems are, nonetheless, more conservative in that they detect a larger fraction of organic compounds in emissions. Further, hot systems represent best demonstrated technology for monitoring HC levels.

[38] U.S. EPA, "Report of the Products of Incomplete Combustion Subcommittee of the Science Advisory Board", Report # EPA-SAB-EC-90-004, January 1990.

[39] EPA is not requiring that the estimated cancer risk from CDD/CDF be added to the risk from metal emissions to demonstrate that the summed risk to the maximum exposed individual is less than 10^{-5}. The Agency believes that it is inappropriate to sum the estimated health risk from metals that [illegible] known or probable human carcinogens wi[illegible] toxicity equivalency factor for CDD/CDF th[illegible] designed to be very conservative.

with an inlet gas temperature within the range of 450 to 750 °F, or if it is an industrial furnace that has hydrocarbon levels exceeding 20 ppmv. See § 266.104.

Dispersion modeling must be conducted in conformance with EPA's "Hazardous Waste Combustion Air Quality Screening Procedure" provided in Methods Manual for Compliance with the BIF Regulations or EPA's Guideline on Air Quality Models (Revised) which are incorporated in today's rule as appendices IX and X, respectively, of part 266, or "EPA SCREEN Screening Procedure" as described in Screening Procedures for Estimating Air Quality Impact of Stationary Sources. The latter document is incorporated by reference in today's final rule at § 260.11. To evaluate potential cancer risk from the congeners, prescribed procedures must be used to estimate the 2,3,7,8-TCDD toxicity equivalence of 2,3,7,8-chlorinated congeners. See "Procedures for Estimating Toxicity Equivalence of Chlorinated Dibenzo-p-Dioxin and Dibenzofuran Congeners" in Methods Manual for Compliance with the BIF Regulations incorporated in the rule as appendix IX of part 266.

Studies conducted by the Agency [40] and others [41] during development of regulations for municipal waste combustors (MWCs) concluded that PM control devices operated at temperatures greater than 450 °F have the potential for emitting elevated levels of CDD/CDF. At these temperatures, precursor organic materials and chlorine in the flue gas can be catalyzed by PM captured in the PM collection device to form CDD/CDF. Based on these findings, the Agency proposed to restrict the combustion of hazardous waste in BIFs that operate with PM control device temperatures greater than 450 °F.

A number of commenters opposed the proposed limitation on the flue gas temperature to less than 450 °F. Several commenters pointed out technical distinctions among types of boilers and industrial furnaces that affect the ability of a unit to change flue gas temperature and the potential of an ESP to form CDD/CDF. For example, many boiler and industrial furnaces either combust wastes that are very low in chlorine or that have high levels of chlorine capture within the process (e.g., cement kilns). As a result, the CDD/CDF emission potential will vary for different boilers and industrial furnaces, as well as between boilers and industrial furnaces and MWCs. Commenters also stated that there is no direct evidence of CDD/CDF emissions from several types of boilers and industrial furnaces, and that compliance testing to demonstrate 99.99 percent DRE of POHCs and continuous monitoring of CO and HC levels is adequate to ensure minimal emissions of organic compounds.

The Agency has reviewed the available data on the theory of CDD/CDF formation as well as CDD/CDF emissions from BIFs. Based on this review, the Agency agrees that most, but not necessarily all, BIFs burning hazardous waste have low CDD/CDF emission rates. For example, EPA recently tested a cement kiln burning hazardous waste that operates with an ESP at a temperature of 500–500 °F and found it to have relatively high CDD/CDF emissions.[42] (EPA conducted a risk assessment, however, that estimated the increased lifetime cancer risk to the hypothetical maximum exposed individual from the CDD/CDF emissions ranged from 7 in 10,000,000 to 2 in 1,000,000 without burning hazardous waste and from 2 in 1,000,000 to 4 in 1,000,000 when burning hazardous waste, well under the 1 in 100,000 limit established in today's rule.) The Agency suspects that the elevated CDD/CDF concentrations in the stack gas at this cement kiln are the result of the ESP's operating temperature and the level of HC precursor material in the flue gas. HC concentrations ranged from 66 to 70 ppmv (measured with a hot system, reported as propane, and corrected to 7% oxygen, dry basis) without hazardous waste burning and from 38 ppmv to 63 ppmv with hazardous waste burning. (We note that to continue burning hazardous waste under today's rule, the Director must establish during the part B permit proceedings an alternative HC level for this kiln based on a demonstration by the applicant that HC levels are not higher when burning hazardous waste than under normal conditions and that the facility is designed and operated to minimize HC emissions from all sources—fuels and raw materials. At certification of compliance with the emissions controls other than the HC limit, this facility must also propose a HC concentration limit for the remainder of interim status (until that limit or another limit is established under permit proceedings) that will ensure that HC levels when hazardous waste is burned will not be higher than baseline levels (i.e., HC levels when the system is designed and operated to minimize HC emissions from all sources, when burning normal fuels and feeding normal raw materials to produce normal products, and when not burning hazardous waste).) In addition, trial burn emissions testing must demonstrate that emissions of organic compounds are not likely to result in an increased lifetime cancer risk to the hypothetical maximum exposed individual exceeding 1 in 100,000. See § 266.104(f) and discussion in section II.B.4.b of part three of this preamble.) There may be other factors that influence CDD/CDF levels at this facility (and other facilities), but this is uncertain. In addition, the exact HC concentration in combustion gas below which elevated CDD/CDF concentrations will not occur is unknown.

The Agency continues to believe that the operating temperature of the PM control device (and HC concentrations in flue gas) plays a significant role in CDD/CDF emissions. For a given HC concentration in the flue gas, the available data suggest that the potential for elevated CDD/CDF emissions is low if the PM control device operates at temperatures of less than 450 °F or above 750 °F. Consequently, today's rule does not require BIFs with PM control devices operating at temperatures outside of the 450–750 °F window to determine CDD/CDF emission rates (unless it is an industrial furnace with HC levels greater than 20 ppmv). Owners and operators of units operating within the temperature window, however, are required to conduct stack testing to determine CDD/CDF emission rates and to conduct a risk assessment using prescribed procedures to demonstrate that the estimated increased lifetime cancer risk to the hypothetical maximum exposed individual is less than 1 in 100,000.

The Agency notes that the final rule municipal waste combustors (MWCs) may take a slightly different approach to control dioxin and furans by limiting temperatures at the inlet of the PM air pollution control system to within 30 °F of those achieved in a dioxin/furan compliance test. The preamble to that rule, however, will probably continue to note the possibility of dioxin/furan formation in the temperature range of 230 °C (450 °F). In today's rule, the Agency believes that using temperature and HC levels as a trigger to dioxin/furan testing and risk assessment will be fully protective of human health and the

[40] See U.S. EPA, "Municipal Waste Combustion Study: Combustion Control of Organic Emissions", EPA/530-SW-87-021C, NTIS Order No. PB87-206090; U.S. EPA, "Municipal Waste Combustion Study: Flue Gas Cleaning Technology", EPA/530-SW-87-021D, NTIS Order No. PB87-206108; and 54 FR 52251 (December 20, 1989).

[41] Vogg H. and L. Stieglitz, "Thermal Behavior of PCDD/PCDF in Fly Ash from Municipal Waste Incinerators", Chemosphere, pp. 1373–1378, 1986.

[42] U.S. EPA, Emissions Testing of a Wet Cement Kiln at Hannibal, MO, December 1990.

environment and somewhat easier to implement than the MWC approach.

III. Risk Assessment Procedures

The Agency uses assessment of health risk to develop and implement the final rules for metals, hydrochloric acid (HCl), and chlorine gas (Cl_2). Specifically, the Agency has used risk assessment to: (1) Establish ambient air concentrations of appendix VIII compounds that do not pose an unacceptable health risk for purposes of this rulemaking; and (2) establish risk-based, conservative feed rate and emissions Screening Limits for metals and HCl. In addition, if facilities fail the Screening Limits or elect to conduct dispersion modeling to obtain less conservative limits, the rule allows facilities to use site-specific dispersion modeling to establish emission limits, and ultimately feed rate limits for metals and chlorine.

To establish health-based acceptable ambient concentrations for noncarcinogenic toxic metal and nonmetal compounds (except for HCl, Cl_2 and lead), EPA converted oral reference doses to reference air concentrations (RACs) by assuming average breathing volumes and body weights, and by applying a safety and a background level factor. See 54 FR at 43756. Health-based concentrations for carcinogenic pollutants were derived by converting cancer potency factors, or slopes (unique for each carcinogen), into Risk Specific Doses (RSDs) at a risk level of 1 in 100,000.[43] Since carcinogens are assumed to pose a small but finite risk of cancer even at very low doses, the RSD reflects a certain risk level, corresponding to 1 chance in 100,000, or 10^{-5} excess risk of cancer for the maximally exposed individual if exposed continuously to multiple carcinogenic chemicals for a 70-year lifetime. RACs for HCl and Cl_2 are based on inhalation data, and a RAC for lead is based on the National Ambient Air Quality Standard (NAAQS).

To establish the Screening Limits for metals and HCl, air dispersion modeling was applied to back-calculate maximum acceptable feed rates and stack emissions rates from risk-based, acceptable ambient concentrations. These calculations were performed for various terrain types, effective stack heights, and land use classifications. The resulting permissible Screening Limits reflect plausible, reasonable worst-case assumptions about a generic facility that are not site-specific. The Screening Limits process provides a rapid and convenient risk-based mechanism to determine compliance. Conservative assumptions used to estimate health impacts exposure in the Screening Limit process include: (1) Use of reasonable, worst-case estimate of dispersion of stack emissions; and (2) for the Tier I feed rate Screening Limits, assuming that all metals and chlorine fed into the BIF in all feedstreams are emitted (i.e., there is no partitioning to bottom ash or product, and not removal by an air pollution control system.[44] See 52 FR 17002 (May 6, 1987) and 54 FR 43729 (October 26, 1989). Thus, assumptions and the Screening Limits tend to err intentionally on the side of protecting human health.[45]

If emission levels exceed the Screening Limits (or if the owner/operator so elects), the rule allows a facility to conduct its own site-specific air dispersion modeling in order to establish metals, HCl, and Cl_2 emission limits. Incorporation of site-specific information allows less conservative assumptions (than the reasonable worst-case, nonsite-specific defaults) to be used in the dispersion models. Consequently, site-specific air dispersion modeling may predict lower ambient concentrations than the nonsite-specific modeling reflected in the Screening Limits, thus allowing higher emissions and feed rate limits.

A. Health Effects Data

1. Carcinogens

Health effects evaluations for carcinogens have been summarized in Part Three, I. D, "Evaluation of Health Risk" in the April 27, 1990 proposal (see 55 FR 17873). To summarize briefly, in contrast to noncarcinogens, carcinogens are assumed to present a small but finite risk of causing cancer, even at very low doses. The slope of the dose-response curve in the low dose region is assumed to be linear for carcinogens. Because of this, the slope of the curve in the low dose region may be used as an estimate of carcinogenic potency. The unit risk is defined as the incremental lifetime risk estimated to result from exposure of an individual for a 70-year lifetime to a carcinogen in air containing 1 microgram of the compound per cubic meter of air ($\mu g/m^3$). At an air concentration of 1 $\mu g/m^3$, the cancer potency slope is numerically equivalent to the unit risk. Thus, at a preselected risk level, the corresponding air concentration which would cause that risk may be calculated by dividing the desired risk level by the unit risk value. Although the resulting value represents an air concentration with units of $\mu g/m^3$, this concentration is referred to as the Risk Specific Dose (RSD).

When exposed to more than one carcinogen, the Guidelines for Carcinogenic Risk Assessment (51 FR 33992 (September 24, 1986)) recommend adding risks from the individual carcinogens to obtain the aggregate risk (i.e., cancer risks from exposure to more than one carcinogen are assumed to be additive). For today's rule, the Agency has proposed that an aggregate risk level for metals (i.e., arsenic, beryllium, cadmium, and hexavalent chromium) of 10^{-5} is appropriate because it would limit the risk level for individual carcinogens to the order of 10^{-6}. The Agency points out, however, that in selecting the appropriate risk level for a particular regulatory program, it considers such factors as the particular statutory mandate involved, nature of the pollutants, control alternatives, fate and transport of the pollutant in different media, and potential human exposure. See, e.g., 54 FR at 38049 (Sept. 14, 1989). Particular factors bearing on the Agency's choice here include the wide array and potentially large volumes of carcinogenic pollutants that can be emitted by these devices (unlike the situation in such rules as the benzene NESHAP when a single pollutant with well-understood effects was at issue), the need to guard against environmental harm as well as harm to human health, potential synergistic effects of the carcinogens emitted by these devices (which effects are not accounted for by the risk assessment), and legislative history indicating Congressional preference for parity of regulation between BIFs burning hazardous waste fuels and hazardous waste incinerators (S. Rep. No. 284, 98th Cong. 1st Sess. 38)). In addition, the increased recognition of the need to control net air emissions of toxic pollutants generally, manifest in Title III of the Clean Air Act Amendments of

[43] We note that the cancer risk from the carcinogenic metals must be summed to ensure that the summed risk is not greater than 1 in 100,000. Thus, when more than one carcinogenic metal is emitted, the allowable ground level concentration for each carcinogenic metal is less than the 10^{-5} Risk Specific Dose for that metal.

[44] To obtain credit for partitioning to residue or product and for APCS removal efficiency, owners and operators must conduct emissions testing to demonstrate the overall System Removal Efficiency (SRE)—partitioning plus APCS removal efficiency. The Agency has not assumed an SRE in developing the Tier I feed rate Screening Limits because there are many site-specific factors that can affect the SRE.

[45] We note that the Screening Limits may not always be conservative, however. Today's rule identifies criteria whereby the Screening Limits may not be used because they may not be conservative. See § 266.106(6). That paragraph in the rule also gives the Agency authority to determine whether the Screening Limits may not be protective in a particular situation. In that case, the owner and operator must use the Tier III procedures—site-specific dispersion modeling.

1990, influences the Agency's choice of a conservative risk target in this rule. These same factors can also influence choice of a risk level where the Agency is making site-specific determinations.

The following section discusses comments on health effects data on carcinogens.

a. Unit Risk Factors/Risk Specific Doses. A few commenters argued for deletion of category C carcinogens from consideration in the risk assessment process.

Given that the carcinogenic metals arsenic, beryllium, cadmium, and hexavalent chromium are classified as either A or B carcinogens, this discussion pertains only to the C nonmetal appendix VIII compounds for which the Agency established 10^{-5} RSDs for purposes of implementing the low risk waste exemption, risk assessments for cement kilns with HC levels exceeding 20 ppmv, and health-based limits for Bevill excluded waste.

As a conservative element in the risk assessment process, and especially for purposes of implementing an exemption from some of the emission controls, EPA does not believe that exposure to category C carcinogens should be ignored at this time for those chemicals with cancer potency slopes. The classification schemes categorize chemicals based upon weight of the evidence, not carcinogenic potency. Therefore, a highly potent carcinogen may be classified in the C category and present a threat to health.

b. Quality of the Toxicological Data Base. Several commenters questioned the quality and extent of the toxicology data base and EPA's selection of specific studies used to calculate the cancer potency factors and unit risk values for a particular chemical. For example, one commenter noted that the molecular species of a metal compound emitted from an incinerator may be markedly different from the metallic complex actually tested for carcinogenicity and used to calculate that metal's cancer potency factor. This would distort the risk assessment process. This same commenter argued that beryllium oxide, which would be formed preferentially at the extreme temperatures of a furnace, is relatively inert compared to the molecular complex of beryllium which forms the basis of the cancer potency factor. Another commenter contended that, in general, the less water soluble (and, therefore, less bioavailable) metallic oxides are emitted from incinerators whereas the metallic species tested for cancer were more water soluble and bioavailable (i.e., absorbable into the organism).

EPA acknowledges the concern that the metal complex tested for carcinogenicity in animals reflects that to which humans are exposed. However, the particular metal complex being emitted may not have been tested in animals. In such cases, it is sometimes necessary to use that toxicological data which is available (on the same metal but complexed with a different ligand), limitations notwithstanding, until appropriate data on the complex of concern become available. EPA believes the use of the available data base will result in risk assessment methodology that is protective of human health and the environment.

Moreover, EPA notes that soluble metallic salts may also be emitted under some conditions (e.g., metallic chlorides). For screening purposes, the conservative assumption that soluble (i.e., bioavailable) metallic complexes are emitted, is assumed to protect health. For the site-specific risk assessment option, historical or test burn data may be used to identify probable emitted metallic species. If permit officials conclude during the permit process that appropriate fate, transport, and toxicological data exist for the actual emitted complex to support risk assessment, this could then be used in the site-specific risk assessment option.

c. High Dose to Low Dose Extrapolation. Several commenters questioned the scientific merit of extrapolating from high dose experimental data to low dose cancer risks using existing statistical models, asserting that the process is not biologically-based and is extremely conservative (i.e., overly health-protective). Two commenters asserted that the linearized multistage model should not be applied to non-genotoxic carcinogens because such "carcinogens" promote rather than initiate cancer, thus acting as a classical toxicant with a threshold. These commenters maintained that a chemical such as chloroform, which they claim is non-genotoxic (i.e., has not tested positive in mutation assays), would have a threshold below which there is no risk of cancer. Another commenter argued that biological evidence indicates a threshold for arsenic-induced cancer due to its known benefit as an essential trace element at low doses. This same commenter asserted that hexavalent chromium (Cr+6) is quickly converted in the body to the essential trace element Cr+3 and, therefore, should be treated as a "threshold carcinogen."

The Agency is following closely recent developments in scientific consensus regarding the basic molecular biology of cancer. EPA will revise its guidelines for carcinogen risk assessment, and other guidance documents, to reflect developing scientific theory on high to low dose extrapolation threshold effects, and other related issues. Until that time, EPA will continue to use its current approach, believing that a more conservative approach is warranted in the face of uncertainty.

d. Chromium Oxidation State. Several commenters argued that the current proposal does not differentiate chromium in the +6 oxidation state from chromium +3. They contend that most chromium emitted from boilers, industrial furnaces, and incinerators exists in the +3 state. Consequently, the proposed approach, which assumes that all chromium is +6, may overstate risks drastically. The commenters recommended that EPA assume that only a fraction of the chromium emitted by incinerators exists in the +6 oxidation state.

EPA concludes that assuming that 100% of the chromium is in the hexavalent oxidation state is a conservative assumption taken in the face of limited data. In a test [46] of hazardous waste incinerator emissions under varying levels of total chlorine in the waste burned, a high percentage of the total chromium emitted was in the hexavalent state under certain conditions. Until more data is available, showing consistently lower proportions of Cr^{+6} under a variety of combustion conditions, EPA believes it is health-protective to assume that chromium from incinerator emissions exists in the hexavalent state. Facilities may elect to conduct emissions testing to determine the actual emission rate of Cr^{+6}.

e. Additive Risks. One commenter criticized EPA's selection of 10^{-5} as the acceptable aggregate risk level (for carcinogenic metals) for deriving screening limits, and claimed the selection is arbitrary and inconsistent with other EPA policy. EPA policy, the commenter notes, has traditionally embraced a range of risks from 10^{-7} to 10^{-4}, with the final EPA-selected risk level dependent upon site-specific conditions (i.e., characteristics and size of the exposed population).

EPA's rationale for selecting 10^{-5} risk for the MEI is described in the October 26, 1989 supplemental notice (54 FR 43754). In summary, EPA continues to believe that the aggregate cancer risk to

[46] U.S. EPA, "Pilot Scale Evaluation of the Fate of Trace Metals in a Rotary Kiln Incinerator with a Venturi Scrubber/Packed Column Scrubber, Vol. I, Technical Results", April 1989.

the MEI of 10^{-5} for metals is appropriate because: (1) It provides adequate protection of public health; (2) it considers weight of evidence of human carcinogenicity; (3) it limits the risk from individual Group A and B carcinogens to risk levels on the order of 10^{-6}; and (4) it is within the range of risk levels the Agency has used for hazardous waste regulatory programs. See also the discussion in section III.A.1 of part three above.

2. Noncarcinogens. For toxic substances not known to display carcinogenic properties, there appears to be an identifiable exposure threshold below which adverse health effects usually do not occur. Noncarcinogenic effects are manifested when these pollutants are present in concentrations great enough to overcome the homeostatic, compensating, and adaptive mechanisms of the organism. Thus, protection against the adverse health effects of a toxicant is likely to be achieved by preventing total exposure levels that would result in a dose exceeding its threshold. Since other sources in addition to the controlled source may contribute to exposure, ambient concentrations associated with the controlled source should ideally take other potential sources into account. Therefore, the Agency has conservatively defined reference air concentrations (RACs) for noncarcinogenic compounds that are defined in terms of a fixed fraction of the estimated threshold concentration. The RACs for lead and hydrogen chloride, however, were established differently, as discussed below. The RACs established in today's final rule are identical to those proposed. (See appendix H of the Supplement to Proposed Rule at 54 FR 43762 (October 26, 1989)). (The Agency notes that it does not intend for RACs to be used as a means of setting air quality standards in other contexts. For instance, the RAC methodology does not imply a decision to supplant standards established under the Clean Air Act.)

We note, however, that the RACs proposed in appendix H of the supplement to proposed rule (and promulgated today as appendix IV to the rule) included both Agency-verified and unverified values. Unverified values are subject to revision as the Agency's Reference Dose Workgroup continues to establish verified inhalation RfDs. (Occasionally, the Agency may also revise verified values based on new and significant information.) Since the supplemental notice, the Workgroup has established inhalation RfDs for eight compounds on proposed appendix H (and promulgated appendix IV to the rule). The basis for the newly-verified RfDs is set forth in the Health Effects Assessment Summary Tables, Fourth Quarter—FY90, U.S. EPA, OERR 9200 6-303 (90-4), September 1990.[47] Consequently, RACs based on those RfDs are different from the proposed and promulgated RACs. The RACs based on verified inhalation RfDs are shown in the table below. EPA will use the omnibus permit authority of § 270.32(b)(2) to use these revised RACs where the facts warrant.[48]

Compound	RAC in appendix IV of final rule ($\mu g/m^3$)	RAC based on recently verified RfD ($\mu g/m^3$)
Acrolein (107-02-8)	20	0.03
Carbon Disulfide (75-15-0)	200	3
p-Dichlorobenzene (106-46-7)	10	200
Bromomethane (74-83-9)	0.8	2
Hydrogen Sulfide (7783-06-4)	3	0.2
Mercury (7439-97-6)	0.3	0.08
Methoxychlor (72-43-5)	50	4
Toluene (108-88-3)	300	500

RACs have been derived from oral reference doses (RfDs) for those noncarcinogenic compounds listed appendix VIII of 40 CFR part 261 (except for lead, HCl, and Cl_2) for which the Agency considers that it has adequate health effects data. An oral RfD is an estimate (with an uncertainty of perhaps an order of magnitude) of a daily oral dose (commonly expressed with units of mg/kg-day) for the human population (including sensitive subgroups) that is likely to be without an appreciable risk deleterious effects, even if exposure occurs daily for a lifetime. Since these oral RfDs are subject to change, EPA will undertake rulemakings as necessary if the derivative RACs change in a way that affects the regulatory standard (see also the discussion of this issue in the Boiler/Furnace supplemental notice published on October 26, 1989 at 54 FR 43718). We note that, in the interim before any such rulemaking is complete, and as discussed above, permit officials may use the omnibus permit authority[49] of the statute to consider revised health effects data in establishing permit conditions.

The Agency's rationale for using oral RfDs as a basis for RAC-derivation is described in 54 FR 43755 (October 26, 1989). EPA believes the approach to derive RACs is reasonable because: (1) the RfDs are verified by an EPA workgroup whose decisions are subject to public review; (2) the verification process addresses long term (lifetime) exposure; (3) the RfDs are based on the best available information meeting specific scientific criteria; (4) the most sensitive individuals are considered; and (5) the RfD determination takes into account the confidence in the quality of the information on which they are based. Nevertheless, the Agency's Inhalation RfD Workgroup is developing reference dose values (concentrations) for inhalation exposure for several chemicals, and some are currently available. As reference concentrations are established by the Workgroup, the Agency will consider the need to change the RACs established in today's rule as discussed above.

The final rule regulates HCl emissions based on an annual exposure (long-term) RAC of 7 $\mu g/m^3$.[50] The RAC is based on the threshold of priority [illegible] resulting from exposure to HCl. Background levels were considered to be insignificant given that there are not many large sources of HCl and that this pollutant generally should not be transported over long distances in the lower atmosphere.

The Agency also proposed a short-term (i.e., 3-minute exposure) RAC for HCl. The Agency agrees with commenters, however, that the proposed RAC was not technically supportable. See discussion in section V of part three of this preamble. Consequently, the final rule does not establish a short-term RAC for HCl.

To consider the health effects from lead emissions, we adjusted the National Ambient Air Quality Standard (NAAQS) by a factor of one-tenth to account for background ambient levels

[47] The document is available from the National Technical Information Service (NTIS), 5285 port Royal Road, Springfield, VA 22161, (703) 487-4600. The document number is PB90-921-104.

[48] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

[49] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

[50] U.S. EPA, Integrated Risk Information [illegible] (IRIS) Chemical Files.

and indirect exposure from the source in question. Thus, although the lead NAAQS is 1.5 $\mu g/m^3$, for purposes of this regulation, sources could contribute only up to 0.15$\mu g/m^3$. Given, however, that the lead NAAQS is based on a quarterly average, the equivalent annual exposure is 0.09 $\mu g/m^3$.

Finally, section 109 of the Clean Air Act (CAA) requires EPA to establish ambient standards for pollutants determined to be injurious to public health, allowing for an adequate margin of safety. Secondary NAAQS, also authorized by section 109, must be designed to protect public welfare in addition to public health, and, thus, are more stringent. As discussed above, the Reference Air Concentration (RAC) used in today's rule for Lead is based on the Lead NAAQS. As the Agency develops additional NAAQS for toxic compounds that may be emitted from hazardous waste incinerators, we will consider whether the acceptable ambient levels (and, subsequently, the feed rate and emission rate Screening Limits) ulimately established under this rule should be revised. We note again that the reference air concentration values (and risk-specific dose values for carcinogens) presented here in no way preclude the Agency from establishing NAAQS as appropriate for these compounds under authority of the CAA.

a. *Derivation of Oral RfDs/RACs.* Many commenters responded to the issue of derivation of oral RfDs/RACs, questioning the scientific basis for the oral RfDs and conversion of RfDs to RACs. Some commenters stated that use of oral RfDs do not factor in differences in routes of exposure (e.g., absorption, first-pass effects) when extrapolating from oral to inhalation routes of exposure. As discussed above, we acknowledge the limitations of developing RACs from oral RfDs but continue to believe the approach used is reasonable and the best available approach until the Agency's Inhalation RfD Workgroup can provide inhalation values.

Other commenters directed their comments exclusively to lead, indicating that the lead RAC was arbitrary. EPA has based the lead RAC on the National Ambient Air Quality Standard (NAAQS). This was done in part because no reference dose or cancer potency slope is currently available for this metal. The final rule uses 10%, rather than 25% as is used for other compounds, as an apportionment factor (as proposed) because the Agency is particularly concerned with: (1) The possible high contribution of lead exposure by indirect pathways, particularly in urban environments; and (2) the growing concern of low level lead exposure in children since the lead NAAQS was established. (The Agency currently plans to propose to readjust the lead NAAQS in 1991.)

b. Apportionment. Some commenters questioned EPA's proposal apportioning 75% of the RfD to other non-specified sources, thus causing the RAC to correspond to 25% of the RfD. The commenters indicated that the figure of 75% from other sources was arbitrary and could vary from one chemical to another. They suggested that unless other sources of exposure were identified, the RAC should reflect 100% of the RfD.

EPA has chosen a fraction (25%) of the RfD to serve as the basis for the RACs because indirect pathways, known to contribute to risks, are not quantified in these regulations. Even apart from exposures contributed by sources separate from the boiler, industrial furnace, or incinerator, indirect pathways from emissions from these devices themselves may contribute 75% or more to risk. Such indirect (i.e., non-inhalation) pathways include deposition of emitted chemicals on: (1) Gardens and crops directly consumed by humans; (2) meadows used for grazing by beef cattle and other edible livestock; and (3) meadows and fodder used by dairy cattle (and subsequent milk consumption by humans).

Such real exposures, which are not quantified in these rules, are accounted for by the allowance for 75% contribution from other sources. Moreover, it is questionable whether any single facility should be allowed to consume 100% of an individual's exposure allowance, above which any further exposure might cause adverse health effects.

B. Air Dispersion Modeling

The Agency used air dispersion modeling to develop the Screening Limits and dispersion modeling is available as the exposure assessment component of the site-specific risk assessment option. A more extensive discussion of air dispersion modeling is included in the 1989 supplemental notice (see 54 FR 43752–54). This discussion focuses on derivation of Screening Limits wherein the dispersion models are used to "back-calculate" emission rates from acceptable ground level concentrations. The section is also applicable to dispersion modeling used for the risk assessment option (where ground level concentrations are predicted from estimated emissions rates). The reader is referred to this discussion for further information about air dispersion modeling. It should be noted that for the purposes of the risk assessment option, more site-specific information may be used in place of some of the conservative default assumptions used to derive the Screening Limits, generally resulting in lower predicted ambient air concentrations.

1. Option for Site-Specific Modeling

In responding to this provision in the proposal, many commenters argued for procedures which would allow greater flexibility in the air dispersion modeling process. Many commenters seemed to confuse the issues of dispersion modeling used for the Screening Limits, and modeling for the site-specific risk assessment. EPA concedes that many assumptions used to develop the Screening Limits are, by design, conservative to ensure that the Limits are protective in most cases. These assumptions do not apply, however, when an owner or operator conducts site-specific dispersion modeling under the Tier III standards. For site-specific dispersion modeling, procedures specified in EPA's Guideline on Air Quality Models must be used.

2. Terrain-Adjusted Effective Stack Height

Two commenters stated that in adjusting the stack height to account for local terrain and differentiating for terrain in the screeing limits, EPA is "double counting" the influence of terrain unnecessarily. One commenter added that such terrain adjustment of stack height is not supported by the current EPA Guideline on Air Quality Models (Revised) and should be eliminated.

EPA acknowledged this "double counting" of terrain in the supplement to the proposed rule (54 FR 43759), stating that this additional conservatism is necessary to account for the wide range of terrain complexities encountered at real facilities. EPA continues to believe that this double counting is necessary. Without this conservatism, additional criteria would have to be added to the existing list (see § 266.106(b)(7)) for determining when the screening limits may not be conservative and, thus, may not be used. Commenters did not propose (and provide support for) additional criteria for determining when the use of less conservative screening limits would be appropriate. Further, EPA believes that additional criteria would complicate and delay the implementation of the rule by placing additional burden on regulatory officials. Moreover, if a facility cannot

meet the screening limits, then site-specific dispersion modeling may be used to demonstrate compliance with the Tier III standards. Detailed, comprehensive dispersion modeling generally costs less than $5,000 and, thus, should not pose a substantial burden. In fact many BIFs have already conducted such modeling to comply with applicable standards under the Clean Air Act. Finally, the final rule minimizes the burden of dispersion modeling by allowing the use of screening models.

3. Conservatism in Screening Limits

Five commenters stated that EPA's approach to setting the screening limits is overly conservative and illustrated this by calculating the difference in estimated ground level concentrations using site-specific information as opposed to the default assumptions recommended for the Screening Limits.

It should be noted that the Agency would expect that the use of site-specific information would lead to higher emission limits than under the screening limits. However, the Agency developed feed rate and emission rate screening limits with the intent of minimizing the need of site-specific dispersion modeling and thus reducing the burden of demonstrating compliance with the emissions standards. To ensure that the limits are protective in most cases, however, the Agency derived the limits using conservative assumptions. The Agency believes that, although the assumptions are reasonable, they would likely limit emissions by a factor of 2 to 20 times lower than would be allowed by site-specific dispersion modeling (54 FR 43758).

4. GEP Stack Height.

Two commenters stated that EPA should not impose a GEP stack height limitation for existing stacks. The commenters went on to state that EPA should allow modeling of emissions at actual stack height for existing stacks or, at a minimum, adopt a grandfather provision to exclude GEP from applying to stacks constructed prior to December 31, 1970. One commenter also indicated that EPA should recognize that the stack height used for conducting a site-specific dispersion modeling analysis may exceed GEP formula height, as allowed under section 123 of the Clean Air Act.

The Agency maintains that in complying with the metals and HCl/Cl_2 controls credit will not be allowed for stack heights greater than GEP. GEP stack heights are determined in a manner consistent with the Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations), Revised (EPA 450/480-023R).

EPA's position here is consistent with the prohibition on using physical stack height in excess of GEP in the development of emission limitations under EPA's Air Program at 40 CFR 51.118 and 40 CFR 51.164. Stack heights higher than GEP cannot be used for compliance purposes because such stacks merely provide added dispersion and dilution of ambient levels. EPA prefers that pollutants be removed from the stack gas to avoid build-up of persistent pollutants (e.g., metals) in the environment and subsequent indirect exposure through, for example, the food chain. In addition, better dispersion of emissions of carcinogenic compounds can merely expose larger populations to (albeit lower) concentrations of pollutants and may not decrease the aggregate population risk (i.e., cancer incidents/year in the affected population).

5. Plume Rise Table

One commenter recommended that EPA extend Table F-2 (plume rise) and Tables E-1 through E-10 (feed rate and emissions screening limits) of the October 26, 1989 supplemental notice to account for the high flow rates typical of many cement plant stacks. Another commenter stated that the effective stack height of most utility boilers exceeds the maximum stack height contained in Tables E-1 through E-10. One commenter indicated that the plume rise values presented in Table F-2 are not conservative for conditions of neutral atmospheric stability at average to high wind speeds or for stable atmospheric conditions at all typical wind speeds. This commenter added that the screening limits based on Table F-2 plume rise may not be conservative for regions having complex terrain.

For the final rule, the plume rise values presented in Table F-2 of the supplement to the proposed rule were revised and the table was expanded to include higher stack exit flow rates indicative of cement kiln stacks (exit flow rates were increased up to a level of 200 m^3/s). See appendix VI to the final rule. The plume rise table values were originally developed based on plume rise equations presented in the 1979 User's Guide to the Industrial Source Complex (ISC) model. The plume rise formulation in the ISC model has since been changed to correspond to the way other EPA models determine plume rise. Consequently, the entire table was revised, based on conservative application of the updated neutral and stable buoyant plume rise equations.[51] The revised values of plume rise represent the lowest value of conservative stable buoyant and neutral buoyant plume rise for each flow rate/temperature level.

The range of terrain-adjusted effective stack heights, shown in Tables E-1 through E-10 of the supplemental notice, was not increased beyond the height of 120 meters. This height was determined to be the maximum terrain-adjusted effective stack height based on the stack parameter and site location data used in the development of the dispersion coefficients (as described in appendix F of the proposed, supplemental rule). Facilities with terrain-adjusted effective stack heights that exceed 120 meters have the option of conducting site-specific dispersion modeling to demonstrate compliance.

6. Compliance by Manipulating Effective Stack Height

One commenter claimed that facilities may elect to circumvent compliance by manipulating their effective stack heights. This commenter added that additional exposures could result from the increased dispersion from taller stacks. The Agency acknowledges that an owner or operator could increase physical stack height up to the GEP maximum to achieve better dispersion and hence a higher allowable emission rate. The Agency maintains, however, that it is more protective of human health and the environment (see discussion in section III.B.4 above) and it may be more cost-effective to upgrade emission control equipment to state-of-the-art control, rather than to increase stack height, particularly given that the Agency plans to consider in the future whether additional controls are needed to better control metals emissions. See discussion in section I of Part Three of this preamble.

7. Effect of HCl Emissions on Acid Rain

One commenter disagreed with the use of Screening Limits for HCl which are based solely upon effective stack height, terrain and land use. This commenter maintained that this approach ignores the effects of HCl in atmospheric reactions and acid rain.

Addressing potential effects of HCl in atmospheric reactions and acid rain is beyond the scope of this rule. The screening limits were developed to

[51] Memorandum from Sue Templeman, Radian Corp., to Dwight Hlustick, EPA, entitled "Derivation of Plume Rise Values for BIFs", dated November 30, 1990.

protect human health in the vicinity of facilities burning hazardous waste.

8. Building Wake Effects

One commenter stated that emissions limits based on effective stack height, terrain, and land use would not be conservative in cases where stacks are subject to building wake effects. This commenter added that only consideration of building wake effects will lead to conservative concentrations for stacks influenced by nearby structures and recommended that site-specific dispersion modeling be required in all cases where the "Guideline for Air Quality Models (Revised)" indicates the necessity for consideration of building wake effects.

The development of the conservative dispersion coefficients incorporated an eleventh hypothetical source in order to represent facilities whose release heights do not meet good engineering practice and whose plumes would thus be subject to building wake effects (54 FR 43752). In addition, the Agency acknowledges that the dispersion coefficients used to establish the Tier I and II Screening Limits may not be conservative in extremely poor dispersion conditions or when the ambient-air receptor is located close to the source and has therefore defined five situations for which the permit writer should require site-specific dispersion modeling (54 FR 43754). Furthermore, the Agency is reserving the right to require that a site-specific dispersion modeling analysis be conducted, irrespective of whether the facility meets the specific Screening Limits. Thus, the permit writer has the option of overruling use of Tier I or II, if a probability exists that application of this methodology would not be protective of the health-based standards. The Tier III approach of conducting site-specific dispersion modeling requires incorporation of building wake effects, as necessary, in the modeling analysis. The Tier I and II Screening Limit methodology was not further modified to account for these factors, as it already embodies repeated use of conservative assumptions.

C. Consideration of Indirect Exposure and Environmental Impacts

1. Indirect Exposure

During the proposal stages of these regulations, a few commenters recommended incorporating indirect exposure pathways into the risk assessment process. Indirect exposure is defined, in these regulations, as any exposure pathway other than direct inhalation of emissions from a boiler or industrial furnace. One commenter maintained that emissions such as metals, chlorinated dioxins, and furans would be environmentally persistent and able to enter the food chain after deposition on the ground (including crops, pasture land, surface waters). Consequently, the commenter argued that indirect exposures should be factored into the risk assessment.

EPA recognizes that the contribution of indirect pathways may be significant. However, the Agency believes that other conservative procedures, such as apportioning 75% of exposures to either indirect pathways or other emission sources (that can contribute to background levels) in the calculation of RACs, will help offset the contribution of indirect pathways. Another significant source of conservatism, offsetting the contribution of indirect pathways, is represented by the inherent uncertainty, and consequent conservatism, in the models used to estimate unit risk values. Use of the MEI in the Screening Limits procedure comprises yet another conservative element in the risk assessment process which would offset direct estimation of indirect pathway exposure. Therefore, the Agency has not modified the risk assessment process to address indirect pathways.

2. Non-human Health Related Environmental Impacts

One commenter noted that for many pollutants, environmental standards for certain flora and fauna may be more stringent than for humans. Therefore, the effect on non-human receptors should not be ignored in the regulations and the environmental risks should be evaluated.

EPA is concerned about the potential effects of BIF emissions on non-human receptors. While some environmental standards are available for the protection of environmental receptors (notably EPA water quality criteria for aquatic organisms), methods for quantifying exposure and defining acceptable levels for non-human receptors are still largely in the developmental stages. Thus, until these critical procedures are better established, the Agency is not requiring such an evaluation at this time. However, as noted earlier, some of the conservatism in the human health risk assessment is designed to compensate for the absence of direct environmental standards.

D. Acceptable Risk Level for Carcinogens

Today's rule limits the incremental lifetime cancer risk to the hypothetical maximum exposed individual (MEI) to 10^{-6}. This risk level is within the range of levels historically used by EPA in its hazardous waste and emergency response programs—10^{-4} to 10^{-6}.

Under the rule, we are limiting the aggregate risk to the MEI from carcinogenic metals to 10^{-5}, and the aggregate risk from carcinogenic organic compounds (dioxins and furans and other PICs under provisions of the alternative HC limit) to 10^{-6}. This will limit in most cases the risk from individual carcinogenic compounds to levels on the order of 10^{-6} but below 10^{-5}. The rule does not require that the risk from carcinogenic organic compounds be added to the risk from carcinogenic metals. This is because the Agency does not believe it is appropriate to sum the risk from metals (i.e., arsenic, beryllium, cadmium, and chromium) that are known or probable human carcinogens (Group A or B carcinogens under the weight-of-evidence approach) with the risk from organic compounds, many of which are possible human carcinogens (Group C carcinogens).

In selecting a 10^{-5} aggregate risk threshold level for this rule, we considered risk thresholds in the range of 10^{-4} to 10^{-6}, the range the Agency generally uses for various aspects of its hazardous waste programs.

We considered limiting the aggregate risk of the MEI to 10^{-6} but determined that this risk threshold would be unnecessarily conservative for the purpose of this rule. In reaching this determination, we considered that, at an aggregate risk level of 10^{-6}, the risk level for individual metals would be on the order of 10^{-7}, which we believe is overly conservative for this rule.

Alternatively, we considered limiting the aggregate risk to the MEI to 10^{-4}. An aggregate risk threshold of 10^{-4} would result in limiting the risk level for individual carcinogens on the order of 10^{-5}. We did not select a 10^{-4} aggregate risk threshold for this proposed rule for a number of reasons. In selecting the appropriate risk level for a particular regulatory program, the Agency considers such factors as the particular statutory mandate involved, nature of the pollutants, control alternatives, fate and transport of the pollutant in different media, and potential human exposure. The Agency believes that a 10^{-6} risk level is appropriate for this rule because: (1) The rule limits emissions considering only direct exposure via inhalation of dispersed emissions. Other routes of exposure (e.g., soil ingestion, uptake through the food chain) are not accounted for by this methodology,

which means the risk is somewhat higher; (2) the carcinogenic metals that the rule controls are Group A or B (i.e., known or probable) human carcinogens; (3) we are concerned about the potential risks posed by the unknown pollutants these devices can emit—i.e., products of incomplete combustion (PICs);[52] and (4) the 10^{-6} risk level does not result in a rule that poses a substantial burden on the regulated community given that it is neither a major rule as defined by Executive Order 12291 nor will it significantly impact small entities.

When the proposed regulations were published and comments were solicited from affected parties, several commenters responded to the issue of acceptable risk levels for exposure to carcinogens. These commenters questioned the basis of 10^{-5} as representing an acceptable risk level. They maintained that the discussion in the rule, serving as the rationale or justification for selecting this level of risk, was inadequate. Others asserted that the selected acceptable level of cancer risk was not consistent with other regulations (specifically, 10^{-4} cancer risk to the MEI was used to set a national emission standard (NESHAP) for benzene, and 10^{-5} for individuals living "some distance from the source").

The Agency continues to believe that the aggregate cancer risk to the MEI of 10^{-6} is appropriate here because: (1) It provides adequate protection of public health; (2) it limits the risk from individual Group A and B carcinogens to risk levels on the order of 10^{-6}; and (3) it is within the range of risk levels the Agency has used for hazardous waste regulatory programs. See also discussion in section III.A above.

E. Use of MEI/Consideration of Aggregate Risk

The Agency considered the use of aggregate population risk or cancer incidence (i.e., cancer incidents per year) in developing the national emission limits and in site-specific risk assessments. This approach could, in some situations, be more conservative than considering only MEI risk because, even if the "acceptable" MEI risk level were not exceeded, large population centers may be exposed to emissions such that the increased cancer incidence could be significant. However, it would be difficult to develop acceptable aggregate cancer incidence rates. Nevertheless, it is likely that many facilities that perform a site-specific MEI exposure and risk analysis would also generate an aggregate population exposure and risk analysis that could be considered by the Agency.

Several commenters addressed the issue of using the maximum exposed individual (MEI) as a basis for risk estimation and recommended using population (aggregate) risks as a more realistic alternative. They maintained that health risks are overstated if based only on exposure of the Maximum Exposed Individual (MEI). Aggregate population-based exposures, which are usually much lower would more realistically represent site-specific health risks. Many commenters noted that using the MEI exposure implicitly assumes that population risks are similar.

EPA believes that evaluation of the MEI only (and not aggregate population risk) is usually a conservative feature of the risk assessment. For screening purposes, a simplified approach is necessary. While site-specific demographic data is usually readily available from 1980 census data, its incorporation into a screen would complicate the screening process unnecessarily. Calculation of screening limits based on the risks to the MEI requires much less site-specific information, facilitating application of the screen to a broad range of sites. If the facility does not meet the screening limits, the option of site-specific risk assessment is still available. While MEI exposures are estimated routinely in a site-specific risk assessment, aggregate population risks may also be estimated, if desired.

Several commenters also contended that even the risk estimates for the MEI may be overly health-protective since the MEI is assumed to reside at this high exposure location 24 hours per day, 365 days per year, for a 70-year lifetime. A more fair evaluation of MEI risk would account for the attenuating effects of time spent indoors and off-site, and include estimates of average residence times and facility lifetimes. Moreover, some exposure assessments assume the MEI is located at the point of maximum ground level concentration predicted by the dispersion model, when in fact, no one may live at this site.

EPA acknowledges that use of the hypothetical MEI is a conservative feature of the rule but maintains that it is reasonable to balance against the potentially nonconservative features of the rule discussed below.

F. Risk Assessment Assumptions

As indicated in the above discussion, we have used a number of assumptions in the risk assessment, some conservative and others nonconservative, to simplify the analysis or to address issues where definitive data do not exist.

Conservative assumptions include the following:

- Individuals reside at the point of maximum annual average ground level concentrations. Furthermore, risk estimates for carcinogens assume that the maximum exposed individual resides at the point of maximum annual average concentration for a 70-year lifetime.
- Indoor air contains the same levels of pollutants contributed by the source as outdoor air.
- For noncarcinogenic health determinations, background exposure already amounts to 75% of the RfD. This includes other routes of exposure, including ingestion and dermal. Thus, the BIF is only allowed to contribute 25% of the RfD via direct inhalation. The only exception is for lead, where a BIF is only allowed to contribute 10% of the NAAQS. This is because ambient lead levels in urban areas already represent a substantial portion (e.g., one-third or more) or the lead NAAQS. In addition, the Agency is particularly concerned about health risks from lead in light of health effects data available since the lead NAAQS was established. EPA is currently reviewing the lead NAAQS to determine if it should be lowered.
- Risks are considered for pollutants that are known, probable, and possible human carcinogens.
- Individual health risk numbers have large uncertainty factors implicit in their derivation to take into effect the most sensitive portion of the population.

Nonconservative assumptions include the following:

- For carcinogenic compounds, indirect routes of exposure are not considered, such as uptake of arsenic, beryllium, cadmium, and chromium through the food chain.
- Although emissions are complex mixtures, interactive effects of threshold or carcinogenic compounds have not been considered in this regulation because data on such relationships are inadequate.
- Environmental effects (i.e., effects on plants and animals) have not been considered because of a lack of adequate information. Adverse effects on plants and animals may occur at levels lower than those that cause adverse human health effects. (The Agency is also developing procedures and requesting Science Advisory Board review to consider environmental effects resulting from emissions from all

[52] This rule is, thus, unlike the Benzene NESHAP where EPA targeted one known pollutant with known effects.

categories of waste combustion facilities.)

Many commenters responded broadly on the impact of assumptions and uncertainty in risk assessment. While generally supporting the concept of risk assessment, some asserted that EPA's proposed assumptions were too conservative regarding estimated emission levels, dispersion modeling, and health impact estimation. Further, they maintained that assumptions were not well enough justified and the conservative bias used for each of the multiple assumptions required in a risk assessment tends to accumulate, resulting in gross over-estimation of health impacts. Some of the specific assumptions that commenters considered too conservative are discussed in the following paragraphs.

Two commenters asserted that emission control technology should not be assumed absent when estimating emission levels. One commenter recommended that sensitivity analysis be incorporated into the risk assessment process. This commenter also recommended incorporation into the risk assessment of population mobility (i.e., time spent away from the site), facility lifetimes less than 70 years, and an attenuation factor for time spent indoors, rather than assume 24 hr/day, 70-year exposure.

Many of the respondents argued that economic impacts resulting from overly-conservative risk assessments are substantial. To avoid some of the default assumptions is also burdensome in the commenters' judgment, requiring trial burns, emissions measurements, slag and product assays, and detailed air quality dispersion modeling.

Although many of the assumptions discussed by the commenters are conservative in nature, it is difficult to determine how less conservative assumptions could be used in light of the considerable associated uncertainty. Much of the conservatism referred to originates from assumptions used to derive screening levels. When screening levels are derived, either: (1) No site-specific information is available (nor may be assumed if the procedure is intended to screen a variety of sites); or (2) incorporation of site-specific information in the derivation of screening levels would so complicate the process as to render it prohibitively time-consuming and defeat its utility as a screen. Thus, in light of the uncertainty (i.e., no site specific-information), conservative assumptions are used to derive the screening limits that EPA believes to be protective of human health and the environment.

If the facility fails to meet the screening criteria, the option of site-specific risk assessment is still available. For site-specific risk assessment, more realistic and less conservative assumptions may be incorporated, reflecting actual site or facility conditions.

V. Controls for Emissions of Toxic Metals

The Agency has identified 12 toxic metals in appendix VIII of 40 CFR part 261 that may pose a hazard to human health and the environment: antimony, arsenic, barium, beryllium, cadmium, hexavalent chromium, lead, mercury, nickel, selenium, silver, and thallium. Five of these metals (or their compounds) are known or suspected carcinogens: arsenic, beryllium, cadmium, hexavalent chromium, and nickel.

Many of these toxic metals are contained in hazardous waste that is burned in boilers and industrial furnaces. Many hazardous waste fuels contain metals at levels orders of magnitude higher than levels found in No. 6 fuel oil. Metal-bearing wastes typically used as fuel in boilers and industrial furnaces include spent halogenated and nonhalogenated degreasing solvents used for metals cleaning, paint manufacturing wastes, and other organic liquid wastes with high heating values. Currently, metals emissions from the burning of these wastes are not controlled under RCRA for boilers and the types of industrial furnaces that burn hazardous wastes. Emissions of carcinogenic metals can potentially result in increased lifetime cancer risks of greater than 1×10^{-4} and emissions of noncarcinogenic metals such as lead can result in ambient levels that result in adverse health effects.

Today's final rule promulgates the controls as discussed in the October 1989 supplement to the proposed rule (see 54 FR 43728–29).[53] See § 266.106. The rules establish metals emission limits for 10 toxic metals)[54] listed in appendix VIII of 40 CFR part 261 based on projected inhalation health risks to a hypothetical maximum exposed individual (MEI). The standards for the carcinogenic metals (arsenic, beryllium, cadmium, and chromium) limit the increased lifetime cancer risk to the MEI to a maximum of 1 in 100,000. The risk from the four carcinogens must be summed to ensure that the combined risk is no greater than 1 in 100,000. The standards for the noncarcinogenic metals (antimony, barium, mercury, silver, and thallium) are based on Reference Doses (RfDs) below which adverse health effects have not been observed. The standard for lead is based on the National Ambient Air Quality Standard (NAAQS) for lead.

The owner and operator must analyze the hazardous waste to be burned and comply with the standard for each of the 10 metals that could reasonably be expected to be in the waste. The metals excluded from analysis must be indentified and the basis for their exclusion explained to ensure that there is adequate justification for not analyzing for a particular metal.

The standards are implemented through a three-tiered approach. Compliance with any tier is acceptable. The tiers are structured to allow higher emission rates (and feed rates) as the owner or operator elects to conduct more site-specific testing and analyses (e.g., emissions testing, dispersion modeling). Thus, the feed rate limits under each of the tiers are derived based on different levels of site-specific information related to facility design and surrounding terrain. Under tier I (see § 266.106(b)), the Agency has provided conservative waste feed rate limits in reference tables as a function of effective stack height and terrain and land use in the vicinity of the stack. The owner or operator demonstrates compliance by waste analysis, not emissions testing or dispersion modeling. Consequently, the Tier I feed rate limits are based on an assumed reasonable, worst-case dispersion scenario, and an assumption that all metals fed to the device are emitted (i.e. no partitioning to bottom ash or product, and no removal by an air pollution control device (APCD)).

Under Tier II (see § 266.106(c)), the owner or operator conducts emissions testing (but not dispersion modeling) to get credit for partitioning to bottom ash

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[53] Given time constraints in developing the final rule for promulgation, response to major comments could not be provided in the preamble. Responses to comments are provided in the Comment Response Document for the BIF Regulation.

[54] As proposed, the rule does not limit emissions of nickel and selenium (see 54 FR 43729). Limits cannot be established for selenium because the Agency has inadequate health data to establish a reference air concentration. Nickel is not controlled because the two nickel compounds suspected at this time of being potential human carcinogens, nickel carbonyl and subsulfide, are not likely to be emitted from combustion devices, given their highly oxidizing conditions. In the 1989 supplemental notice to the proposed rule, EPA requested comments on whether the reduced carcinogenic forms of nickel were likely to be emitted from hazardous waste burning devices, especially those furnaces that may not use highly oxidized conditions. However, the Agency did not receive any comments on this issue pertinent to boilers and industrial furnaces.

or product, and APCD removal efficiency. Thus, the Agency has developed conservative emission rate limits in reference tables, again as a function of effective stack height and terrain and land use in the vicinity of the stack. The Agency also assumed reasonable, worst-case dispersion under Tier II.

Under Tier III (see § 266.106(d)), the owner or operator elects to conduct emissions testing and site-specific dispersion modeling to demonstrate that the actual (measured) emissions do not exceed acceptable levels considering actual (predicted) dispersion.

The metals controls apply both to facilities applying for a part B operating permit and to facilities operating during interim status. See section VII of part Three of this preamble for discussion of how the standards apply during interim status.

A. Background Information

The following sections summarize EPA's regulation of metals emissions from boilers and industrial furnaces under other statutes, the 1987 proposed rule and comments received on that proposal, and the basis for the 1989 revision to the proposed rule and comments received on that revised approach.

1. Metal Standards Under Other Statutes

As discussed below, EPA has promulgated standards applicable to boilers and industrial furnaces under other statutes for some but not all of the 10 toxic metals controlled by today's rule. Under the Clean Air Act (CAA), EPA established National Emissions Standards for Hazardous Air Pollutants (NESHAPS) for arsenic, beryllium, and mercury for certain categories of sources (40 CFR part 61). These emission standards were developed considering the quantities and types of metals emissions from various source categories, current control practices, and the economic impacts of reducing emissions. In addition, EPA has established National Ambient Air Quality Standards [55] (NAAQS) for lead and particulate matter. These ambient standards are implemented by states under the State Implementation Plan (SIP) program to control major sources of lead and particulate emissions. The Agency does not believe that lead emissions standards have been established under the SIPs for any boilers and for many industrial furnaces that burn hazardous waste fuels (e.g., cement and light-weight aggregate kilns) because they are not major lead emitters as defined under the NAAQS. Therefore, EPA believes that today's metals controls are not redundant to existing Agency standards, and, thus, are necessary to ensure adequate protection of human health and the environment.

Particulate emission standards, however, established under the SIPs in conformance with the particulate NAAQS, or by EPA as New Source Performance Standards (NSPS), do apply to some boilers and industrial furnaces that burn hazardous waste. The particulate standards generally limit metals emissions to the extent that state-of-the-art particulate control technologies will allow. High efficiency electrostatic precipitators (ESPs) or fabric filters are usually required to meet these standards. However, these particulate emission standards may not adequately control metals emissions from the burning of hazardous wastes in many boilers and industrial furnaces for service reasons: (1) The particulate standards do not apply to gas and oil-fired boilers (which represent a large number of hazardous waste fuel burners); (2) smaller coal-fired boilers are not subject to NSPS standards and may not be required under the SIPs to be equipped with ESPs or fabric filters; (3) large volumes of hazardous waste fuels are burned by light-weight aggregate kilns that are equipped with low-pressure wet scrubbers that may not be highly efficient at collecting particulates in the less than 1 micron range, the size range that contains the bulk of the particulate metals; and (4) the risks posed by metals emissions from these boilers and industrial furnaces that are equipped with ESPs, fabric filters, and wet scrubbers can increase substantially when hazardous waste fuel is burned since the levels of some metals, particularly chromium and lead, can be much higher in hazardous waste than in coal.

2. 1987 Proposed Rule

The 1987 proposed rule would have established a four-tiered standard to control emissions of arsenic, cadmium, hexavalent chromium, and lead. Each tier represented a standard protective on its own, and demonstration of compliance with any Tier would have been sufficient. Tiers I through III established hazardous waste metals concentrations, feed rates, and emission screening limits, respectively, as a function of device type and thermal capacity. Tier IV would have provided for site-specific dispersion modeling to demonstrate that, when the screening limits were exceeded, emissions would nevertheless not pose an unacceptable health risk. Data available to the Agency indicated that only four of the 12 toxic metals listed in appendix VIII of part 261 were likely to be present in hazardous waste burned in boilers and industrial furnaces at levels posing a significant health risk. The permit writer would have determined on a case-by-case basis if any of the other toxic metals were present at levels posing a significant risk.

Public comments submitted on the 1987 proposal stated that EPA's database on the metals composition of hazardous waste was both limited and out of date in light of the Agency's data collection efforts at that time and the HSWA statutory requirement to pretreat waste that heretofore had been land disposed. As a result of HSWA, more hazardous waste is being burned, and pretreamtent operations are often likely to involve combustion. The hazardous waste burned currently and in the future in boilers and industrial furnaces may include toxic metals other than the four targeted for regulation in the 1987 proposal. Therefore, the Agency requested comment in the October 1989 supplemental notice on expanding the list of regulated metals to include all 10 appendix VIII metals. (Nickel and selenium were not included as discussed above.) In addition, if standards for all of the toxic metals were included in the rule, the burden on permit writers would actually be reduced because explicit standards would be provided for all metals of potential concern. Without explicit standards, permit writers would have to rely on the omnibus permit authority of the statute to add permit conditions as necessary to protect human health and the environment. Using the omnibus permit authority can involve a lengthy and cumbersome interaction between permit officials and the applicant.

3. 1989 Supplement to Proposed Rule

Based on public comments submitted on the 1987 proposed rule and on additional evaluation of the risk assessment approach used for the proposal, the Agency discussed in the 1989 supplemental notice whether to (1) expand the list of metals for which emissions standards would be established in the rule to include all the toxic metals listed in appendix VIII of part 261 (except nickel and selenium, for the reasons discussed above); (2) establish the screening limits as a function of effective stack height,

[55] We note that the reference air concentration values for noncarcinogens and risk-specific dose values for carcinogens established by today's rule are not intended to, and in no way, preclude the Agency from establishing NAAQS as appropriate for these compounds under authority of the Clean Air Act.

terrain, and land use rather than as a function of device type and capacity; and (3) rather than provide the screening limits in the rule itself as proposed in 1987, provide them in a guidance document that would be entitled "Risk Assessment Guideline (RAG) for Permitting Hazardous Waste Thermal Treatment Devices".

a. Expanded List of Metals. In the 1989 supplemental notice, EPA proposed to expand the list of metals for which emissions standards would be established in the rule to include antimony, arsenic, barium, beryllium, cadmium, hexavalent chromium, lead, mercury silver, and thallium. Thus, of the 12 toxic metals listed in appendix VIII, only selenium and nickel would not be controlled for reasons discussed above. Today's final rule establishes standards for all 10 metals. We note that the controls apply only to metals that are present in the hazardous waste feed at detectable levels using procedures specified in SW-846. See § 266.106(a).

b. Revised Basis for Screening Limits. In the 1989 supplemental notice, EPA also proposed to revise the bases for the feed rate and emission rate screening limits to correlate them with stack height and terrain and land use in the vicinity of the facility because these parameters more directly relate emission controls to key parameters that affect the dispersion of emissions, and ultimately, ambient levels (i.e., more so than the proposed approach of correlating the screening limits to device type and heat input capacity). When developing the Tier I through Tier III screening limits proposed in 1987, the Agency made a simplified assumption that effective stack height correlated with thermal capacity (e.g., if the thermal capacity of one device was 10 percent greater than the thermal capacity of another, the effective stack height was also 10 percent greater). The Agency acknowledges that this assumption may not always hold. Stack height is often more a function of the height of nearby buildings and surrounding terrain than a function of the heat input capacity of the device. Thus, the final rule correlates the Tier I and Tier II screening limits to stack height, terrain, and land use.

c. Establishing the Screening Limits in the Rule. As originally proposed in 1987, the final rule incorporates the Tier I feed rate screening limits and the Tier II emissions rate screening limits in the rule itself rather than in a separate guidance document. Our concern (and many commenters concurred) is that a guidance document would not carry the weight of a regulation—permit writers would be free to accept or reject the guidance (i.e., in this case, the screening limits and the reference air concentration (RACs) and risk-specific dose (RSD) values used to develop the limits). In addition, permit writers would be obligated to justify use and appropriateness of the guidance on a case-by-case basis. This would place a substantial burden on the permit writer and result in inconsistent, and perhaps, inappropriate permit conditions. Finally, implementing the emission standards during interim status as required by the final rule would be virtually impossible without incorporating the screening limits and RACs and RSDs in the rule.

We note that revisions to the RACs and RSD values will undoubtedly need to be made over time as the Agency obtains additional health effects information on the regulated pollutants, and corresponding revisions to the screening limits will be made by formal rulemaking (i.e., proposed revisions, opportunity for public comment, and promulgation of final revisions). In the interim, however, permit writers may apply stricter limits than contained in the rule (if the facts justify it) pursuant to the omnibus permit authority [56] in section 3005(c)(3).

In the 1989 proposal, as a possible alternative to monitoring waste feed rates and compositions, EPA requested comment on using the results of analyses of emission control residues to monitor compliance with the metals emission standards. Several commenters supported this approach. The final rule allows for this or other alternative approaches to implement the metals controls. See section IV.C.4 of Part Three of the preamble.

B. How the Standards Work

1. Tier III Standards

Tier III standards are discussed first because the Agency believes that the majority of facilities will elect to comply with these standards rather than the Tier I or Tier II screening limits to obtain more flexible permit limits. The Tier III standards (see § 266.106(d)) require: (1) Emissions testing to determine actual emissions taking into account partitioning of metals to combustion gas versus ash or product; and removal of metals from flue gas by the air pollution control system (APCS); and (2) site-specific dispersion modeling to take into account actual, predicted dispersion conditions at the facility.

To comply with the Tier III standards, predicted ambient concentrations of the carcinogenic metals, arsenic, beryllium, cadmium, and hexavalent chromium at the hypothetical maximum exposed individual (MEI) may not result in an increased cancer risk of more than 1 in 100,000. The risk from each metal must be summed to ensure that the summed risk does not exceed 1 in 100,000. As proposed, the final rule establishes a risk-specific dose (RSD) for each metal at the 10^{-5} (i.e., 1 in 100,000) risk level. If a person is exposed to the 10^{-5} RSD (an ambient air concentration) over a lifetime, the probability of increased cancer incidence is not expected to exceed 1 in 100,000. To ensure that the summed risk from the four carcinogens is no greater than 1 in 100,000, the ratios of the predicted ambient concentration to the 10^{-5} RSD must be summed for all metals to demonstrate that the sum does not exceed 1.0.[57]

For the noncarcinogenic metals, antimony, barium, mercury, silver, and thallium, predicted MEI ambient air concentrations may not exceed the reference air concentrations (RACs), as proposed. The RAC for lead is based on 10% of the National Ambient Air Quality Standard (NAAQS) for lead, as proposed. One commenter stated that the lead RAC may be appropriate for facilities in urban areas but that it is not appropriate for rural areas with low background lead levels. This commenter suggested a waiver of the lead RAC where a facility can show that measured ambient air lead levels do not exceed the NAAQS. Although this approach is reasonable, the final rule does not include a waiver provision for the lead RAC based on site-specific ambient air monitoring [58] because: (1) the lead

[56] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

[57] To implement the metals controls, metals feed rates are limited to levels during the compliance test or trial burn. Thus, if the owner/operator would like to have the flexibility to burn wastes with varying (higher) levels of carcinogenic metals, he/she may choose to develop two or more operating modes with varying feed rates of carcinogenic metals. If so, a compliance test or trial burn would be required for each mode of operation to demonstrate that the summed risk from the carcinogenic metals does not exceed 1 in 100,000. Under this approach, the operator is required to identify the mode of operation at any time, and to comply with the metal feed rate limits for that mode of operation.

[58] We note, however, that EPA's Guideline on Air Quality Models allows the use of ambient air monitoring to develop site-specific dispersion models.

NAAQS may not be protective given that the Agency has been developing for some time a proposal to lower the NAAQS (perhaps by as much as 50%) based on health effects data obtained since the NAAQS was established initially (the Agency plans to propose a lower lead NAAQS in the fall of 1991); (2) the time and cost of conducting ambient monitoring in conformance with procedures established by EPA's Office of Air Quality Planning and Standards (OAQPS) would make this approach impracticable; (3) a waiver provision would add extra complexity to the rule; and (4) such a waiver would make eventual further regulation under amended section 112 of the Clean Air Act more likely.

a. Emissions Testing. Stack emissions testing for metals must be conducted in conformance with "Methodology for the Determination of Metals Emissions in Exhaust Gases from Hazardous Waste Incineration and Similar Combustion Processes" (Multiple Metals Train) provided in section 3.1 of Methods Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266).

b. Dispersion Modeling. Dispersion modeling must be conducted in conformance with EPA's "Hazardous Waste Combustion Air Quality Screening Procedure" provided in Methods Manual for Compliance with the BIF Regulations or EPA's Guideline on Air Quality Models (Revised) which are incorporated in today's rule as Appendices IX and X, respectively, of Part 266, or "EPA SCREEN Screening Procedure" as described in Screening Procedures for Estimating Air Quality Impact of Stationary Sources. The latter document is incorporated by reference in today's final rule at § 260.11. The Guideline on Air Quality Models is the Agency's primary guide for dispersion modeling. The "Hazardous Waste Combustion Air Quality Screening Procedure" is included in EPA's Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators. Draft Final Report, August 1989. The derivation of this procedure, which was developed specifically for hazardous waste combustion facilities, is also included in that document. The data base used in the derivation is the same as that used for deriving the Tier I and Tier II screening limits as summarized in the October 26, 1989 supplement to the proposed BIF rule (54 FR 43752). Finally, the EPA SCREEN screening procedure has been in general use since 1988 when it was developed by EPA's Office of Air Quality Planning and Standards. It has been used by Regional Offices, States, and sources for air dispersion modeling required by EPA air regulations.

If a user determines that there is an inconsistency between either of the screening procedures discussed above and EPA's Guideline on Air Quality Models, the Guideline shall have primacy.

c. GEP Stack Height. As proposed, stack heights used to demonstrate conformance with the final rule may not exceed Good Engineering Practice (GEP) as defined in 40 CFR part 51.100(ii).

d. MEI. As proposed, the hypothetical MEI concentration is the maximum annual average ground level concentration at an off-site location. On-site MEI locations need not be used to demonstrate conformance with the standards, unless a person resides on-site.

e. Bubble Approach for Multiple Stacks. Given that the standards for metals (and HCl and Cl_2) are health risk-based, the final rules are implemented using a limited "bubble" approach as proposed. Under the limited bubble approach, emissions from all hazardous waste combustion stacks at a facility subject to metals and chlorine feed rate limits must be considered in demonstrating conformance with the acceptable ambient levels. This includes all boilers and industrial furnaces regulated under today's rule, and also those RCRA-regulated incinerators and thermal treatment units where feed rate or emission limits have been established for metals, chlorine, HCl, or Cl_2 by EPA. (The Agency considered expanding the bubble to consider other stack emissions such as from nonhazardous waste incinerators or process stacks, but believes that effective implementation would be difficult given the different types and levels of regulatory control and procedures applicable to a variety of stack emission sources.)

To implement the bubble approach, dispersion modeling must consider emissions from all regulated stacks (see discussion above) to predict the maximum annual average off-site ground level (i.e., MEI) concentration of each metal. The MEI location will generally vary for each metal.

2. Tier II Standards

See § 266.106(c). The final rule incorporates the Tier II emission rate screening limits (see appendix I of the final rule) as presented in the 1989 supplemental notice as a function of terrain-adjusted effective stack height, and noncomplex versus complex terrain and urban versus rural land use in the vicinity of the facility. The limits were back-calculated from the RACs and 10^{-5} RSDs established by today's rule using reasonable, worst-case dispersion scenarios. Conformance with the Tier II emission rate screening limits is demonstrated by emissions testing (i.e., the facility's actual emissions are compared to the maximum allowable screening limits).

The methodologies for determining terrain-adjusted effective stack height and terrain type are established in §§ 266.106(b) (3) and (4), and the methodology for determining land use in the vicinity of the stack are provided in "Simplified Land Use Classification Procedures for Compliance with Tier I and Tier II Limits in Methods Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266).

a. Special Requirements for Carcinogens. We note that the Tier II emission rate screening limits for the carcinogen metals arsenic, beryllium, cadmium, hexavalent chromium, are back-calculated from the 10^{-5} RSD for each metal. Thus, if the actual emission rate of one of those metals was at the Tier II screening limit, the resulting risk to the MEI is estimated to be 1 in 100,000. Given that the rule requires that the summed risk for all carcinogenic metals cannot exceed 1 in 100,000, the ratios of the actual emission rate to the Tier II allowable emission rate for all of the carcinogenic metals must be summed and the sum cannot exceed 1.0.

b. Bubble Approach for Multiple Stacks. Although we believe that most facilities will use Tier III dispersion modeling to demonstrate conformance with the metals (and HCl and Cl_2) controls when they have multiple stacks to obtain credit for actual dispersion conditions, Tier II (or Tier I) may be used. To use the Tier I feed rate limits or Tier II emissions rate limits for multiple stacks, the owner/operator must conservatively assume that all hazardous waste is fed to the source with the worst-case stack (i.e., considering dispersion). The worst-case stack must be determined from the following equation [59] as applied to each stack:

$K = HVT$

where:

K = a parameter accounting for relative influence of stack height and plume rise;
H = physical stack height (meters);
V = stack gas flow rate (M^3/second); and
T = exhaust temperature (Kelvin).

[59] This equation was proposed at 54 FR 43782 (Oct. 26,1989). It is derived from a similar equation on pp. 2-3 of Screening Procedures for Estimating Air Quality Impact of Stationary Sources, EPA-45[illegible] 4-88-010, August 1988.

The stack with the lowest value of K must be used as the worst-case stack.

c. Facilities Ineligible To Use the Tier II (and Tier I) Screening Limits. The screening limits were back-calculated from the RACs and 10^{-5} RSDs established by today's rule using dispersion modeling scenarios that the Agency considers reasonable, worst-case dispersion scenarios. However, dispersion characteristics at a particular facility may, in fact, provide worse dispersion of emissions than used to calculate the screening limits. Consequently, the final rule, as discussed in the 1989 supplemental notice, establishes criteria for facilities that are ineligible to use the screening limits. See § 266.106(b)(7).

3. Tier I Standards

See § 266.106(b). The final rule incorporates the Tier I feed rate screening limits (see appendix I to the rule) as presented in the 1989 supplemental notice as a function of terrain adjusted effective stack height, and noncomplex versus complex terrain and urban versus rural land use in the vicinity of the facility. Conformance with the Tier I feed rate screening limits is demonstrated by sampling and analysis of all feed streams (hazardous waste, other fuels, and raw materials).

By complying with the conservative Tier I feed rate screening limits, applicants burning hazardous waste with very low concentrations of metals would not have to conduct emissions testing. The feed rate limits are back-calculated from the emission screening limits, assuming that all metals present in feedstreams are emitted to the atmosphere. Thus, no metals are assumed to partition to the bottom ash or product, and no allowance is made for removal of metals from the stack gas by an air pollution control system. Consequently, the Tier I feed rate screening limits are equivalent to the Tier II emission rate screening limits and are provided in the same table in appendix I to the rule. (At proposal, the feed rate and emission rate screening limits were provided in separate tables because the Agency presented the limits in different units—lb/hr (pound per hour) for feed rate limits, and g/s (grams per second) for emission rate limits. To avoid confusion and for simplicity, however, the final rule combines the Tier I and II screening limits and presents the limits in g/hr (grams per hour)).

The Tier II discussions above on special requirements for carcinogens also applies to the Tier I feed rate limits. Thus, to demonstrate conformance with the feed rate limits for the carcinogenic metals, the sum of the ratios of the actual feed rate to the Tier I allowable feed rate for all of the carcinogenic metals must be summed, and the sum cannot exceed 1.0.

In addition, the Tier II discussions above on the bubble approach for multiple stacks and criteria for facilities that are ineligible to use the screening limit apply to the Tier I feed rate screening limits as well.

Finally, we note that the Tier I feed rate limits may be adjusted upward to reflect site-specific dispersion modeling. This is a hybrid of Tiers I and III. See § 266.106(e). Under this approach, site-specific dispersion modeling may be conducted using the procedures discussed above to back-calculate allowable emission rates for each metal. These allowable emission rates then become the adjusted feed rate limits. Given that emissions testing is not conducted under this modified Tier I approach, no credit is given for partitioning of metals to bottom ash or product, or removal by the air pollution control system.

C. Implementation

As discussed above, EPA developed a three-tiered standard to ensure that metals emissions do not pose an unacceptable risk to human health and the environment. Tier I consists of conservative feed rate screening limits, Tier II establishes conservative emission rate screening limits, and Tier III allows the use of site-specific air dispersion modeling to demonstrate compliance. The decision of which tier to use depends on the physical characteristics of the facility and surrounding terrain, on the anticipated waste compositions and feed rates, and on the level of resources available for conducting the analysis. It is acceptable to use different tiers to comply with the standards for different metals.

1. Tier I Implementation

The Tier I feed rate limits are implemented by sampling and analysis as necessary and flow rate monitoring of each feedstream (i.e., hazardous waste, other fuels, and raw materials) to ensure that the total feed rate of each metal does not exceed the Tier I limit on either an hourly rolling average or instantaneous basis (i.e., at any time), except as provided for the carcinogenic metals and lead as discussed below.

a. Special Procedures for Carcinogenic Metals. Given that, for the carcinogenic metals, the sum of the ratios of the actual feed rates to the Tier I allowable feed rates cannot exceed 1.0, there are no fixed feed rate limits for individual carcinogenic metals. Rather, the operator must ensure that on an hourly rolling average or instantaneous basis (or as allowed below for carcinogenic metals and lead) that the mixture of carcinogenic metals fed into the BIF does not exceed allowable levels. To demonstrate conformance with this standard, the operator must: (1) Know the concentration of metals in each feedstream and the flow rate of each feedstream; (2) calculate on an hourly rolling average or instantaneous basis (or as allowed below for carcinogenic metals and lead) the sum of the ratios of the actual feed rate to the allowable feed rate; and (3) ensure that the sum of the ratios for all carcinogenic metals (on an hourly rolling average or instantaneous basis or as allowed below) does not exceed 1.0.

b. Averaging Periods. As discussed in the 1989 supplemental notice, the final rule provides an alternative averaging period to the hourly rolling average or instantaneous basis for the carcinogenic metals arsenic, beryllium, cadmium, and chromium, and for lead. For these metals, an averaging period not to exceed 24 hours (i.e., 24-hour rolling average) may be used provided that the feed rate at any time (i.e., instantaneously) does not exceed 10 times the feed rate on an hourly rolling average basis. The Agency believes that an averaging period greater than an hourly rolling average is reasonable given that the metals controls are based on lifetime exposures. However, the Agency is concerned that averaging periods greater than 24 hours may be difficult to enforce. A ten-fold higher emission rate should not pose adverse health effects from short-term exposures for the carcinogenic metals because the 24-hour rolling average would not exceed the level that could pose a 10^{-5} health risk over a lifetime of exposure and the threshold (i.e., noncancer) health effect would not be likely at exposures only ten times higher than the 10^{-5} RSD. A ten-fold higher instantaneous ambient level for lead should not pose adverse health effects given that the acceptable ambient level for long-term exposure to lead (i.e., the lead RAC) is based on only 10% of the National Ambient Air Quality Standard.

We do not believe that a similar approach for the other noncarcinogenic metals would be appropriate given the uncertainty in the level of protection provided by the long-term acceptable ambient (e.g., the RACs are based on oral RfDs converted 1 to 1 to inhalation values).

2. Tier II Implementation

Conformance with the Tier II emission rate screening limits is based on emissions testing (see section IV.B.1.a) using the Multiple Metals Train prescribed in Methods Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266). The Tier II emission limits are implemented by permit limits on the following parameters based on operations during the trial burn:

- Maximum feed rate of each metal in total feedstreams (e.g., hazardous waste, raw material, other fuel), except as discussed below;
- Maximum feed rate of each metal in total hazardous waste feedstreams;
- Maximum feed rate of each metal in all pumpable hazardous waste feedstreams;
- Maximum feed rate of total hazardous waste and pumpable hazardous waste;
- Maximum feed rate of chlorine in total feedstreams;
- Maximum production rate in appropriate units (e.g., total heat input, pounds of steam produced, raw material feed rate);
- Maximum temperature at the inlet to the air pollution control system (APCS);
- Maximum combustion chamber temperature; and
- Key parameters to ensure proper operation of the APCS.

The approach that must be used to measure these parameters and the approach to establish limits on each parameter based on trial burn data is specified in § 266.102(e)(6).

In addition, the permit must specify sampling and analysis procedures for all feedstreams and all flow rates of all feedstreams must be continuously monitored and recorded.

The final rule establishes limits on these parameters because they can affect metals emissions. The feed rate of metals in both total hazardous waste feeds and pumpable hazardous waste feeds is limited because the physical form of the waste (e.g., solid vs liquid) can affect the partitioning of the metal between bottom ash (for a boiler) or product (for a furnace) and combustion gas entering the PM control system. Metals partition to the combustion gas more readily when fired in a liquid or pumpable form.

The rule limits the metal feed rate from total feedstreams to account for metals in raw materials and nonhazardous fuels. When added to the emissions from hazardous waste, noncarcinogenic metals from these sources can cause the MEI concentration to exceed the threshold level for health effects and carcinogenic metals from these sources can cause the MEI concentration to exceed the incremental lifetime cancer risk limit for the rule of 1 in 100,000. Thus, these controls ensure that burning hazardous waste does not result in unacceptable risks.

The rule limits the chlorine feed rate because chlorine can increase the volatility of metals, thus increasing the rate of partitioning to the combustion gas and, in some cases, resulting in smaller metal particulates in flue gas that can be more difficult to control with a PM collection system.

The rule limits the maximum capacity of the device to ensure that, during the compliance test (under interim status) or the trial burn (under a part B permit application) the device is feeding raw materials and nonhazardous fuels at a rate that will not be exceeded after the compliance test or trial burn. Thus, the gas flow rate and particulate loading are maximized during the compliance test or trial burn, which tests the ability of the PM collection system to control metals.

The rule limits the maximum temperature at the inlet to the PM collection system because temperature affects the volatility of a metal—some metal species may be partially (or totally in the case of mercury) in the vapor form at high temperatures at the inlet to the PM collection system which will reduce the amount of the metal collected. Limiting the inlet temperature to that occurring during the compliance test or trial burn will ensure that the temperature cannot be increased later which could result in an increase in metals emissions.

Finally, the rule limits key operating parameters of the PM air pollution control system to ensure that it continues to operate as efficiently as it did during the compliance test or trial burn.

3. Tier III Implementation

Conformance with Tier III is demonstrated by emissions testing and site-specific dispersion modeling showing that ambient levels of metals do not exceed allowable levels. Permit limits are established for the same parameters as required for Tier II.

4. Special Requirements for Furnaces that Recycle Collected Particulate Matter

Metal emissions are not feasibly monitored on a continuous basis. Thus, some other means of demonstrating compliance is necessary. For most types of BIFs, compliance is demonstrated by monitoring feed rates of metals from all feedstreams. EPA requested comment on whether approaches other than monitoring feed rates of metals may be more appropriate to implement the metals controls. See 54 FR 43760 (Oct. 26, 1989). A number of commenters argued that the material balance approach for implementing the metals controls was impractical and nonconservative for cement kilns. The material balance approach for metals limits the feed rate of each metal in three types of feeds: (1) Pumpable hazardous waste; (2) total hazardous waste; and (3) total feedstreams. Although limiting the feed rate of each metal in the total hazardous waste feed and the pumpable hazardous waste feed was workable, commenters argued that limiting the feed rate of metals in total feedstreams was impractical for cement kilns because of the variety of raw materials they feed. Raw materials to a cement kiln are a blend of several components including calcium sources such as limestone, sea shells, marl, or chalk, silica sources such as clay, shale, slate, or sand, and iron sources such as iron ore or mill grindings. The proportions of the components of the blend are changed frequently according to the type of cement desired and the composition of the sources. This can make it very difficult to accurately determine the metals feed rate in the blended raw materials.

Of even more concern to the Agency, however, is the fact that the material balance approach is not likely to be conservative (i.e., protective) for furnaces, like cement kilns, that recycle collected PM back into the furnace. Because the dust is recycled, an increase in the feed rate of a metal in one of the feedstreams—such as spiking during a compliance test (under interim status) or a trial burn (under a part B permit application)—leads to a gradual increase in the concentration (and feed rate) of the metal in the recharged kiln dust which leads to a gradual increase in the metal emissions. Several recharge cycles may be necessary for the kiln to reach steady state condition. Thus, until the system reaches equilibrium, metals feed rates do not correlate with metals emissions.

EPA considered a number of alternatives to address the problem that the recycled dust creates a system that is out of equilibrium when a metal is spiked. We considered handling the recycled dust as another feedstream. Under this approach, the feed rate of metals in the recycled dust would be considered along with those from other feedstreams. (Or alternatively, the feed

[redacted] metals in the recycled dust would be considered as a fourth level of metals feed rate controls—that is, the feed rate of metals in pumpable hazardous waste, total hazardous waste, recycled dust, and total feedstreams would be limited.) We did not adopt this approach because: (1) The recycled dust is an internal recycled stream so that limits on the recycled dust coupled with limits on other feedstreams would probably correlate with metals emissions in the kiln off-gas, but not necessarily with stack emissions; and (2) during an emissions test when metals are spiked, the system will not be in equilibrium and we do not know enough about metal behavior in the system to determine whether the metals feed rate in the dust would be higher or lower after reaching equilibrium (i..e., we did not know whether this approach would be conservative).

To address this concern that the material balance approach to implementing metals controls is not likely to be conservative (i.e., protective) for furnaces that recylce dust, today's rule requires owners and operators of such devices to comply with one of three alternatives: (1) Daily monitoring of collected PM to ensure that metals [redacted]s do not exceed limits that relate concentration of the metal in the collected PM to emitted PM; (2) daily stack sampling for metals; or (3) conditioning of the furnace system prior to compliance testing to ensure that metals emissions are at equilibrium with metals feed rates. We discuss each of these procedures below.

We note first, however, that today's rule gives owners and operators the option of selecting one of these methods only during interim status. The Director will determine under the part B permit application proceeding which of these methods (or whether another method) may be more appropriate on a case-by-case basis considering the facts. See § 266.106(f). In addition, we note that experience with these methods during interim status may indicate the need to refine them for use under a RCRA operating permit. Finally, we note that this provision of the permit standards is not limited to furnaces that recycle collected PM. (However, the methods discussed below may be used during interim status only by furnaces that recycle collected PM.) The permit standards provide this flexibility because, although we believe that these [redacted]ethods (as they may be refined with [redacted]xperience) or other methods that adequately address the concerns described below must be required for systems that recycle collected PM, the first two methods (i.e., monitoring collected PM or daily stack sampling) may be preferable for other types of devices as well. This is because these first two alternative methods address not only the special problem caused by recycled PM but also the problem of the difficulty (and imprecision) associated with limiting metals emission rates by the material balance approach given the variability of waste and raw material matrices and variability of the concentrations of metals in feedstreams, a problem that also exists for these furnaces and will exist for other devices as well.[60]

a. Monitoring Metals in Collected PM. This approach will control metals emission rates by establishing limits on all of the parameters discussed above for implementing the Tier II and Tier III controls, except for limits on the feed rate of each metal in total feedstreams. In lieu of that parameter, the final rule limits the concentration of each metal in collected PM. See "Alternative Methodology for Implementing Metals Controls" in Method Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266). The concentration limit is calculated by determining the maximum allowable concentration of each metal in the emitted PM and by empirically relating the concentration of the metal in the emitted PM to the concentration of the metal in collected PM (i.e., the enrichment factor). The maximum allowable concentration of each metal in the emitted PM is determined by dividing the allowable emission rate for the metal in pounds per hour by the applicable PM standard [61] in pounds per hour. The enrichment factor (i.e., concentration of a metal in emitted PM divided by the concentration in collected PM) is determined initially by a series of 10 emissions tests over a two-week period. Quarterly testing is required thereafter to determine if the enrichment factor changes substantially. If so, the series of 10 emissions tests must be conducted again to establish the revised enrichment factor.

EPA acknowledges certain potential limitations to this approach: (1) The Agency has limited data to support the main assumption of this approach—that the enrichment factor will remain constant over the range of normal operating conditions that occur between the initial series of 10 tests to establish the enrichment factor and the quarterly confirmation tests; and (2) that a problem with emissions is detected after the fact. However, we have built into the approach conservative features that should address concern about whether the enrichment factor may change over time. First, the approach assumes that the facility is always operating at its maximum allowable PM emission limit. Although allowable metal concentrations in collected PM would be higher when the facility operates at lower PM emission levels, the limits do not change. Thus, for example, for every 10% the facility operates under its PM standard, the limit on metals concentrations in collected PM are conservative (lower than necessary) by 10%. Second, the enrichment factor is statistically determined based on test data as the lower of: (1) Twice the enrichment factor at the 95% confidence level; or (2) the enrichment factor at the 99% confidence level. Where there is significant scatter in the data, twice the enrichment factor at the 95% confidence level is likely to govern. Thus, when the enrichment factor varies significantly during the 10 tests, not only is the enrichment factor based on the 95% confidence level, but an additional margin of safety is provided by doubling the factor at the 95% confidence level for purposes of determining the metal limit in collected PM.[62]

As for detection after the fact, sampling of collected dust is required every eight hours to form a daily composite sample. The operator is allowed up to 48 hours to analyze the daily composite [63] given that the analytical procedures can take 24 to 48 hours even for on-site laboratories. In addition, if the sample fails the concentration limit for a metal, the operator may analyze two duplicate samples that he may have elected to obtain to determine if the failed sample is an outlier. Analyses of these back-up samples will also take up to 48 hours. Thus, it could take up to four days to confirm that a dust sample has failed the

[60] We also note that these methods may be preferable to the material balance approach in some situations for implementing the metals controls for hazardous waste incinerators.

[61] The applicable PM standard is 0.08 gr/dscf or any more stringent standard that may apply under the NSPS or SIP.

[62] In addition, the methodology requires that a "safe enrichment factor" of 100 be used when a metal is at nondetect levels in the collected PM. Mercury, for example, may be at nondetect levels because it is likely to be in the vapor form (and not collected as PM) in an ESP or baghouse.

[63] Except for "noncritical" metals where 30 continuous days of analyses demonstrate that the dust concentration for the metal does not exceed 10% of the concentration limit. For these metals, weekly composite samples must be analyzed. If a weekly composite exceeds 10% of the dust concentration limit, however, daily analyses would be again required.

concentration limit and that a violation of the metals emissions controls may have occurred.[64]

Notwithstanding this provision of the method, EPA expects that owners and operators that want to comply with the spirit of the controls and to operate in a manner that is protective of human health and the environment will conduct triplicate analyses of samples for those metals that may exceed the "conservative" metal limit to avoid the time delay of subsequently analyzing back-up samples if the initial sample fails the concentration limit. Owners/operators should use historical data to determine whether a metal may be close to exceeding a concentration limit and, thus, routinely analyze "back-up" samples concurrently with the "required" sample for such metals. Further, EPA expects that enforcement officials will consider whether the owner/operator has taken such precautions to minimize the time during which they may be operating under violation conditions (if the dust concentration actually exceeds the "violation" limit) in determining appropriate enforcement action.

Notwithstanding these potential limitations, EPA believes that this methodology is preferable to the material balance approach. Rather than attempt to limit emissions by limiting metal feed rates and extrapolating through a number of not well-understood processes for furnaces that recycle dust, the methodology in the final rule goes to the material that is closest to to what is being emitted, collected PM, to extrapolate to emissions.

Limits on the operating parameters discussed above will be established under this methodology during a minimum of three "compliance tests" of the first five of the ten emissions tests required to establish the enrichment factor for each metal. Consequently, during three of the ten runs, feed rates of metals in total hazardous waste and pumpable hazardous waste will be at the maximum level that the facility may operate during the remainder of interim status. Although the feed rate of metals in the hazardous waste during the other tests need not be at the maximum level established during the three "compliance tests",[65] the feed rate must be at least 25%[66] of the compliance test level, and the facility must operate at the compliance test capacity (i.e., the maximum capacity at which the facility may operate during the remainder of interim status). The owner and operator must demonstrate compliance with the applicable PM standard and the metals emissions standards of § 266.106(c) or (d) during all ten tests required to establish enrichment factors. The rule requires that the ten emissions tests to determine enrichment factors be conducted in a two week period with not more than two tests per day, and that the three compliance tests (when metals feed rates from the hazardous waste will be maximized to establish limits for the remainder of interim status) be among the first five tests. EPA is providing these restrictions to ensure that the enrichment factors are representative of operations over several days when operating conditions can vary, and to ensure that any effect on enrichment factors from the high metals loading from spiked hazardous waste during the three compliance tests will be detected during the subsequent tests.

The testing and operating requirements for this methodology are prescribed in detail in "Alternative Methodology for Implementing Metals Controls" in the Methods Manual.

b. Daily Emissions Testing. Under this option, the owner or operator must conduct daily emissions testing to confirm that the metals emission limits are not exceeded. Sampling must be conducted for a minimum of 6 hours each day when hazardous waste is burned. To ensure that sampled emissions are representative of normal emissions that day, the testing must be conducted when burning normal hazardous waste for that day (i.e., considering metals content, point of injection into the system, and physical form of the waste) at normal feed rates for that day and when the air pollution control system is operated under normal conditions. See § 266.103(c)(3)(ii)(B).

Given that actual emissions sampling is used under this option to determine compliance with emission standards, those operating conditions that apply to other BIFs after certification of compliance that are designed to control metals emissions are not necessary. See § 266.103(c)(1). The operating parameters that need not be limited at certification of compliance under this method are:

- Maximum feed rate of each metal in total feedstreams, total hazardous waste feedstreams, or pumpable hazardous waste feedstreams;
- Maximum feed rate of pumpable hazardous waste;
- Maximum feed rate of chlorine in total feedstreams;
- Maximum combustion chamber temperature and temperature at the inlet to the air pollution control system (APCS); and
- Key parameters to ensure proper operation of the APCS.

This approach has one drawback—there is a time delay before a violation of the emissions limits is determined given that it normally takes a week or more to obtain the results of the stack sampling. To minimize the impact of this problem, the operator is required to know the metals concentration and feed rate of hazardous waste at all times and must determine if a change in metal feed rate from the hazardous waste is likely to result in exceedance of a metal emission limit.

c. Conditioning Prior to Compliance Testing. Under this approach (see § 266.103(c)(3)(ii)(C)), the operator must condition the furnace to ensure that metals emissions are in equilibrium with metals fed into the system from all feedstreams. The owner or operator must determine using engineering judgment when the system has reached equilibrium (i.e., how long the system must be conditioned). During conditioning, hazardous waste and raw materials having the same metals content as will be fed during the compliance test must be fed at feed rates that will be fed during the compliance test.

Under this method, limits for all operating parameters under § 266.103(c)(1) must be established during the compliance test.

5. Trial Burns

A trial burn, or data in lieu of the trial burn (e.g., emissions data from interim

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[64] The methodology requires that two dust concentration limits be established for each metal: a "conservative" limit and a "violation" limit. For example, the conservative limit is based on the safe enrichment factor of twice the enrichment factor at the upper 95% confidence level, while the violation limit is based on the enrichment factor at the upper 95% confidence level. If the conservative limit is failed more than 3 times out of 60 times, the owner/operator must notify the Director and he may burn hazardous waste for a total of 720 hours during which: (1) The series of 10 emissions tests must be conducted to revise the enrichment factor and the dust concentration limits; and (2) the maximum feed rate of each metal in the hazardous waste is reduced by 50% (except during the three compliance tests). If the violation limit is exceeded, however, the operator is in violation of the metals controls (and he must also notify the Director, reduce the feed rate of metals in hazardous waste, and conduct the series of 10 tests to calculate the revised concentration limits.)

[65] We are not requiring the facility operate at the maximum (i.e., compliance test) metals feed rate from hazardous waste (or other feedstreams) during all ten emissions tests because the purpose of the remaining tests is to obtain data to statistically determine the enrichment factor. Thus, it is important to determine how the enrichment factor may change as the feed rate of metals from various feedstreams varies. Nonetheless, the metal feed rate in the hazardous waste must be a minimum of 25% of compliance test limits during the remaining 7 enrichment factor determinations tests.

status compliance testing) is required to demonstrate the performance capabilities of a system and to establish the operating limits of a facility for the duration of the operating permit. Compliance limits will be based on the operating conditions and emission rates observed during the trial burn. Therefore, to obtain the most flexible compliance limits, an owner/operator should conduct test burns and the trial burn under worst-case conditions (those that maximize emissions without exceeding the established limits). These conditions include feeding the waste used in the trial burn at a feed rate and metals concentration that reflect the highest levels expected in present or future operations.

Spiking with Metals. To achieve the maximum allowable concentration of metals, the owner/operator may wish to spike the waste to artificially high concentrations of the metals during the pre-trial burn period and during the trial burn. However, the owner/operator may not feed metals at levels higher than those documented in the part B permit application as those not likely to result in emissions exceeding allowable levels. Permit officials will consider this documentation in establishing pre-trial burn permit conditions for new permits.

6. Monitoring and Analysis Requirements

a. Emissions Testing. Emissions testing and analysis for metals must be conducted using "Methodology for the Determination of Metal Emissions in Exhaust Gases from Hazardous Waste Incineration and Similar Combustion Processes" provided in Methods Manual for Compliance with the BIF Regulations [66], incorporated in today's rule as appendix IX of part 266. The methodology describes the use of a multiple metals sampling train. The methodology also describes and provides references to the appropriate analytical techniques in Test Methods for Evaluation Solid Wastes (SW-846), incorporated by reference in § 260.11, that must be used to analyze samples.

b. Analysis of Feedstreams. Feedstreams must be analyzed for each of the 10 regulated metals that could reasonably be expected to be in the hazardous waste. If a particular metal is excluded from the analysis, the basis for exclusion must be documented and included in the operating record. Methods for sampling and analysis of feedstreams for metals are prescribed in SW-846.

[66] U.S. EPA. *Methods Manual for Compliance with the BIF Regulations.* December 1990. EPA/530-SW-91-010. NTIS publication number PB91-120-006.

D. Interim Status Compliance Requirements

As prescribed in §266.103, and discussed in section VII of part three of this preamble, boilers and industrial furnaces operating under interim status must comply with the metals emissions standards during interim status.

V. Controls for Emissions of Hydrogen Chloride and Chlorine Gas

Today's final rule uses a three-tiered regulatory approach to limit HCl and Cl_2 emissions (see § 266.107), an approach identical to that used to control noncarcinogenic toxic metals emissions.

A. Background Information

In the 1987 proposed rule, EPA stated its intention to develop risk-based HCl emission standards in the same format and for the same reasons as the proposed metals emission limits. The HCl emission limits for a particular device would have been based on the device type and capacity, and on the type of surrounding terrain. In the 1989 supplemental notice, EPA discussed an alternative approach to make the standards a function of stack height, terrain, and land use rather than a function of device type and capacity. The reasons for the change were the same as those described above in the discussion of the metals standards.

Controls on Cl_2 were proposed on April 27, 1990 (55 FR 17866) because Cl_2 can be emitted from devices burning chlorinated wastes if insufficient hydrogen is available (i.e., from other hydrocarbon compounds or water vapor) to react with all of the chlorine present in the waste. In recent tests [67] of a cement kiln, EPA found that approximately 50% of gaseous chlorine emissions were in the form of Cl_2 (and the other 50% was in the form of HCl). In the April 1990 proposal, the Agency proposed a Cl_2 RAC of 0.4 $\mu g/m^3$.

In the 1989 supplemental notice, EPA also discussed the possibility of using continuous HCl monitors in lieu of the waste feed analysis approach for monitoring HCl emissions are likely to be close to allowable emissions. The Agency continues to believe that this is a reasonable approach and believes that it can be effectively implemented during the permit process as necessary using the omnibus authority.[68]

[67] U.S. EPA. Emission Testing of a Precalciner Cement Kiln at Louisville, Nebraska, November 1990. Document No. EPA/530-SW-91-016.

[68] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

B. Response to Comments

The Agency received a number of comments on the proposed HCl and Cl_2 controls as discussed below.

1. Short Term HCl RAC

A number of commenters stated that the Agency's support for the proposed 3-minute RAC for HCl was inadequate. The Agency is currently developing a new methodology for evaluating health effects data to develop a no-adverse-effect short-term exposure level.[69] Given that the new methodology has not been approved by the Agency, today's final rule does not establish a short-term RAC for HCl.

We note that the Tier I chlorine feed rate limits proposed in the 1989 supplemental notice were based on the short-term HCl RAC because the short-term exposure RAC provided more restrictive feed rate limits than the long-term RAC. Consequently, the 1989 proposed chlorine feed rate limits are not included in today's final rule. In establishing the Tier I feed rate limits for chlorine in today's final rule, the Agency considered both the long-term HCl RAC (i.e., 7 $\mu g/m^3$) and the Cl_2 RAC (i.e., 0.4 $\mu g/m^3$), and the partitioning between the two pollutants in stack gases. Given that the Agency has tested for Cl_2 emissions at only two facilities, and at one of the facilities more than 50% of the chlorine partitioned to Cl_2, the Agency conservatively assumed in calculating feed rate limits that 100% of the chlorine would be partitioned to Cl_2. Because the Cl_2 RAC is more than an order of magnitude lower than the HCl RAC, the Tier I chlorine limits were based on 100% conversion of chlorine to Cl_2. If applicants believe that this assumption is too conservative, they may conduct emissions testing to document Cl_2 and HCl emission rates.

2. Need for Cl_2 Controls

Many commenters stated that Cl_2 controls are unnecessary. One commenter believed that very little hydrogen is needed to react with Cl_2 to form HCl. Another commenter believed that operating conditions for boilers and industrial furnaces are not conducive to the formation of Cl_2. Another commenter stated that the proposed limits to control

[69] Memorandum dated September 18 from Susan Griffin, EPA, to Bob Holloway, EPA, entitled "Derivation of Short-Term RAC for HCl"

HCl emissions will provide adequate control of Cl_2 emissions as well.

The Agency does not agree with these commenters. As discussed above, emissions testing indicates that a substantial fraction of gaseous chlorine can be emitted in the form of Cl_2. In addition, the HCl controls may not be adequate to control Cl_2 emissions. Because Cl_2 has a much lower solubility in water than does HCl, the use of wet scrubbers as the principle emissions control device for HCl is not likely to significantly reduce emissions of Cl_2. Cl_2 emissions can be controlled, however, by increasing the hydrogen content of feedstreams (e.g., by adding steam) or by decreasing the feed rate of chlorine. Moreover, EPA does not believe that high Cl_2 emissions relative to HCl emissions is a widespread occurence.

3. HCl Emission Test Procedures

A number of commenters who own or operate cement kilns expressed concern that EPA's HCl stack sampling and analysis procedure (see section 3.3 in Methods Manual for Compliance with the BIF Regulations) was inappropriate because it counted as HCl chlorine in inorganic chloride salts and chloride ions that are emitted as ammonium chloride. The Agency has determined [70] that the filter in the sample probe, in fact, effectively removes fine particulate chloride salts so that they do not interfere with the HCl determination. The Agency agrees, however, with commenters that the procedure may consider as HCl chloride ions that are emitted as ammonium chloride.[71] Although the Agency has not developed a sampling and analysis procedure that would correct this problem, we do not believe that any such over-reporting of HCl will cause a cement kiln to exceed the HCl standard. This is because the highly alkaline particulate matter resulting from the limestone raw materials effectively neutralizes much of the chlorine generated from hazardous waste fed into the kiln.

4. Technology-Based HCl controls

Several commenters stated that technology-based HCl emission controls applicable to hazardous waste incinerators (i.e., 99% reduction of emissions in the stack gas) should also apply to BIFs. As discussed in the proposed rule, the Agency continues to believe that a 99% reduction standard for BIFs to control HCl emissions may be neither technically feasible nor necessary to protect human health and the environment. The Agency believes that the process chemistry of some industrial furnaces (e.g., cement kilns) generally results in low HCl emissions and concerns about tube corrosion generally limit HCl concentrations in boiler emissions. Given the low uncontrolled HCl concentrations in many BIFs, a 99% reduction standard in addition to the health-based standard required by today's final rule, may not be cost-effective. Commenters did not provide data or information that would support the need for, and the cost-effectiveness of a technology-based standard in addition to the health-based standard provided by the final rule.

We note that the Agency is currently developing health effects data for two other acid gases: hydrogen fluoride and hydrogen bromide.

C. Implementation

Procedures for implementing the HCl and Cl_2 controls are virtually identical to those for the metals controls discussed above.

1. Emissions Testing

Collection and analysis of HCl and Cl_2 in stack gas emission samples must be conducted according to the procedures prescribed in section 3.3 of the Methods Manual for Compliance with the BIF Regulations, (Methods Manual) incorporated in today's rule as appendix IX of part 266. The Methods Manual describes two procedures for sampling emissions for HCl and Cl_2: Methods 0050 and 0051. Method 0050 collects a sample isokinetically and is, therefore, particularly suited for sampling at sources emitting acid particulate matter (e.g., HCl dissolved in water droplets), such as those controlled by wet scrubbers. Method 0051 uses a midget impinger train sampling method designed for sampling sources of HCl and Cl_2 emissions not in particulate form. Samples collected using either method must be analyzed using Method 9057 which is also described in the Methods Manual.

2. Wastes Analysis

Methods for sampling and analysis of feedstreams for total chlorine and chloride are described in detail in SW-846.

3. Interim Status Compliance Requirements.

As discussed in section VII of part three of this preamble, boilers and industrial furnaces operating under interim status must comply with the HCl and Cl_2 emissions standards during interim status.

VI. Nontechnical Requirements

As proposed, the final rule requires BIFs to comply with the nontechnical standards applicable to other hazardous waste treatment, storage, and disposal facilities. These nontechnical standards address the potential hazards from spills, fires, explosions, and unintended egress; require compliance with the manifest system to complete the cradle to grave tracking system; ensure that hazardous wastes (and hazardous residues) are removed from the site upon closure; and ensure that the owners and operators are financially capable of complying with the standards. BIFs burning hazardous waste fuels that operate storage facilities must already comply with these standards under existing § 266.35(c).

We also note, in particular, that owners and operators of BIFs are subject to the waste analysis requirements of §§ 264.13 and 265.13 by reference. See §§ 266.102(a)(2)(ii) for permitted facilities and 266.103(a)(4)(ii) for interim status facilities. Before a waste is stored or burned, the owner or operator must obtain a detailed chemical and physical analysis of a representative sample of the waste sufficient to enable the owner or operator to comply with today's rule.

The nontechnical standards provided in today's rule are identical to those that currently apply to hazardous waste incinerators. In today's rule, § 266.102(a)(2) applies these standards to permitted BIFs and § 266.103(a)(4) applies these standards to BIFs operating in interim status.

Finally, we note that, as proposed, today's rule applies the same controls on fugitive emissions that currently apply to hazardous waste incinerators. The controls apply to facilities operating under a permit (see § 266.102(e)(7)(i)) and, on the effective date of the rule, to facilities operating under interim status (see § 266.103(h)). The controls provide for alternative control strategies including: (1) Keeping the combustion zone where hazardous waste is burned (or where emissions from such burning may migrate) totally sealed; and (2) maintaining the combustion zone pressure lower than atmospheric pressure.

VII. Interim Status Standards

In addition to the nontechnical standards discussed above, today's final rule requires facilities with interim status to comply with substantive

[70] U.S. EPA. Emission Testing of a Precalciner Cement Kiln at Louisville, Nebraska, November 1990. Document No. EPA/530-SW-91-016.

[71] U.S. EPA. Emissions Testing of a Wet Cement Kiln at Hannibal, MO, December 1990. Document No. EPA/530-SW-91-017.

emission controls for metals, HCl, Cl_2, particulates, and CO (and, where applicable, HC and dioxins and furans). Owners and operators must certify compliance with the emissions controls under a prescribed schedule, establish limits on prescribed operating parameters, and operate within those limits throughout interim status.

Given that interim status requirements are self-implementing, the Agency has developed comprehensive interim status requirements to ensure that the standards are implemented effectively. To assist the regulated community in complying with the requirements, EPA is developing a guidance document entitled Interim Status Guidance Document for BIFs (ISGD). The guidance document will be available shortly after publication of the final rule in the Federal Register. The ISGD will summarize the provisions of the rule, provide example forms that may be used to submit data and information required by the certifications of precompliance and compliance (see discussions below), and provide guidance on developing a compliance test protocol. To provide further assistance to the regulated community, EPA plans to conduct a series of workshops open to the public to explain how the interim status standards work. The workshops are scheduled to begin shortly after publication of the final rule in the Federal Register. To obtain a copy of the ISGD or information on the dates and locations of the workshop, contact the sources identified at the beginning of this preamble under "FOR FURTHER INFORMATION CONTACT".

The following sections summarize how the interim status standards work.

A. Certification Schedule

1. Certification of Precompliance

The BIF rule is effective 6 months after the date of promulgation. By the effective date, an owner/operator must submit a certification of precompliance providing prescribed information supporting a determination that emissions of individual metals, HCl, Cl_2, and particulates are not likely to exceed allowable levels. See § 266.103(b)(2). For certification of precompliance, the owner/operator must use engineering judgment to evaluate available information and data (or must use EPA-prescribed default data provided in sections 8.0 and 9.0 of Methods Manual for Compliance with the BIF Regulations, incorporated in today's rule as Appendix IX of part 266) to determine that, under the operating limits (for EPA-prescribed parameters) that the owner/operator establishes, emissions are not likely to exceed the allowable emissions provided by §§ 266.105, 266.106, and 266.107. The owner and operator must then comply with these operating conditions (see discussion in section VII.B below) submitted in the precompliance certification during the interim status period of operation until a revised precompliance certification is submitted or until a certification of compliance is submitted as discussed below.

In addition, by the effective date of the rule, the owner or operator must submit a notice for publication in a major local newspaper of general circulation providing the general facility information prescribed by § 266.103(b)(6). The information that must be provided in the notice includes: The name and address of the owner and operator of the facility; the type of facility, the type and quantity of hazardous waste burned; the location where the operation record of the facility can be viewed; a notification that a facility mailing list is being established so that interested parties may notify the Agency that they wish to be placed on the mailing list to receive future information and notices about the facility; a brief summary of the RCRA regulatory system for BIFs; and the address of the EPA Regional Office where additional information on the RCRA regulatory system may be obtained. EPA is requiring this public notice to ensure that the local citizenry is aware that the BIF is burning hazardous waste and that, to the extent desired, the local citizenry may become better informed about the facility operations through site inspections and review of data in the operating record. In turn, this opportunity for local involvement in facility operations should provide an added incentive for the owner and operator to comply with the spirit and letter of the interim status standards.

EPA notes that facilities that meet the definition of "in existence" of § 266.103(a)(1)(ii) but that are not burning hazardous waste on the effective date of the rule must nonetheless submit a certification of precompliance based on planned operations. The certification may be revised at any time in the future if necessary. See § 266.103(b)(8).

2. Certification of Compliance

Within 18 months of promulgation, the owner/operator must conduct compliance testing [12] and submit a certification of compliance with the standards for individual metals (§ 266.106), HCl and Cl_2 (§ 266.107), particulates (§ 266.105), and CO, and, where applicable, HC and dioxins/furans (§ 266.104 (b) through (e)). The certification of compliance is based on emissions testing and establishes operating limits for EPA-prescribed parameters based on the compliance test. See § 266.103(c)(1).

If the owner/operator cannot submit the certification of compliance within 18 months of promulgation however, he must either: (1) Notify the Director that he is taking an automatic 12-month extension under which hazardous waste burning is limited to a total of 720 hours; (2) obtain a case-by-case extension of time for reasons beyond his control; or (3) stop burning hazardous waste and begin closure of the hazardous waste portion of the facility. See § 266.103(c)(7).

The case-by-case time extension will be provided by the Director if he determines that the owner or operator has made a good faith effort to comply with the requirements in a timely manner but, for reasons beyond his/her control, are not able to meet the certification of compliance deadline. Reasons could include inability to complete modifications to an air pollution control system in time to conduct the compliance test to support the certification, or a major, unplanned outage of the facility (e.g., need to replace refractory in a kiln) just prior to scheduled compliance testing, or as discussed earlier, HC levels attributable to organics in raw materials. The Director may use his discretion to determine the length of the extension.[13] The Director also may impose conditions that ensure that the boiler or industrial furnace will be operated in a manner that protects human health and the environment, provided that the Director documents the basis for adding such a condition and provides the applicant opportunity to comment on it.

[12] We note that compliance testing may be conducted only under operating conditions for which the facility has submitted a certification of precompliance. This is because the facility may only operate after the effective date of the rule and prior to submittal of a certification of compliance under conditions for which it has certified precompliance. If any applicable emission standard is exceeded during the compliance test (or during pretesting), the facility must immediately submit a revised certification of precompliance establishing revised (i.e., more stringent) operating limits.

[13] We would not expect for the Director normally to limit the hours that hazardous waste may be burned under a case-by-case extension given that the owner/operator must support the need for the extension and, if granted, the extension must be for a legitimate need. In contrast, the hours of burning are limited for the automatic 12-month extension because there is no judgement by the Director that, in fact, the extension is warranted.

In addition, we note that a case-by-case extension may be requested and granted for any interim status certification deadline under § 266.103 (c) or (d). A case-by-case extension may be granted after an owner/operator has elected to take the 12-month automatic extension, an extension may be granted if the owner/operator cannot comply with the recertification schedule (see discussion below), and an existing extension may be extended.

3. Recertification

Owners and operators must periodically conduct compliance testing and recertify compliance with the standards for individual metals, HCl and Cl_2 particulates, and CO, and, where applicable, HC and dioxins/furans within three years of the previous certification while they remain in interim status (i.e., until an operating permit is issued under § 270.66). See § 266.103(d). EPA is requiring recertifications primarily to ensure that air pollution control systems do not deteriorate over time.

4. Failure to Comply with the Certification Schedule

If the owner or operator does not comply with the certification schedule, all hazardous waste burning must cease as of the date of the missed deadline, and closure must commence. See § 266.103(e). Any burning of hazardous waste by such a device after failure to comply with the certification schedule must be under a RCRA operating permit. See § 270.66.

To comply with the certification schedule, complete and accurate certifications of precompliance and compliance must be submitted by the applicable deadlines. (Although the deadline for certification of compliance may be extended (see § 266.103(c)(7)), the deadline for certification of precompliance may not be extended.) In addition to terminating interim status if the owner and operator do not comply with the certification schedule, EPA will also take appropriate enforcement action.

When closing a BIF, all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber water, and scrubber sludges, must be removed from the affected BIF. In addition, the owner/operator must comply with the general interim status closure requirements of §§ 265.111–265.115, as amended. These requirements, which are incorporated by reference into today's rule, specify closure performance standards; submission of and compliance with a written closure plan; disposal or decontamination of equipment, structures, and soils; and certification procedures for closure.

We note that under amended § 265.112(d)(2), for an owner or operator who fails to submit a complete certification of compliance by the applicable compliance deadline (including the automatic 12-month extension or the case-by-case extension under § 266.103(c)(7)(i), the date that he "expects to begin closure" is within 30 days after the applicable deadline. Therefore, for example, for an owner who takes the automatic 12-month extension, the closure notification requirements of § 265.112(d)(1) or the closure activity requirements of § 265.113 would not be triggered unless and until the owner fails to submit a complete certification of compliance by the 12-month extended deadline and a case-by-case extension beyond the 12-month extension was not obtained.

For any other BIF owner or operator closing during interim status operation (i.e., one who closes between the effective date of the rule but before the interim status compliance deadline of 18 months after promulgation of the rule, or one who submits a complete certification of compliance by the applicable 18-month compliance deadline, the 12-month automatic extension, or case-by-case extension, and closes during interim status), the date when he "expects to begin closure" under § 265.112(d)(2) will remain either within 30 days after the date on which any hazardous waste management unit receives the known final volume of hazardous waste, or if there is a reasonable possibility that the unit will receive additional hazardous waste, no later than one year after the date on which the unit received the most recent volume of hazardous waste.

5. Development of the Certification Schedule

In the 1989 supplemental notice, the Agency requested comment on alternative schedules for requiring compliance with the emissions standards during interim status. The Agency selected a certification deadline of 18 months (with provision for extensions) because we believe that most facilities will be able to install the necessary monitoring equipment, conduct any precompliance testing that may be necessary, and conduct compliance testing within that time period. Although 18 months from the date of promulgation is a fairly short period of time, we note that Agency staff have made numerous public presentations and have had numerous discussions [74] with the regulated community, including, in particular, the development of interim status compliance procedures. Thus, facility owners/operators have had some advance indication of the general regulatory approach taken in the final rule.

The Agency received a comment that the air emission standards for cement kilns should be instituted more quickly than the schedule proposed. The commenter believed that accelerating the schedule will not place an excessive burden on these facilities because the regulations were proposed far enough in advance for cement kilns to come into compliance. The Agency has considered this comment and: (1) Sees no compelling reason to single out cement kilns from other BIFs for an accelerated schedule; and (2) continues to believe that an 18-month compliance period is representative of the time required to implement necessary plant design or process modifications, install monitoring and compliance equipment, conduct facility compliance testing, and submit a certification of compliance testing that documents key operating limits during the remainder of the interim status period. In fact, the Agency is concerned that in some situations, where, for example, the air pollution control system may need to be modified, an 18-month deadline may not provide enough time to complete modifications, "shake-down" the system, conduct pre-testing [75], conduct compliance testing, and analyze test data and submit a certification of compliance. Thus, the final rule includes provisions for time extensions to all certification deadlines except for certification of precompliance under § 266.103(b).

B. Limits on Operating Parameters

Limits on operating parameters during interim status are established at certification of precompliance and at certification of compliance following emissions testing 18 months (unless extended) after promulgation of the rule. The operating conditions can be revised prior to certification of compliance by submitting a revised certification of precompliance. The operating conditions can be revised after certification of

[74] See the public docket for this rulemaking for summaries of meetings held with groups including: Cement Kiln Recycling Coalition, Chemical Manufacturers Association, National Solid Waste Management Association, Council of Industrial Boiler Operators, and Hazardous Waste treatment Council.

[75] Although pretesting is not required, EPA believes that most facilities will conduct pretesting before conducting the formal compliance testing with all its attendant QA/QC requirements.

compliance by conducting emissions testing and submitting a revised certification of compliance.

After the effective date of the rule and prior to certification of compliance with the emissions standards based on emissions testing, a facility may operate only under those conditions for which the facility has submitted a "precompliance" certification demonstrating that emissions of individual metals, HCl, Cl_2, and particulates are not likely to exceed allowable levels. The operating conditions for which limits are established by precompliance are (see § 266.103(b)(3)):

- Feed rate of each of the 10 metals in:
  - —Total feed streams, except for furnaces that recycle collected particulate matter (see discussion in section VII.I below)
  - —Total hazardous waste feed streams
  - —Total pumpable hazardous waste feed streams;
- Total feed rate of chlorine and chloride in all feed streams;
- Total feed rate of ash in all feed streams, except for cement and lightweight aggregate facilities for which ash content of feed streams is not an operating parameter;
- Total feed rate of hazardous waste and feed rate of pumpable hazardous waste; and
- Maximum capacity in appropriate units such as heat input, steam production, or raw material feed rate.

In addition, the following parameters must be considered in demonstrating precompliance and must be continuously monitored (and records maintained in the operating log) when monitoring systems are installed (see § 266.103(b)(6)):

- Maximum combustion zone temperature;
- Maximum flue gas temperature entering the PM APCS; and
- Limits for APCS-specific operating parameters.

Once a facility has conducted compliance testing and certified compliance with the emissions standards, limits for all of the above parameters, as well as for CO (and, where applicable, HC) are established based on the compliance test and remain in force until recertification under new conditions. See § 266.103(c)(1).

C. Automatic Waste Feed Cutoff

Upon certification of compliance, an automatic hazardous waste feed cutoff system must engage when the limits (established in the certification) for the following operating parameters are exceeded (see § 266.103(g)):

- Total feed rate of hazardous waste and feed rate of pumpable hazardous waste;
- Limits on CO and, where applicable, HC;
- Maximum production rate in appropriate units such as heat input, steam production, or raw material feed rate;
- Maximum combustion zone temperature;
- Maximum flue gas temperature entering the PM APCS; and
- Limits for APCS-specific operating parameters.

Facilities operating during interim status after certification of compliance must test the automatic waste feed shutoff system once every 7 days to ensure that it is operating properly, unless an owner/operator can document that weekly testing will result in unsafe conditions. See § 266.103(j)(3). In all cases, testing at least every 30 days is required. Owners/operators are required to document the results of these tests and all automatic waste feed shutoffs that occur during normal operations.

D. Sham Recycling Policy

The BIF rules supersede the Agency's sham recycling policy (see 48 FR 11157 (March 16, 1983)) after the owner or operator certifies during interim status compliance with the emissions standards for metals, HCl, Cl_2, particulates, and CO (and, where applicable, HC and dioxins and furans). Thus, after certification of compliance, a BIF may burn hazardous waste (other than waste fed solely as an ingredient or solely for material recovery) with a heating value lower than the 5,000 Btu/lb limit generally considered heretofore to be the minimum for a legitimate hazardous waste fuel. Although the Agency considers such burning to be treatment, we believe that conformance with the emissions standards upon certification of compliance under § 266.103(c) will ensure protection of human health and the environment. (Prior to today's rule, BIFs burning a hazardous waste that was not considered to be a legitimate fuel were subject to the subpart O incinerator standards of parts 264 and 265, assuming burning was not for some other legitimate recycling purpose, such as material recovery.)

Although we indicated above that a BIF may burn hazardous waste for the purpose of treatment upon certification of compliance, today's rule allows BIFs to burn such hazardous waste for a total period of time not to exceed 720 hours prior to certification of compliance. See § 266.103(a)(6). The rule allows such burning only for purposes of compliance testing (and pretesting to prepare for compliance testing) to determine that the device can comply with the emissions standards while burning waste for treatment. The rule limits such burning to a total of 720 hours because we believe that period of time is adequate to complete any pretesting and compliance testing, and it is the same period of time that new BIFs may burn hazardous waste during the pretrial burn period under § 270.66(b)(1).

The Agency discussed three options in the 1989 supplemental notice for superseding the sham recycling policy: Rescinding the sham recycling policy on the effective date of the final rule; rescinding the sham recycling policy when a facility comes into compliance with the interim status emission standards; or leaving the sham recycling policy in effect until a RCRA operating permit is issued.

The Agency received comments supporting all three of the options. Eight commenters supported the first option, rescinding the sham recycling policy on the effective date of the final rule, because the policy is considered guidance. Eight commenters supported the second option, rescinding the sham policy when facilities come into compliance with the interim status emission standards, because the standards are protective of human health and the environment. Five commenters supported the third option, leaving the sham recycling policy in effect until a facility is issued a RCRA operating permit, because the permit writer oversight during the permit process is necessary to ensure that a facility complies with the appropriate regulations.

The Agency believes that the procedures required for certification of the interim status emissions standards are adequate to ensure effective implementation and enforcement of the standards. The only emissions standard applicable to permitted facilities that is not required during interim status is the destruction and removal efficiency (DRE) standard requiring a trial burn to demonstrate 99.99% DRE. The Agency does not believe that this is necessary because emissions testing of boilers and industrial furnaces indicates that facilities with CO and HC levels within the limits established by today's rule also are likely to achieve 99.99% DRE.

It should be noted that in rescinding the sham recycling policy for these types of regulated boilers and industrial furnaces, the Agency is not altering in

any way what secondary materials are defined as solid and hazardous wastes when burned for legitimate energy recovery. Thus, all spent materials, sludges, and by-products are solid wastes when burned for recovery, as are off-specification commerical chemical products which are burned as fuels (or used as a component of fuels) in lieu of their original intended use. See §§ 261.2(c)(2) and 261.33. (Non-listed hazardous commercial chemical products (i.e., those that exhibit a characteristic but are not listed in § 261.33) are likewise solid wastes when they are recycled in ways that differ from their normal use. 50 FR at 14219 (April 11, 1985).) With respect to the issue of what constitutes a normal manner of use for an off-specification commercial chemical product that has some Btu value, or the issue of when such a material is used "in lieu of [its] original intended use" (§ 261.33) and so is a solid and hazardous waste, the Agency notes that not every type of burning ostensibly for energy recovery is considered to qualify. Inappropriate modes of burning thus do not render such materials non-wastes. For example, if ignitable off-specification natural gas condensate is burned as a motor fuel, or reactive jet fuel (U 133, hydrazine) is burned as conventional fuel oil, such materials are solid and hazardous wastes and subject to subtitle C controls. This is because the mode of burning is not at all like these materials' original intended use.

E. Submittal of Part B Applications

Permit writers will require owners and operators to submit part B applications for operating permits on a schedule considering the relative hazard to human health and environment the facility poses compared to other storage, treatment, and disposal facilities within the Director's purview.

F. DRE Testing

As proposed, testing to demonstrate 99.99% destruction and removal efficiency (DRE) of organic compounds in the waste is not required under interim status. The complexity and costs of DRE testing, as well as the substantial interaction needed between owners/operators and regulatory officials, make such testing impracticable during interim status. EPA expects that the control requirements for CO and HC will result in low levels of emissions of organic compounds.

G. Chlorinated Dioxins and Furans

As proposed, hazardous waste containing or derived from any of the following dioxin-listed wastes cannot be burned in a boiler or industrial furnace operating under interim status: EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027. Burning these dioxin-containing wastes during interim status is prohibited because boilers and industrial furnaces cannot be assumed to achieve the 99.9999 percent DRE required for these wastes.

Even though these wastes may not be burned during interim status, chlorinated dioxins and furans may be emitted as PICs under certain conditions (i.e., when the PM control device is operated within the temperature range of 450–750°F, or when HC concentrations exceed 20 ppmv) as discussed in section II.E of part three of the preamble. EPA believes that the emissions testing and risk assessment requirements of § 266.104(e) can be effectively implemented during interim status without significant EPA interaction. Thus, the rule requires the owner or operator to certify compliance with those requirements, as applicable.

H. Special Requirements for Furnaces

Today's rule provides special interim status requirements for industrial furnances that feed hazardous waste, except hazardous waste fed solely as an ingredient,[76] at locations other than the "hot" end where the product is discharged and fuels are normally fired to ensure adequate combustion of hazardous waste prior to conducting a trial burn during the part B permit process (see § 266.103(a)(5)) as follows: (1) The combustion gases must have a minimum temperature of 1800 °F at the point where the waste is introduced; [77] (2) the owner or operator must determine (and include such determination in the operating record) that there is sufficient oxygen present to combust the waste; (3) the continuous hydrocarbon monitoring controls provided by § 266.104(d) apply; and (4) for cement kilns, hazardous waste must be fed into the kiln itself;

EPA established a minimum temperature of 1800 °F for the location of hazardous waste firing and is requiring that the owner/operator demonstrate that adequate oxygen is present to sustain combustion given that it is generally accepted that organic compounds are readily destroyed at temperatures above 1800 °F in the presence of adequate oxygen. The demonstration of adequate oxygen is particularly important for cement kilns because they are operated close to stoichiometric oxygen levels (i.e., with little excess oxygen in the kiln) to efficiently maintain the high temperatures necessary to calcine and sinter the raw materials. Although higher excess oxygen levels would better ensure more complete combustion of fuels, operating at higher oxygen levels is less thermally efficient and reduces the kiln production capacity.

In addition, continuous hydrocarbon (HC) monitoring is required to demonstrate that HC levels do not exceed the regulatory limit of 20 ppmv on a hourly rolling average basis (or alternative level established under § 266.104(f)) irrespective of whether the CO level is less than 100 ppmv where HC monitoring is not normally required. See § 266.103(a)(5). EPA is requiring HC monitoring because of the concern that CO monitoring alone may not be an adequate indicator of good combustion conditions when hazardous waste is fed at locations other than where (nonhazardous) fuels are normally fired. See discussion in part three, section II.B.4.a of this preamble. Continuous monitoring of HC and compliance with the applicable operating limit is required upon certification of compliance (or, for furnances that feed raw materials containing organic matter and that receive a time extension to certify compliance, upon receipt of the time extension.[78]

The Agency considered whether the hydrocarbon controls were redundant to the operating requirements specified above and concluded that HC monitoring is needed to effectively

[76] Hazardous waste is burned solely as an ingredient if it is burned for neither energy recovery (i.e., it has a heating value less than 5,000 Btu/lb) nor treatment or destruction (i.e., it contains a total of less than 500 ppm toxic nonmetal constituents listed in appendix VIII, part 261).

[77] EPA is aware that cement companies have experimented with feeding containerized waste into the upper, raw material feed end of the kiln using feed chutes that propel the containers down into the kiln before they rupture and expose the waste to the combustion gas (and begin to release hydrocarbons). In such a situation, the temperature limit applies at the point that the waste may begin to release hydrocarbons—the point where the container impacts the charge bed. The temperature limit does not apply to the point where the container is actually charged into the kiln. (If, however, a noncontainerized waste is fired into the kiln at the upper end, the 1800 °F temperature limit applies at the location where the waste exits the firing system.) Although this discussion pertains to cement kilns, EPA notes that the subject requirements apply to any industrial furnance that feeds hazardous waste at a location other than the "hot" end as described in the text.

[78] We note, as discussed elsewhere in the text, the time extension will be conditional on, among other things, HC (and CO) levels not exceeding an interim limit established in the extension.

implement and enforce the controls on organic emissions. Although the operating requirements alone should be adequate to limit organic emissions, absent HC monitoring there would be no continuous verification that the operating requirements were, in fact, adequate and that the owner/operator maintained compliance with the operating requirements.

Finally, the rule requires that hazardous waste be fired into a cement kiln itself to ensure that the waste is not introduced at a location that may not be conducive to complete combustion of the waste. For example, cement companies have considered burning hazardous waste in the precalciner of a cement kiln. Although such practices may prove during the permit process to be acceptable, EPA has not tested emissions from a kiln burning waste at locations other than in the kiln itself, and is concerned that complete combustion of organic constituents may not be ensured. Thus, burning hazardous waste in a cement kilns precalciner is not allowed during interim status. (This restriction is limited to cement kilns because this is the only type of kiln of which the Agency is aware where hazardous waste may be fired at a location that is clearly not designed for optimum combustion conditions. A cement kiln precalciner is designed primarily to achieve calcining of raw materials and may not provide adequate combustion of hazardous waste.)

The special requirements do not apply to hazardous waste that is burned (processed) solely as an ingredient [79] because such waste does not contain significant levels of hazardous nonmetal constituents (i.e., compounds listed in appendix VIII, part 261) and, thus, nonmetal emissions will not pose significant risk to human health and the environment. (Metal emissions will be adequately controlled by today's rule irrespective if where the waste is fed into the system because metals are controlled by a PM control device.) Thus, emissions of nonmetal compounds are not of concern when a waste is burned (processed) solely as an ingredient. EPA considers a waste to be burned solely as an ingredient in a kiln if it is not burned partially as a fuel or for conventional treatment (i.e., destruction). The Agency considers a waste that is fed to boilers and industrial furnaces to be burned at least partially for energy recovery and not as an ingredient if it has a heating value of 5,000 Btu/lb or greater, as-generated, and at least partially for treatment (i.e., destruction) if it contains more than a total of 500 ppm (by weight) of appendix VIII, part 261, nonmetal hazardous constituents. See 54 FR at 43731–32 where EPA discussed use of a 500 ppm standard for distinguishing between recycling activities tantamount to production and those constituting conventional treatment.

The Agency notes in addition that it ordinarily does not consider metal-bearing wastes hazardous wastes to be used as ingredients when they are placed in industrial furnaces purportedly to contribute to producing a product. (The use of metal-bearing wastes for material recovery is discussed earlier in the preamble, and this discussion does not deal with the issue of when such wastes are burned for legitimate material recovery in industrial furnaces.) To be considered legitimate use as an ingredient, it would normally need to be demonstrated to EPA (or an authorized State) pursuant to § 261.2(f) that the hazardous metal constituents in the waste are necessary for the product (i.e., are contributing to product quality) and are not present in amounts in excess of those necessary to contribute to product quality. See 50 FR at 638 (Jan. 4, 1985). This would normally require some demonstration that these hazardous metal constituents do not render the product unsafe for its intended use. (The other sham recycling criteria discussed frequently by EPA would also have to be satisfied. See, e.g., 53 FR at 522 (Jan. 8, 1988).) The types of uses of hazardous wastes in industrial furnaces to produce waste-derived products of which the Agency is aware, such as using hazardous wastes to produce aggregate or cement (the Agency is not actually aware of cement kilns using hazardous wastes ostensibly as ingredients, although some facilities have contemplated engaging in the practice) do not appear to satisfy these criteria. In addition, the Agency notes the discussion earlier in this preamble (in the context of hazardous waste used as slurry water) to the effect that the more common and less valuable the raw material the hazardous waste is replacing, the more likely the activity is to be some form of surrogate treatment.

I. Special Metals Controls for Furnaces that Recycle Collected Particulate Matter

For reasons discussed in section IV.C.4 of this preamble, the final rule requires owners and operators of furnaces (e.g., cement kilns, light-weight aggregate kilns with dry particulate matter (PM) control systems) that recycle collected PM back into the furnace to implement the metals emissions controls of § 266.106 (c) or (d) under one of the three alternative methods. The discussion in section IV.C.4 of the preamble summarizes procedures for certification of compliance under the methods. For certification of precompliance, the standard procedures will be used for both the "daily emissions testing" option, and the "conditioning prior to compliance testing" option. Precompliance procedures are different, however, for the "monitoring metals in collected PM" method, as discussed below.

Under the "monitoring metals in collected PM" method, operating limits will be established for all of the parameters listed in section VII.B. above except for the feed rate limit on each metal in total feedstreams. In lieu of that parameter, the special procedures limit the concentration of each metal in collected PM. See "Alternative Methodology for Implementing Metals Controls" in Methods Manual for Compliance with the BIF Regulations (incorporated in today's rule as appendix IX of part 266).

For certification of precompliance, the owner/operator must estimate the enrichment factor for each metal using engineering judgment or EPA prescribed default values. EPA default values are 100 for mercury and 10 for all other metals. The enrichment factors are then used to calculate precompliance dust metal concentration limits using the allowable emission rate for each metal and the applicable PM standard using the same procedures applicable for certification of compliance. Daily (or weekly for noncritical metals) analysis of dust samples is required. If more than 3 of the previous 60 samples fail, the owner/operator must notify the Director. The owner/operator is then allowed to burn hazardous waste for up to 720 hours before a revised certification of precompliance must be submitted that revises the estimated enrichment factors and establishes revised precompliance dust metals concentration limits. The revised enrichment factors must be based on testing or engineering judgment using

[79] Under the RCRA hazardous waste regulatory program, EPA considers a hazardous waste to be burned or processed as an ingredient if it is used to produce a product. EPA considers a hazardous waste to be burned or processed for material recovery if one or more constituents of the waste is recovered as a product. Nonetheless, the criteria are the same for determining when a waste is burned (or processed) as an ingredient or for materials recovery versus when it is burned for the partial purpose of energy recovery or conventional treatment.

data or information not considered in the original estimate.

J. Recordkeeping

Over the period of interim status, facilities will be required to generate and maintain data and records designed to demonstrate routine compliance with established limits on operating parameters. These records must be sufficient to allow a RCRA inspector to review and evaluate recent and past operation of the facility for compliance purposes. Records must be maintained for a period of three years or until an operating permit is issued under § 270.66, whichever is later.

VIII. Implementation of Today's Rule

There are three types of treatment, storage, and disposal facilities (TSDF's) which may be affected by today's rule: (1) Facilities which are subject to RCRA permit requirements for the first time as a result of today's rule; (2) facilities which are already operating under interim status; and (3) facilities that have been issued a RCRA permit. The following sections describe the compliance obligations for facilities that have units subject to permitting due to today's rule.

A. Newly Regulated Facilities

Prior to receiving a permit, newly regulated facilities (i.e., facilities which only contain the types of units newly regulated by today's final rule) must qualify for interim status by the effective date of the rule in order to continue managing hazardous wastes in units newly regulated by today's rule. To obtain interim status, the eligible facility must meet three criteria: (1) On the effective date of the BIF rule, the facility must be "in existence" with respect to hazardous waste burning or processing activities; (2) within 90 days of the date of publication, the owner or operator must notify EPA or an authorized State (if not previously required to do so) of the facility's hazardous waste burning or processing activities; and (3) within 180 days of the date of publication, the owner or operator must submit part A of the permit application.

1. Definition of "In Existence".

To meet the definition of an existing facility, the boiler or industrial furnace must either be in operation burning or processing hazardous waste on or before the effective date of the rule, or construction of the facility (including the hazardous waste burning or processing equipment) must have commenced on or before the effective date of the rule. See § 266.103(a)(1)(ii). A facility has commenced construction if the owner or operator has obtained the Federal, State, and local approvals or permits necessary to begin physical construction; and either:

(a) A continuous on-site, physical construction program has begun; or

(b) The owner or operator has entered into contractural obligations—which cannot be cancelled or modified without substantial loss—for physical construction of the facility to be completed within a reasonable time. See § 270.2.

2. Section 3010 Notification

BIF owners and operators burning hazardous waste fuels have already been required to notify of their hazardous waste fuel activities under existing § 266.35 and need not renotify. (See section 3010(a) which allows EPA to waive notification if the information is considered unnecessary.) Although today's rule requires small quantity burners and owners and operators of smelting, melting, and refining furnaces to notify, this notification is not a section 3010 notice and so is not a prerequisite to obtaining interim status.

Facilities which have not submitted a section 3010 notification form to EPA must do so by May 22, 1991. This is done by completing a section 3010 notification form and sending it to the appropriate EPA Regional Office. (See EPA form 8700-12, dated 7/90. See 55 FR 31389, August 2, 1990 for a copy of the form. Notification instructions are set forth in 45 FR 12746.)

3. Part A Permit Application

Newly regulated facilities must also submit a part A permit application to the appropriate EPA Regional Office by August 21, 1991, which is the effective date of today's rule. (See 270.70(a) and EPA Form 8700-23, dated 1/90.)

B. Interim Status Facilities

Interim status facilities that contain units newly regulated by today's rule must file an amended part A permit application under 40 CFR 270.10(g) if they are to continue managing hazardous waste in these newly regulated units. The facilities must file the necessary amendments to EPA by August 21, 1991, the effective date of the rule, or they will have to cease management of hazardous waste in these units. In authorized states, the facility should also send a copy of the submission to the State program.

Today's rule amends § 270.72 to allow interim status facilities to add newly regulated units as a change in interim status without prior Agency approval. The current procedures for the addition of new units in § 270.72(a)(3) require Agency approval prior to making the change. Section 270.72(a)(1) allows the addition of newly listed or identified wastes, and any newly regulated units associated with them, to be added to the part A application without prior Agency approval. Today's addition of § 270.72(a)(6) extends this ability to any newly regulated unit. Today's rule also eliminates the reconstruction limit for the addition of newly regulated types of units. (As noted earlier, the Agency proposed this specific change for boilers and industry furnaces, but realized in the course of implementing the proposal that the problem was more endemic and called for a general solution.) This provision is located in § 270.72(b)(7).

In order to add a unit as a change in interim status under the new § 270.72(a)(6), the owner or operator must file the amended part A permit application by the effective date of the rule that subjects the unit to regulation.

Technical Correction to § 270.73 (f), (g). In the course of developing today's rule, the Agency discovered that particular regulatory provisions dealing with loss of interim status are miscodified. See §§ 270.73 (f), (g). We are amending these provisions in today's notice to match the implementing statutory language. The result will be that neither boilers nor industrial furnaces, nor other units which achieve interim status after Nov. 7, 1984, are subject to the automatic statutory loss of interim status provisions.

The 1984 HSWA amendments provided that each facility which achieved interim status prior to the effective date of the amendments would automatically lose its interim status on a specified date, unless by an earlier specified date the facility applied for a final determination regarding the issuance of a permit (i.e., submitted part B of of its permit application. See RCRA sections 3005 (c)(2), (e)(2). The dates for part B submission and loss of interim status vary according to whether the facility is a land disposal facility, incinerator, or other facility. *Id.* Of relevance to today's technical correction, HSWA provided that interim status for incinerators would terminate five years after the enactment of HSWA (i.e., on November 8, 1989), unless the part B application was submitted within two years after the enactment (i.e., by November 8, 1986); interim status for other non-land disposal facilities would terminate eight years after the HSWA amendments (i.e., November 8, 19[illegible] unless the part B application was submitted within four years (i.e.,

November 8, 1988). See RCRA section 3005(c)(2).

EPA amended its regulations on July 15, 1985 to incorporate these and other HSWA changes. See 50 FR at 28703. EPA's intention in promulgating these amendments was simply to reflect the new statutory provisions; for the most part, the Agency simply codified into the regulations the new HSWA language. *Id.* at 28703. In light of the largely ministerial nature of the regulations, and in view of the need to move quickly to incorporate HSWA, EPA published these 1985 regulations without opportunity for public comment. *Id.* (The D.C. Circuit eventually sustained the legality of these procedures in *United Technologies Corp.* v. *EPA*, 821 F.2d at 714 (D.C. Cir. 1987).)

Section 270.73 (f), (g) sets forth the dates on which interim status for incinerators and other non-land disposal facilities terminates if the facilities fail to submit their part B applications. However, in contrast to the HSWA amendments, the sections by their terms apply to all incinerator and other non-land disposal facilities, instead of being limited only to those facilities which had obtained interim status on November 8, 1984, the date of the HSWA amendments. In fact, it is impossible for units newly subject to regulation after the specified dates for submission of part B permit applications (such as the boilers and furnaces regulated by today's rule, or certain facilities newly subject to regulation under the recent Toxicity Characteristic rule) to comply with the rules as codified. EPA did not intend for these rules to deviate from statutory language. As the preamble to the 1985 codification regulations stated, the Agency simply intended for section 270.73 (f), (g) to reflect the HSWA termination-of-interim status provisions. *Id.* at 28723.

The Agency is today making a technical correction to these sections to correct this mistake, and to avoid the unintended (and possibly illegal) result that large classes of newly regulated units are ineligible for interim status because they failed to submit part B applications at a time they were unregulated. EPA is proceeding without proposing the correction for public comment, and believes that public comment is unnecessary, for the following reasons: (1) This correction simply conforms the language of the regulations to the Agency's original expressed intent in promulgating the 1985 regulations, which themselves were validly promulgated without the opportunity for comment; (2) this correction simply conforms the regulations to HSWA's plain language; (3) the amendment conforms the regulations to the Agency's actual practice in implementing the regulations and RCRA 3005(c)(2); (4) the amendment is necessary to avoid rendering units newly regulated after specified part B permit application submittal dates from being ineligible for interim status even though they meet all of the statutory interim status eligibility criteria; and (5) the amendment can be viewed as an interpetative rule, which does not require prior notice and public comment.

C. Permitted Facilities

Some permitted facilities contain boiler and furnace units that are newly subject to subtitle C regulation as a result of today's rule. These permitted facilities must therefore submit permit modifications to EPA Regional offices, and comply with federal permit modification procedures in order to continue to manage hazardous waste in these units. The modification will be processed under Federal permit modification procedures rather than authorized state procedures because this rule is promulgated under HSWA authority.[60] However, because the permit undergoing modification is most likely a jointly issued EPA-state RCRA permit, a copy of the modification request should also be submitted to the state if it is an authorized state.

1. Amendment to § 270.42(g)

Today's rule contains a new permit modification procedure in § 270.42 for the addition of any newly regulated waste management units used to manage hazardous wastes (*see* § 270.42(g)). This two-step procedure essentially allows the permittee to notify the Agency of its newly regulated boilers and furnaces using the Class 1 permit modification procedures, and to continue to handle hazardous wastes. Subsequently, the permittee must submit a Class 2 or 3 permit modification request to initiate a permanent change to the permit. The self-implementing interim status standards of § 266.103 would apply until the permit was modified using the Class 2 or 3 modification procedures. This new permit modification provision only applies to newly regulated units that were not previously subject to the permitting requirements of subtitle C of RCRA.

Today's new permit modification provision for newly regulated units is essentially identical to the special procedure in § 270.42(g) for newly regulated wastes. The purpose of today's amendment is to extend the same opportunities and procedures that are available for newly regulated waste streams (and any units used to manage them) to those situations where the unit becomes newly regulated in absence of a new waste identification. (See 53 FR 37922, September 28, 1988.) EPA believes that the same rationale applies to newly regulated types of units, and is therefore clarifying this provision in today's rule.

Without the procedure in § 270.42(g), the facility would need to obtain an approved permit modification if the facility were to continue managing hazardous wastes past the effective date of today's rule, which establishes management standards for boilers and industrial furnaces. If the modifications were not approved within six months, these facilities would be barred from handling hazardous wastes, disrupting the ongoing operations of many of these facilities as well as other RCRA facilities that would then need to manage the wastes. As discussed below, EPA believes that the addition of a boiler or industrial furnace to a facility's permit is a Class 3 modification. Because of the time allowed for preparation of the modification request by the facility and public participation in the permit modification procedures, the Agency would be unable to review and make a final determination on the modification request in the six month period.

Today's technical correction rectifies a potential inequity between permitted facilities and newly regulated facilities. Newly regulated facilities are required only to submit part A of the permit application, and submit the RCRA section 3010 Notification form, if necessary, to obtain interim status. Both activities can be easily completed by the effective date of today's rule, allowing them to continue operations, while permitted facilities, who have undergone the scrutiny of the permitting process, would likely be barred from doing so.

2. Procedures to Modify Permits

Under today's new procedures in § 270.42(g), a unit that is "in existence" as a unit by managing hazardous waste on or before the effective date of today's rule must submit a Class 1 modification by that date. Essentially, this modification is a notification to the Agency that the facility is managing hazardous wastes in these newly regulated units. It could consist of a revised part A application form clearly indicating all activities that are newly

[60] Except, however, the provisions for sludge dryers, carbon regeneration units, infrared incinerators, and plasma arc incinerators are not promulgated under HSWA authority.

regulated as a result of today's rule. As part of the Class 1 procedure, the permittee must also notify the public regarding the modification 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 request to the Agency. It is at this time that the detailed part B information must be submitted. The Agency believes that the Class 3 permit modification procedures are mostly likely applicable to the addition of boilers or industrial furnace units. The Class 3 modification requires an initial 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. After the end of the 60 day public comment period, the Agency will develop a draft permit modification, open a second public comment period of 45 days and hold a public hearing. After the public comment period, the Agency will make a final decision on the modification request.

Today's rule also amends appendix I to § 270.42 to classify the permit modifications for boilers and industrial furnaces. Section L is revised to include boilers and industrial furnaces with incinerators, and to specify additional permit conditions to conform with today's rule (and the conditions added to incinerator permits under the omnibus authority of § 270.32(b)(2). For more information on these permit modification procedures, see 53 FR 37912, September 28, 1988.

D. Addition of Storage Units as Direct Transfer Facilities That Obtain Interim Status

As discussed in section XII.C of part Three of this preamble, the requirements for boilers and industrial furnaces are being promulgated under section 3004(q) of RCRA, which is a HSWA provision. As a result, under section 3006(g), EPA will implement these requirements in both authorized and unauthorized States until the State is authorized to implement these requirements in lieu of EPA. Based on comments received during the rulemaking, EPA is aware that many interim status facilities newly-regulated under this rule may wish to add storage units to their facilities in the future rather than continue direct transfer operations (direct firing of the burner from the transport vehicle). Furthermore, EPA recommends that facilities install tanks and reduce or eliminate direct transfer practices because of the additional hazards associated with the practice. As discussed in more detail below, EPA believes that such units can be added to the facility without awaiting complete permitting.

1. Unauthorized States

Facilities that wish to shift to storage from direct transfer operations and that are located in unauthorized states, will generally be able to add such units to the facility as a change in interim status under 40 CFR 270.72(a)(3). In order to qualify for addition of units under this provision, the facility must: (1) Obtain interim status for the boiler or industrial furnace; and (2) submit a revised part A application to the EPA Regional Office prior to adding the storage units with a justification for the change. Because EPA strongly encourages the discontinuation of direct transfer operations at boilers and industrial furnaces, EPA believes that the addition of storage units at such facilities constitutes a change necessary to meet federal requirements under 40 CFR 270.72(a)(3)(ii). The Regional Office must approve the interim status change, unless it is covered by amended § 270.72(a)(6) just discussed. Although 40 CFR 270.72(b) limits the extent of an addition that can be made during interim status, the addition of associated storage units under today's rule would be exempt from this limitation pursuant to § 270.72(b)(2).

2. Authorized States

Interim status facilities located in authorized states that wish to discontinue direct transfer operations will also generally be able to add such units to the facility pursuant to 40 CFR 270.72(a)(3). In states which are not authorized to implement the HSWA storage requirements for boilers and industrial furnaces, the procedure for adding storage units at new interim status boilers or industrial furnaces is the same as described above for facilities located in unauthorized states. Because EPA is implementing both the rule promulgated today and the associated storage requirements in such states, the federal rules governing changes in interim status apply to both the boilers and industrial furnaces and the addition of associated storage facilities.

In states which have been authorized to implement the HSWA storage requirements for boilers and industrial furnaces, facilities newly regulated under today's rule must comply with the authorized state requirements concerning the addition of associated storage units. In some cases, the authorized state may require the facility to obtain a permit prior to constructing or operating such storage units.

E. Compliance with BIF Versus Incinerator Rules

Existing rules (see § 266.31(c)) require that cement kilns burning hazardous waste that are located in urban areas must comply with the hazardous waste incinerator standards. In addition, existing rules allow owners/Operators of any boiler or industrial furnace to obtain an incinerator permit. These provisions exist because the Agency had not yet established regulatory controls for BIFs. In fact, the statutory provision (section 3004(q)(2)(c)) requiring that cement kilns in urban areas be regulated as incinerators states that the "* * * regulations remain in effect until the Agency develops substantive standards for cement kilns burning hazardous waste." Therefore, on the effective date of the BIF rule, both of these regulatory provisions will be rescinded except as discussed below.

Commenters questioned what regulations should more appropriately apply under three scenarios: (1) If a BIF is operating in interim status under the subpart O, part 265, incinerator standards; (2) if a BIF has already been issued an incinerator operating permit under subpart O, Part 264; and (3) if a BIF has previously submitted a part B application for an incinerator permit and the permit review process has progressed substantially by the effective date of the BIF rule. A BIF currently operating under the interim status incinerator regulations must comply with the BIF regulations on their effective date in lieu of the incinerator regulations so that it is subject to the more stringent BIF rule. A BIF currently operating under an incinerator permit will continue under that permit until it is reviewed or the permit term otherwise expires. At that time, the BIF rule will apply. Although the Agency's general policy is that BIFs are to be regulated only under the BIF rules, we believe permit officials should use their discretion to determine whether to grant exceptions for the third situation given the protectiveness of the standards, and the desirability of avoiding further delay and expense by having to duplicate the permit process under these BIF rules. For example, if a BIF is operating under the incinerator interim status standards but has submitted part B of the incinerator permit and the permit proceedings have progressed substantially, the Director may continue processing the permit (and issue it) under the incinerator standards and use

omnibus authority [61] to add conditions to the permit as necessary to conform with the BIF rule.

IX. Permit Procedures

A. Part B Information

As proposed on May 6, 1987 (52 FR 17015), § 270.22 provides specific information requirements for part B of the permit application. Paragraph (a) requires a trial burn to demonstrate conformance with the performance standards of §§ 266.104 through 266.107, except where the trial burn is waived. Although the regulatory language is substantively the same as proposed, it has been restructured for clarity, by specifying the documentation required to support a waiver from each type of trial burn: DRE trial burn, particulate matter trial burn, metals trial burn, and HCl/Cl_2 trial burn.

In addition, the rule specifics under § 270.22(a)(6) that owners and operators may submit data from previous compliance testing of the device, or from testing of similar boilers or industrial furnaces burning similar wastes, in lieu of a trial burn provided that the data is determined adequate and sufficient documentation of similarity is provided.

Paragraphs (b) through (e) were added to § 270.22 to provide information requirements related to other regulatory provisions being promulgated today for boilers and industrial furnaces. Paragraph (d) requires information describing the automatic waste feed cutoff system. Paragraph (e) requires owners and operators using direct transfer operations to feed hazardous waste from transport vehicles directly to the boiler or industrial furnace to submit information supporting conformance with the direct transfer standards at § 266.111. Under paragraph (e), owners and operators that claim their residues are excluded from regulation under § 266.112 must submit information adequate to demonstrate conformance with those provisions.

B. Special Forms of Permits

As proposed, the final rule adds § 270.66 to subpart F of part 270. This section establishes special forms of permits (see discussion below) for new boilers and new industrial furnaces, and sets forth requirements for the various periods of operation under which a boiler or industrial furnace operates, depending on applicable trial burn requirements. This section also establishes trial burn procedures. Finally, this section discusses special procedures for permitting existing facilities. Although these provisions were described in the preamble to the proposal, at 52 FR 17016, they are described briefly below, in order to highlight minor changes from the proposed requirements.

1. Permits for New Boilers and Industrial Furnances.

Paragraph (b) specifies four operating periods of a permit for a new facility. The provisions have been restructured from those proposed in recognition of the fact that all boilers and industrial furnaces subject to a permit must undergo some type of trial burn. Although a facility could conceivably meet the requirements for a waiver of the DRE trial burn, particulate matter trial burn, metals trial burn, and HCl/Cl_2 trial burn, all regulated facilities must demonstrate conformance with the carbon monoxide, and where applicable, hydrocarbon limits or § 266.104.

In addition, minor revisions to this section have been made to make the permit process for new boilers and industrial furnaces consistent with the way the hazardous waste incinerator permitting process is implemented, i.e., one permit with four periods of operations rather than an individual permit for each period of operation.

Thus, the final rule provides for permits addressing four periods of operation for all boilers and furnaces: The pre-trial burn period, the trial burn period, the post-trial burn period, and the final permit period.

Conditions addressing compliance with each performance standard (or corresponding waiver requirement) will be set in the permit for each period of operation. Applicants must submit a statement with part B of the permit application that suggests the conditions necessary to operate in conformance with the performance standards of §§ 266.104 through 266.107. For those performance standards for which a trial burn is required, the Director will use his engineering judgment, and consideration of the applicant's proposal, in setting operating conditions in the permit sufficient to meet the performance standards. Once the trial burn data are available, they will be used to modify, if necessary, the final operating conditions in the permit. For those performance standards for which a trial burn demonstration is not required (for example, when the applicant has chosen to comply with Tier I of the metals limitations under § 266.106(b)), appropriate conditions (in the above example, metals feed rate limits specified under § 266.102(e)(4)) will be set for all periods of operation.

The pre-trial burn period begins with initial introduction of hazardous waste into the boiler or industrial furnace and extends for the minimum time required, not to exceed 720 hours of hazardous waste burning, to bring the device to a point of operational readiness to conduct a trial burn. This period may be extended once by the Director if good cause is shown. The trial burn period covers the period when the trial burn is conducted. This period is followed by the post-trial burn period, which extends for the minimum time necessary to allow analysis, data computation, and submission of the trial burn results and modification of the permit by the Director if necessary to reflect the trial burn results. Such modifications will proceed under the permit modification provisions at § 270.42.

Paragraph (c) specifies information that must be included in the trial burn plan. Paragraph (d) establishes trial burn procedures, including criteria for approval of trial burn plans and requirements for submission of trial burn data. Paragraph (e) establishes procedures for selection of POHCs when a DRE trial burn is required. Finally, paragaph (f) establishes the determinations that the applicant must make based on the trail burn results—the data, analyses, and computations that must be submitted to support conformance with the applicable emissions standards.

2. Permit Procedures for Interim Status Facilities.

Applicants owning or operating existing boilers or industrial furnaces will be permitted under § 270.66(g). This paragraph addresses submission of trial burn plans and trial burn data for existing boilers and furnaces. These provisions differ from the proposal in that they specifically require that the applicable trial burn data be submitted and considered prior to permit issuance. This language conforms with the January 30, 1989 change to the hazardous waste incinerator regulations promulgated at 54 FR 4286 providing clarification of this point.

X. Exemption of Small Quantity Burner

Section 3004(q)(2)(B) of RCRA provides EPA with explicit authority to exempt from regulation facilities that burn small quantities of hazardous

[61] EPA notes that permit writers choosing to invoke the omnibus permit authority of § 270.32(b)(2) to add conditions to a RCRA permit must show that such conditions are necessary to ensure protection of human health and the environment and must provide support for the conditions to interested parties and accept and respond to comment. In addition, permit writers must justify in the administrative record supporting the permit any decisions based on omnibus authority.

wastes if the wastes are burned at the same facility at which they are generated. The Administrator is to ensure that such waste fuels are burned in devices designed and operated in a manner sufficient to ensure adequate destruction and removal to protect human health and the environment.

The Agency has carefully evaluated the risks posed by small quantity burning and concluded that a conditional exemption for small quantity burners should be allowed where hazardous waste combustion poses insignificant risk. A discussion of the original May 1987 proposal and the subsequent October 1989 proposed revisions is presented below.

On May 6, 1987 (52 FR 17034), the Agency proposed to exempt facilities that burn small quantities of hazardous waste that they generate on site because even in the absence of regulatory control, the health risk posed by such burning would not be significant. Eligibility for the exemption would have been base on the quantity of waste burned per month, established as a function of device type and thermal capacity. In order to be exempt, in addition to restricting the quantity of waste burned, a facility was required to notify the Regional Administrator that it is a small quantity burner, limit the maximum instantaneous waste firing rate to 1% of total fuel burned, and refrain from burning acutely toxic waste containing dioxin.

On October 26, 1989 (54 FR 43730), the Agency proposed several revisions to the exemption in the 1987 notice. Rather than establish hazardous waste quantity limits as a function of device type and capacity, EPA proposed quantity limits that vary as a function of effective stack height. The exempt quantities proposed in October 1989, and promulgated today, include several changes to the risk assessment methodology. In particular, the quantities are based on evaluation of risks from hydrocarbon (HC) emissions instead of a PIC/POHC ratio as originally proposed. This change was made to better account for organic emissions from combustion. In addition, the procedures for evaluation of facilities with multiple stacks were revised to reduce over-regulation in these situations.

A. Response to Comments

Numerous commenters to the 1987 and 1989 proposals objected to conservatism of the calculated quantity limits and/or the 1% limit on hazardous waste firing. The commenters stated that the assumptions used in calculating the exempt limits are overly conservative, and that the 1% limit on firing of hazardous waste is based on unrealistic and unjustifiable conclusions. The commenters, however, did not provide data or analysis to support their arguments that assumptions used in the small quantity burner exemption (SQBE) calculations and conditions (including limits on the waste to be burned) for exemption eligibility were too restrictive. Absent technical support for alternate approaches, the Agency continues to believe that the approach proposed in October 1989 is reasonable and appropriate. In addition, using less conservative assumptions to derive the exempt quantities could allow relatively large amounts of hazardous waste to be burned, a result somewhat at odds with the statutory language referring to small "quantities" of hazardous waste. See § 266.108(a)(2) which limits the maximum hazardous waste firing rate at any time to 1% of the total fuel requirements of the device on a volume basis. See also § 266.108(a)(3) which requires the hazardous waste to have a minimum heating value of 5,000 Btu/lb, as-generated, to ensure that the exemption is limited to fuels as intended by section 3004(q)(2)(B) and to ensure adequate destruction of toxic organic constituents.

One commenter requested credit for the presence of air pollution control devices (APCDs). The Agency believes that it is no appropriate to allow credit for APCDs because, without requirements for an oversight of the operation and maintenance of the devices, there is no assurance that collection efficiencies are being met.

Four commenters to the 1987 proposal urged EPA to delete the small quantity burner exemption. These commenters were concerned that the large number of boilers and industrial furnaces burning hazardous waste that do not have to meet any design requirements would have a detrimental effect on human health and the environment. The Agency continues to believe that the exemption is protective of human health and the environment because it is health-based, incorporating quantity limits and conservative assumptions designed to be protective regardless of size and location of the device, or conditions of operation.

Two commenters stated that the exemption should apply to facilities that generate hazardous waste at off-site facilities under the same ownership and operational control. The Agency is concerned, however, that contrary to Congress's intent, this approach could allow a large quantity generator to distribute their hazardous wastes in small quantities to TSDFs (including entities that are parent corporations, joint ventures, subsidiaries of the generator, etc.) that would then burn the wastes without regulation. Consequently, the final rule limits the exemption to facilities that burn only hazardous waste generated on-site.

One commenter to the 1987 proposal urged the Agency to clarify that the 1% limit on the hazardous waste firing is to be applied only to unmixed hazardous waste fuel, not to a mixture of hazardous and non-hazardous fuel. The Agency acknowledges the ambiguity in the proposed rule language and intended the proposal to require that the quantity determination take into account only the hazardous waste fuel prior to mixing with a nonhazardous waste fuel. Today's final rule contains language to that effect and requires the exempt facility to keep records to document that the quantity of hazardous waste prior to mixing with a nonhazardous fuel complies with the quantity limitations.

Six commenters to the 1989 proposal suggested that quantity limits be based on 1% of the total fuel burned and not the stack height, which relies upon dispersion only. The Agency, however, continues to believe that terrain-adjusted stack height is the important criterion, because it is possible that even a 1% limit, with large dispersion and low stack height, could pose a threat to human health and the environment.

B. Basis for Today's Final Rule

In order to calculate allowable exempt quantities under today's rule, worst-case dispersion coefficients (based on incinerator modeling), and an HC unit risk factor of 2×10^{-6} m^3/μg (based on a 10^{-5} risk limit) were assumed, as proposed in the October 1989 supplemental notice. Allowable emission rates of hydrocarbons (HCs) were then back-calculated as a function of effective stack height, terrain type, and land use. The assumption used in this back-calculation was an HC concentration in the stack gas of 150 ppmv at 99.99% DRE. Finally, the exempt quantities were calculated using the HC emission rates and an empirically-derived ratio of combustion gas volume to mass of waste. The most conservative allowable emission rates calculated for each stack height were then used as the established quantity limits.

A detailed description of the methodology used to derive quantity limits for the exemption is available in the docket for the supplemental notice.

As mentioned above, the use of effective stack height to determine eligible quantity limits reflects one of the revisions proposed in the October

28, 1989 supplemental notice. The Agency notes that we have not established separate exempt quantity limits for the different terrain types and land use classifications. Rather, the revised quantities are based on assumptions of terrain and land use that result in the lowest (i.e., most conservative) exempt quantities. We believe that this conservative approach is appropriate given that there would be no EPA or State agency oversight of an operator's determination of a facility's terrain and land use classification. Some key assumptions used to arrive at the quantity limits are described below.

EPA evaluated the risks posed by emissions of organic compounds, metals, and hydrogen chloride, the parameters controlled in the substantive regulations promulgated in today's rule.[82] The analysis demonstrates that the risks posed by organic emissions from waste-as-fuel activities are overwhelmingly dominated by the risks posed by carcinogenic (as opposed to noncarcinogenic) waste constituents. Accordingly, the initial evaluation performed in support of the small quantity burner exemption focused exclusively on carcinogenic risks, on the assumption that controls ensuring insignificant risks from organic carcinogenic emissions will ensure protection against non-carcinogenic releases. This assumption was confirmed by evaluating the potential risks from metals and hydrogen chloride that would result when those quantities of waste indicated by the risk analysis for organic carcinogens were burned.

The risks from burning small quantities of hazardous waste are determined primarily by the following factors:

- Composition of the waste stream being burned;
- Toxicities and concentrations of hazardous constituents in the waste stream;
- Destruction and removal efficiency achieved by the device;
- Local meteorology, which influences the amount of dispersion of stack emissions;
- Clustering and size of sources; and
- The effective stack height of the device.

The values of these parameters can and do vary widely. Reasonable, worst-case assumptions were made for these parameters in the Agency's calculations of exempt quantities and evaluation of risks. In the risk analysis, EPA assumed an acceptable cancer risk level of 1.0×10^{-6} to an individual residing for 70 years at the ground level point of maximum exposure to reasonable, worst-case stack emissions. Reasonable, worst-case dispersion coefficients based on effective stack heights were used. The dispersion coefficients were those developed in the risk analysis for the proposed amendments to the hazardous waste incinerator regulations (See 54 FR 43752 and 55 FR 17871). The dispersion coefficients differ by terrain type, land use, and effective stack height. Separate calculations were made for noncomplex and complex terrain and urban and rural land use, resulting in three different sets of quantity eligibility limits for each effective stack height. The rationale for the assumptions used in the risk analysis is discussed below.

1. Composition of Hazardous Waste Stream

Composition data on hazardous waste-derived fuels is scarce. Information gathered by the mail questionnaire survey and other industry contacts indicate that most of the materials burned are organic solvents that are usually classified as hazardous based on ignitability and/or toxicity. The actual concentrations of carcinogens in wastes burned by 21 facilities during EPA's field testing program for boilers and industrial furnaces ranged from 0 to 17% with an average of approximately 4%.

The quantity of PICs measured in EPA test burns was found to be independent of specific POHC species and was a function of hydrocarbon (HC) content of the fuel only. This is supported by comparisons made by MRI of PICs from hazardous waste and fossil fuel combustion. Since it is impossible to differentiate between the PICs from fuel and those from hazardous waste during most tests, it was assumed that the boilers in the EPA test burns were using fuels of 100% HC and all PICs are the result of hazardous waste burning. Additionally, HC emissions are presumed to be an acceptable measurement of PICs; historic data indicate that HC measures from 75 to 95% of all PICs emitted.

The hazardous waste was assumed to contain concentrations of cadmium, chromium, nickel, and lead that were obtained from the state sampling reports of the Keystone Cement Company. Arsenic, barium, and mercury concentrations were based on 90th percentile levels from the Engineering Science Background Document.

2. Toxicity of Hazardous Constituents

The average unit risk of those PICs that were identified during EPA trial burns was 1.0×10^{-5} m³/μg. However, it is likely that the PICs resulting from incineration under the 99% DRE assumption for the small quantity burner analysis would have a higher toxicity than those measured under the 99.99% DRE in the EPA boiler tests. EPA therefore estimates the unit risk for total HCs to be 2.0×10^{-5} m³/μg. This corresponds to a carcinogenic potency of $Q_1^* = 0.07$ for hydrocarbons (HC). As explained in the October 1989 notice, this potency factor was used rather than a Q_1^* value of 1.0 for products of incomplete combustion as originally proposed in the May 6, 1987 proposed rule because the Agency was concerned about possible nonconservative features of PIC estimation. (See 54 FR 43730.)

3. Destruction Efficiency

The burner destruction efficiency determines the quantity of unburned hazardous wastes that will be emitted from the stack. Assumed values for boiler and furnace performance were selected based upon review of test data generated in support of this rule and based on the professional judgment of Agency staff members familiar with the destruction and removal efficiencies (DRE) typically achieved by boilers. It was assumed that, in the worst case, boilers and furnaces would only achieve 99% DRE [83] of organic constituents. This represents a very poorly performing combustion device. In fact, as explained previously, most boilers and furnaces can be expected to achieve 99.99% DRE of organic waste constituents even when operated under less than optimal conditions.

4. Assumptions Regarding Metals and Chlorine in Waste Fuels

A similar reasonable, worst-case analysis was performed to evaluate the potential risks posed by emissions of toxic metals (including carcinogens) and hydrogen chloride from small quantity burners. As a result, it was determined that, at the volume cut-offs specified by the exemption and the assumed waste concentrations as discussed above, metals emissions caused by cofiring of hazardous wastes would not pose a significant risk. The analysis also considered hydrogen chloride emissions assuming a chlorine content of 50% in the hazardous waste fuel. The chlorine

[82] U.S. EPA, "Analysis for Calculating a *de Minimis* Exemption for Burning Small Quantities of Waste in Combustion Devices", August 1988.

[83] We note that we assumed 99% DRE to derive the small quantity burner exempt quantities rather than the 99.9% that the owner/operator must assume under the low risk waste exemption of § 266.109 because monitoring of CO is not required for the small quantity burner exemption to ensure that good combustion conditions are maintained. CO monitoring is required under the low risk waiver of the DRE trial burn.

content in actual hazardous wastes seldom exceeds 3%; however, the highest chlorine content measured in a hazardous waste fuel fired in a boiler of which EPA is aware was 43%. Predicted ground level concentrations of HCl also did not exceed the reference aid concentrations.

The assumptions used to determine the effect of local meteorology/dispersion and the clustering of sources (stacks at the facility) are discussed in the following section.

C. How the Exemption Is Implemented

1. Use of Terrain-Adjusted Effective Stack Height

In the 1987 proposal, the Agency used a set of assumptions about local meteorology, dispersion modeling, terrain conditions, etc., to determine eligible quantity limitations. As mentioned above, today's rule uses terrain-adjusted effective stack height along with the most conservative assumptions of terrain and land use to determine quantity limits for exemption eligibility. See § 266.108.

2. Multiple Stacks

As explained in the October 1989 notice, in today's final rule the exempt quantities for a facility with multiple stacks from boilers or industrial furnaces burning hazardous waste are limited according to the following equation:

$$\sum_{i=1}^{n} \frac{\text{Actual Quantity Burned}_{(i)}}{\text{Allowable Quantity Burned}_{(i)}} < 1.0$$

Where:

- n means the number of stacks
- Actual Quantity Burned, means the waste quantity per month burned in stack "i"
- Allowable Quantity Burned, means the maximum allowable exempt quantity for stack "i"

For example, if a site had two stacks with effective stack heights (ESH) of 30 and 10 meters, the following equation would hold:

$$\frac{X}{140} + \frac{Y}{40} \leq 1.0$$

Where:

- 140 and 40 are the exempt quantities from § 266.108 for stack heights of 30 and 10 meters, respectively
- X is the waste quantity burned in the device with the 30 meter stack
- Y is the waste quantity burned in the device with the 10 meter stack

In this example, if Y is burning 15 gallons/month, then X could burn no more than 87.5 gallons/month.

D. Wastes Ineligible for Exemption

Boilers and furnaces burning hazardous waste fuels containing or derived from any of the following dioxin-containing hazardous wastes are not eligible for the exemption: EPA Hazardous Waste Nos. F020, F021, F022, F023, FO26, and F027. See § 266.108(a)(4). Given the toxicity of these wastes, EPA does not believe it is appropriate to exempt facilities burning them from regulation. Hazardous waste fuels containing or derived from these dioxin-containing wastes must be burned at a 99.9999% destruction and removal efficiency (DRE). We cannot expect boilers and furnaces to achieve that level of DRE when operating outside of the Agency's regulatory system.

E. Exemption of Associated Storage

Hazardous fuel storage practices prior to burning vary from site to site. Many facilities burning relatively large quantities of hazardous waste fuels hold the fuels in a storage system and then pump the waste fuels through a dedicated line into the combustion zone of the boiler. Other facilities mix hazardous waste fuels with other fuels (typically virgin fuel oil) in a storage/mixing tank prior to burning the blended material. These tanks are not feasibly emptied of hazardous waste every 90 days and so are in most cases ineligible for the generator accumulation provisions in § 262.34.

Under today's rule, facilities storing unmixed hazardous waste fuels are responsible for complying with all applicable standards for the storage of the hazardous waste fuel. Owners and operators that are eligible for the small quantity burner exemption and who mix toxic hazardous waste fuels would, however, be exempt from the storage standards after such mixing, as proposed. See § 266.101(c)(2). The basis for this exemption is discussed below.

The Agency is promulgating an exemption for storage of such storage/mixing tanks (for small quantity burners) in order for the small quantity burner exemption in section 3004(q)(2)(B) to have a practical application. Congress evidently envisioned a class of facilities capable of burning small amounts of hazardous wastes safely absent regulation and viewed such burning as a superior means of managing these small amounts of waste. Furthermore, assuming that small quantity waste storage is conducted safely, the Agency assum[es] that Congress also envisioned exemption of the storage since permitting storage would discourage safe on-site burning just as much as regulating the burning itself.

We believe that storage of small amounts of hazardous wastes mixed with virgin fuels would pose no significant incremental risks over storage of the virgin fuels. The monthly volumes of hazardous waste fuel covered by the small quantity burner exemption, for example, represent less than 1% of the fuel flow rate through these tanks. Under these circumstances, we think the statutory exemption can reasonably be read to encompass this limited class of storage practices as well.

We note further that the Agency is studying other situations where hazardous waste-containing mixtures may not be appropriately subject to regulation and will consider whether to issue rules addressing the issue generically. It appears to us justifiable to address the question for the limited class of burning facilities in advance of other types of situations because Congress has singled out small quantity burning facilities for exemption where appropriate. We note further that to [the] extent these small quantity waste-vi[rgin] fuel tanks are underground storage tanks (as defined in RCRA section 9001(1)), they would be subject to regulation under Subtitle I if they contain petroleum.

F. Notification and Recordkeeping Requirements

As proposed in the October 26, 1989 supplemental notice, the final rule requires (conditionally) exempt small quantity burners to provide a one-time written notification to EPA (see § 266.108(d)) of their status as a small quantity burner and a certification that they are in compliance with the requirements of § 266.108. To assist enforcement efforts, the owner or operator must also indicate in the notification the maximum allowable quantity that may be burned per month as provided by § 266.108(a)(1). In addition, the final rule requires small quantity burners to keep records to document that they comply with the conditions of the exemption including: quantities of hazardous waste burned per month; quantities of hazardous waste and other fuels burned at any time to demonstrate conformance wit[h] the 1% hazardous waste firing rate li[mit] and heating value of the hazardous waste.

XI. Exemption of Low-Risk Waste from DRE Standard and Particulate Matter Emission Standard

The final rule defines two types of "low-risk" wastes: (1) waste that is low risk with respect to feed rate of hazardous (i.e., appendix VIII, part 261) nonmetal constituents and, thus, is exempt from the requirement to demonstrate 99.99% DRE; and (2) waste that is low risk with respect to both nonmetal constituents and metals (i.e., the waste meets the Tier I feed rate limits for metals provided by § 266.106(b)) and, thus, is exempt from both the DRE standard and the 0.08 gr/dscf particulate standard. See § 266.109.

The following sections explain these exemptions and how they operate.

A. Exemption from Compliance with the DRE Standard

In the May 6, 1987 proposed rule, the Agency proposed a risk-based, site-specific waiver of the DRE trial burn and the flue gas CO limits for facilities burning waste that poses insignificant health risks absent those controls (52 FR 17002). Today's final rule retains the exemption from the DRE standard, but requires the facility to monitor CO continuously and to comply with the Tier I PIC controls of § 266.104(b) (i.e., CO cannot exceed the 100 ppmv limit on an hourly rolling average basis).

In the 1987 proposal, EPA explained the basis for the DRE exemption for boilers or industrial furnaces that burn low-risk waste (52 FR 17002). After further consideration, however, the Agency believes that controls on emissions of PICs are needed. This is because a waste with low levels of toxic organic constituents can nonetheless pose signficant health risk if it is burned under poor combustion conditions conducive to formation of PICs. Toxic PICs can form from poor combustion of nontoxic organic compounds.

The final rule does not allow a burner to operate under the alternative CO limit provided by § 266.104(c), which allows higher CO levels provided that HC levels do not exceed 20 ppmv, because the Agency believes that only those devices operating under best demonstrated technology combustion conditions should be granted an exemption from the DRE requirement. (We note that this is consistent with the CO restriction for the automatic waiver of the DRE trial burn for boilers operating under the special operating conditions provided by § 266.110.) Devices operating at CO levels above 100 ppmv on an hourly rolling average are not operating under best demonstrated technology combustion conditions even if they can show that hydrocarbon levels do not exceed 20 ppmv (or the HC limit established under § 266.104(f)). As discussed at proposal (see 54 FR 43723 c.3), the 20 ppmv HC level represents a demarcation between good and poor combustion conditions. HC levels under best demonstrated technology combustion conditions would generally be less than 5 ppmv on an hourly rolling average basis.

B. Exemption from Compliance with the Particulate Standard

Today's final rule provides a waiver of the particulate standard for facilities that both obtain the DRE standard waiver and meet the Tier I requirements for all metals. (Because the PM standard guards against risks from both adsorbed organic compounds and metals, only facilities with waste that is low risk for both organic constituents and metals are eligible for the PM waiver.)

The basis for imposing a particulate standard on boilers and industrial furnaces firing hazardous waste, as explained in the October 26, 1989 supplemental notice (54 FR 43719), is primarily the concern over adsorption of toxic organics and metals onto the emitted particulates. Consequently, the Agency believes that an exemption from the particulate standard for boilers and industrial furnaces is appropriate provided that the facility can demonstrate that emissions of toxic organics and metals do not pose unacceptable human health risks.

C. Eligibility Requirements

Three eligibility requirements for the low-risk waste exemption were detailed in the 1987 proposed rule. Many commenters objected to the first of these requirements, that 50 percent of the fuel fired in the boiler or industrial furnace must consist of oil, natural gas, coal, or other fossil fuels derived from these fuels. These commenters requested that EPA allow the cofiring of various other fuels, including tall oil, off-specification fuel oils, and wood chips.

Although some of these fuels may provide a hot, stable flame that will support good combustion, the Agency is concerned that others may not. In today's rule, the Agency is requiring for this exemption the same conditions on the primary fuel as required for the special operating requirements for boilers seeking the automatic waiver from a DRE trial burn (see section II.A.3 of part three of this preamble): a minimum of 50% of the fuel fired to the boiler must be high quality "primary" fuel consisting of fossil fuels or fuels derived from fossil fuels, tall oil, or, if approved by the Director on a case-by-case basis, other nonhazardous fuel comparable to fossil fuel, and all such primary fuels must have a minimum as-fired heating value of 8,000 Btu/lb.

The two remaining eligibility requirements, that the hazardous waste must have an as-fired heating value of at least 8,000 Btu/lb, and that the waste must be fired into the flame zone of the combustion chamber, are being promulgated as proposed in 1987. The reasons for these requirements are the same as discussed in section II.A.3 of part three of this preamble in the context of the automatic waiver of the DRE trial burn for boilers.

D. How the Low-Risk Waste Exemption Works

1. Constituents of Concern

The low-risk waste exemption is intended to exempt a waste from either or both the DRE standard and the particulate standard if the owner/operator demonstrates that, absent regulatory controls (i.e., under a reasonable, worst-case emissions scenario), emissions from the facility will not result in ambient levels of toxic organic compounds and/or metals that exceed acceptable levels. The organic constituents of concern are the hazardous organic compounds listed in appendix VIII of 40 CFR part 261 and the metals of concern are the 10 regulated metals.

2. Estimation of Worst-Case Emissions

The requirements for estimating worst-case emissions were discussed in the May 1987 proposed rule and are being promulgated in today's rule with slight modifications.

To estimate reasonable, worst-case emissions of toxic organic constituents in hazardous waste fuel, an owner or operator must: (1) Identify every nonmetal appendix VIII constituent that could reasonably be expected to be found in the waste; and (2) assume a reasonable, worst-case destruction and removal efficiency (DRE) for each constituent of 99.9 percent in calculating the worst-case emissions (by considering waste concentration and feed rate) from the stack for each constituent. This assumed DRE of 99.9 percent is less conservative than the proposed 99 percent assumption in the 1987 notice. The Agency is making this change in response to the many commenters who objected to the 99 percent DRE assumption. Specifically, the commenters' objection was that 99.9 percent was the worst DRE measured by the Agency in its nonsteady-state testing of boilers operated under intentionally

upset (i.e., high CO and smoke) conditions. The Agency believes that changing the assumed DRE from 99 percent to 99.9 percent is justified because today's rule, unlike the 1987 proposal, does not provide a waiver of the continuous CO emission monitoring (CEM) requirements. Compliance with continuous CO monitoring requirements will ensure that these devices do not operate under upset conditions and will achieve a DRE of at least 99.9 percent.

The Agency has eliminated the proposed requirement that emissions of products of incomplete combustion (PICs) be estimated using a ratio of PICs to principal organic hazardous constituents (POHCs). As explained in the April 1989 notice (54 FR 43730), use of the PIC:POHC ratio may not be a conservative method for estimating PIC emissions.

An estimate of worst-case emissions is not necessary for metals. To be eligible for the exemption from the particulate standard, the waste must be low-risk with respect to organic compounds and must meet the Tier I metals feed rate limits. See § 266.106(b). Those metals feed rate limits assume that all metals fed into the device are emitted.

3. Dispersion Modeling

Dispersion modeling must be used to predict the maximum annual average ground level concentration of each toxic nonmetal compound in the waste using procedures identical to those required to implement the Tier III metals controls. See 266.109(a)(2)(iii)(A).

4. Acceptable Ambient Levels

Predicted maximum annual average ground level concentrations of each toxic nonmetal compound may not exceed levels the Agency proposed as acceptable for purposes of this rule. The acceptable ambient concentrations were developed for carcinogenic and noncarcinogenic compounds using the same procedures used to develop the RACs and 10^{-5} RSDs for the 10 toxic metals.

To demonstrate that the noncarcinogenic nonmetal compounds listed in appendix IV of the rule do not pose an unacceptable health risk, the predicted ground level concentrations cannot exceed the levels established in that appendix.

To demonstrate that the carcinogenic nonmetal compounds listed in appendix V of the rule do not pose an unacceptable health risk, the sum of the ratios of the predicted ground level concentrations to the levels established in the appendix cannot exceed 1.0. This is because the acceptable ambient levels established in appendix V are based on a 10^{-5} risk level. To ensure that the summed risk from all carcinogenic compounds does not exceed 10^{-5} (i.e., 1 in 100,000), the sum of the ratios described above must be used.

To demonstrate that other compounds for which the Agency does not have adequate health effects data to establish an acceptable ambient level are not likely to pose a health risk, the predicted ambient level cannot exceed 0.1 $\mu g/m^3$. This is the 5th percentile lowest reference air concentration for the compounds listed in appendix IV of the rule.

5. Constituents with Inadequate Health Effects Data

At the time of the 1987 proposal, the Agency had data adequate for establishing RACs and RSDs for only about 150 of the over 400 compounds listed in appendix VIII, part 261. In the preamble to the May 1987 proposal, EPA stated that, to be eligible for the exemption, health effects data (i.e., RACs and RSDs) must be available for each constituent in the waste. In response to comments concerning the inadequacy of current health effects data to establish a RAC or RSD for a large number of compounds, we have established in today's rule a conservative RAC value for such constituents determined as the 5th percentile lowest RAC for all of the nonmetal appendix VIII, part 261, constituents—0.1 $\mu g/m^3$ (see note to appendix IV of the final rule). EPA believes that this approach will be protective of human health and the environment and will not unreasonably restrict owners/operators from eligibility for the exemption.

XII. Storage Standards

A. Permit Standards for Storage

Under the administrative controls for hazardous waste marketers, burners, and blenders of hazardous waste burned in boilers and industrial furnaces promulgated on November 29, 1985, and codified in subpart D of part 266, EPA subjected existing burner storage facilities (effective May 29, 1986) to only the interim status standards of part 265. The permit standards of part 264 were not applied to existing storage facilities in order to avoid two-stage permitting, given that today's rule for permitting boiler and industrial furnace facilities was under development at that time. The Agency wanted to avoid requiring a boiler or industrial furnace owner or operator to obtain a permit for their hazardous waste fuel storage facility and to soon thereafter obtain another permit for operation of the boiler or industrial furnace under today's rule.

Today's rule does, therefore, subject such existing burner storage facilities to the permit standards of part 264. See § 266.101(c).

Numerous comments on the May 6, 1987 proposed rule to subject burner storage units to the permit standards of part 264 agreed that the interim status standards currently in force are not adequate and permit standards are needed. Several commenters were concerned about the potential mishanding of waste fuels stored on-site in and around residential areas. One commenter requested that preburn transport and storage regulations for hazardous waste apply to all hazardous waste blends, mixtures, or diluted hazardous materials.

With the promulgation of today's rule, all hazardous waste storage units will be subject to applicable part 264 and 265 standards. Since hazardous waste storage units standards are designed to be protective of human health and the environment regardless of the location of the facility, on-site storage associated with boilers and industrial furnaces burning hazardous waste is not restricted to areas in or around residential areas. These standards apply to the storage of any hazardous waste blends, mixtures, or dilutions that will be burned at these facilities, due to the "mixture rule" of 40 CFR 261.3. Whereas nonindustrial boilers were previously prohibited from burning hazardous wastes unless they were operated in conformance with the incinerator standards of subpart O of parts 264 or 265, today's rule eliminates the distinction between industrial and nonindustrial boilers. Consequently, today's rule establishes standards that are protective when hazardous waste is burned in any boiler.

One commenter recommended that the final rule allow the 90-day "on-site" accumulation provision to include wastes received at the BIF from off-site, company-owned locations. The 90-day accumulation provision referred to by the commenter is contained in 40 CFR 262.34(a) and only applies to generators of hazardous wastes. The Agency does not intend to apply this provision to hazardous waste treatment, storage, or disposal facilities.

B. Consideration of Requirement for Liquid Waste Fuel Blending Tanks

In the October 26, 1989 supplemental notice, the Agency requested comment on a requirement that all boiler and industrial furnaces use blending and surge storage tanks (i.e., other than other

modes of waste fuel transfer) to avoid flow interruptions and waste stratification which could affect the ability of a combustion device to meet performance standards. The majority of commenters opposed requiring blending and surge storage tanks for BIFs and suggested that such a requirement would not be necessary to ensure compliance with performance standards. Several commenters believed that a uniform requirement for tanks, containers, and/or surge tanks may not be universally appropriate. These commenters noted that some secondary materials such as lead acid batteries, flue dust, and various scraps and slags cannot be transferred to furnaces from a tank or container system. Another commenter suggested that in some instances, such as feeding incompatible wastes, direct transfer may be preferable due to health and safety concerns. A few commenters concurred with this view, but felt that storage and blending tanks should be required in all other instances. One commenter suggested that storage tanks should be required only if transport vehicles do not meet Department of Transportation requirements, secondary containment is not used in transfer operations, and if operations are not covered by site-specific contingency or SPCC plans. One commenter agreed that hazardous wastes should generally be fed from storage tanks and supported a final rule that would allow a "window of opportunity" to install storage tanks, thus providing an incentive for a company to reduce their reliance on direct burning from transport vehicles.

In today's rule, the Agency is not requiring storage and blending tanks for boilers and industrial furnaces burning hazardous waste because we continue to believe that such tanks are not requisite to demonstrating conformance with the emission standards of §§ 266.104 through 266.107. However, as indicated in the supplement to the proposed rule, EPA believes that facilities that install blending and storage tanks may be better able to control flow interruptions and waste stratification. Consequently, boilers and industrial furnaces with blending and/or storage tanks may operate with greater efficiency and thereby may more readily meet performance standards for emissions.

We also note that, once an owner/operator is in interim status, the part A application may be revised to convert from direct transfer operations to the use of storage units. See discussion in section VIII.D of Part Three of the preamble.

C. Standards for Direct Transfer Operations

In the October 26, 1989, supplement to the proposed rule, EPA identified permitting authorities' concerns about the practice of feeding hazardous waste fuels directly from transport vehicles to boilers and industrial furnaces. These concerns included: (1) The potential for fires, explosions, and spills during transfer operations; and (2) the stratification of waste in the transport container and the potential for waste fuel flow interruptions which, in turn, could affect the ability of the burner to consistently provide efficient combustion of the waste. EPA requested comment on two approaches to regulate direct transfer operations. One approach was for permit writers to use the RCRA omnibus authority to establish additional permit conditions as necessary to ensure adequate protection of human health and the environment from such operations. The other approach was to require that facilities burning hazardous waste use blending and surge storage tanks to avoid the flow interruptions and waste stratification, which would address permit writers' concerns.

In the April 27, 1990 **Federal Register** notice, EPA noted that commenters on the October 1989 notice stated that controls on transfer operations were needed during interim status. As a result, the Agency requested comment on the need and appropriateness of regulating direct transfer operations under interim status standards for containers and tank systems of subparts I and J of part 265. EPA received numerous comments in response to these solicitations. The majority of commenters recommended that EPA allow direct transfer with proper controls and restrictions, such as: (1) Allow direct transfer approval for facilities granted interim status or a RCRA operating permit; (2) establish direct transfer standards similar to subparts I and J of 40 CFR part 265 for facilities with a contingency or SPCC plan; and (3) allow direct transfer during test burns alone. Some respondents suggested that instead of allowing direct transfer, EPA should require storage and blending tanks for all facilities burning hazardous waste.

The Agency is today promulgating standards regulating direct transfer operations. See § 266.111. The Agency believes that these standards will adequately address potential risks to human health and the environment.

EPA considers direct transfer operations to be a part of the hazardous waste firing system, not a storage activity. Hence, facilities that are not subject to the burner standards of §§ 266.102 (permit standards) or 266.103 (interim status standards) are not subject to the direct transfer standards. Examples of facilities not subject to the direct transfer standards are small quantity burners exempt from regulation under § 266.108, metals reclamation furnaces deferred under § 266.100(c), and coke ovens exempt under § 266.100(b)(4).

These direct transfer standards reference extensively the subpart I container standards and the subpart J tank standards of parts 264 and 265 and will apply equally to facilities operating under a permit as well as those operating under interim status. The regulations address the area in which transport vehicles are located and piping and other ancillary equipment (termed "direct transfer equipment" in today's rule) used to transfer waste from the vehicle to the burner. The standards provide general operating requirements and controls on equipment integrity, containment and detection of releases, response to leaks or spills, design and installation of new direct transfer equipment, and closure.

1. General Operating Requirements

Facilities that directly transfer hazardous waste to boilers and industrial furnaces from transport vehicles must comply with general operating requirements that specify safe management practices for handling incompatible wastes, spill prevention controls, and automatic waste feed cutoffs. These general operating requirements apply to both containerized and bulk hazardous waste. General performance standards for safe operation in today's rule include measures for conducting direct transfer operations such that fire, explosion, violent reactions, and other conditions that could threaten human health or the environment do not occur. Direct transfer from open-top containers is prohibited. Direct transfer equipment, which is any device that distributes, meters, or controls hazardous waste flow between a transport vehicle and a BIF, must also be closed except when necessary to add or remove the waste. Safe management practices for handling incompatible wastes are also required. Transport vehicles or direct transfer equipment holding ignitable or reactive hazardous waste must be located at least 50 feet from the receiving facility's property line.

2. Inspections and Recordkeeping

All equipment and areas where direct transfer occurs must be inspected hourly for leaks during direct transfer operations. Control equipment, direct transfer equipment monitoring data, and other equipment ensuring compliance with direct transfer standards must also be inspected hourly. Finally, the rule provides recordkeeping requirements to document results of inspections.

We note that only daily inspection is required under subpart J of parts 264 and 265 for tank systems (i.e., piping, valves and other direct transfer equipment). EPA is requiring hourly inspections of direct transfer operations because, unlike tank systems that use hard piping, direct transfer operations use flexible hoses and quick change coupling devices that have a greater potential for leaks or spills.

3. Equipment Integrity

Equipment integrity requirements address direct transfer equipment (e.g., piping or conveyors from the transport vehicle to the burner). The standards promulgated today require the transfer of waste to other equipment if equipment holding hazardous waste leaks or is in poor condition, and specify safe management practices for transferring wastes to other containers or transport vehicles. An assessment is required of existing direct transfer equipment that does not meet the secondary containment requirements discussed below to determine if the direct transfer equipment is leaking or unfit for use and must be certified by a qualified, registered professional engineer. If equipment is found to be leaking or unfit for use, the owner/operator must comply with the requirements addressing responses to leaks or spills.

4. Containment and Detection of Releases

The rule requires secondary containment for underground direct transfer equipment. See § 266.111(e)(1). Inspections and leak tests of direct transfer equipment and recordkeeping requirements are also required. Existing direct transfer equipment subject to the secondary containment requirements of § 265.193 (by reference in § 266.111(e)(1) of today's rule) must comply with those secondary containment requirements within two years after the effective date of the rule. EPA believes that two years (30 months from promulgation) is a reasonable amount of time to enable owners and operators to retrofit existing equipment with secondary containment as necessary given that direct transfer operations generally do not involve the use of extensive equipment subject to secondary containment.

5. Response to Leaks or Spills

Action required to be followed in the event of a leak or spill are based on those required in subpart J, part 265. See § 266.11(e)(5). Should a leak or spill occur, equipment use must cease (to prevent the flow or addition of wastes into the direct transfer equipment or secondary containment system) and the system must be inspected to determine the cause of the release. The waste must be removed from the direct transfer equipment or secondary containment system and visible releases to the environment must be contained. In the event of a leak or spill, the Director must be notified of the incident in writing. Secondary containment, repair, or closure of the leaking equipment, and certification of major repairs must be provided.

6. Design and Installation of New Equipment

New direct transfer equipment must meet the design and installation standards specified in today's rule as defined in § 265.192 for tank systems. See § 266.111(e)(4) in today's rule referencing that section. The standards include: Specifications for assessing the design of new direct transfer equipment; backfill requirements for new underground direct transfer equipment; tightness tests; equipment support and protection requirements; corrosion protection; and written certification that these requirements have been met.

7. Closure

Today's rule applies by reference the closure requirements for direct transfer equipment provided by § 265.197 (except paragraphs (c)(2) through (c)(4)). See § 266.111(e)(6). That section requires the removal or decontamination of waste residues, system components, and contaminated soils, structures, and equipment.

XIII. Applicability of the Bevill Exclusion to Combustion Residues When Burning Hazardous Waste

Under the Agency's existing regulations, wastes that are derived from the treatment of listed hazardous wastes are also considered to be hazardous unless and until they are delisted (see 40 CFR 261.3(c)(2) and (d)(2)). The combustion or processing of hazardous waste in a device that uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste, is a type of treatment no matter what type of device is used in the process, or for what purpose the waste is burned or processed. Accordingly, under the Agency's existing rules, residues from thermal combustion (or processing) of listed hazardous wastes remain the listed hazardous wastes until they are delisted.

When the device burning hazardous waste is (1) a boiler burning primarily coal or other fossil fuels, (2) an industrial furnace processing primarily ores or minerals, or (3) a cement kiln processing primarily raw materials, the applicability of the Bevill exclusion must be considered (see RCRA section 3001(b)(3)(A)(i-iii)). The Bevill exclusion refers to residues resulting from burning or processing certain materials whereby the residues are not considered to be hazardous waste at this time because they require special study to determine whether they should be regulated under subtitle C.

To determine whether the Bevill exclusion continues to apply when the devices described above burn or process hazardous waste, today's final rule promulgates the case-by-case determination involving a two-part test as discussed in the October 1989 supplement to the proposed rule. See § 266.112. Under this test, owners and operators must determine on a site-specific basis whether the co-combustion of hazardous waste has significantly affected the character of the residue. The residue is considered to be significantly affected if both: (1) Concentrations of toxic (appendix VIII, part 261) compounds in the waste-derived residue are significantly higher than in normal (i.e., without burning/processing hazardous waste) residue; and (2) toxic compounds are present in the waste-derived at levels that could pose significant risk to human health. If the case-by-case determination demonstrates that the residue has been significantly affected (or if the owner or operator does not obtain data and information adequate to support a demonstration that the residue has not been significantly affected), such derived-from residues are subject to regulation as hazardous waste because the residues are no longer the type of material Congress commanded the Agency to study before regulation. Such residues are no longer deemed to be from processing ores or minerals, burning fossil fuels, or making cement. Rather, they are from treating hazardous waste.

The following sections discuss the basis for applying the Bevill exclusion to derived-from residues, the evolution of

the Agency's interpretations on the applicability of the Bevill exclusion to waste-derived residues, and how today's case-by-case determination works.

A. Basis for Applying the Bevill Exclusion to Derived-From Residues

A number of comments questioned whether the Agency has the legal authority to determine that some residues from coprocessing hazardous waste with Bevill raw materials could remain excluded under the Bevill amendment pending completion of the section 8002 studies. Because the Agency's previous determination of this question (50 FR 49190 (Nov. 29, 1985)) could have been more fully explained, the Agency has decided to reopen the question in this rule and to respond to the public comments.

The Agency's consistent position on this issue is that so long as the processing of hazardous waste does not significantly affect the character of the waste residues as high volume/low hazard, then those wastes can remain excluded under the Bevill amendment. Put another way, the wastes can potentially remain the type of material that Congress told the Agency to study before imposing subtitle C regulation.

Instead of focusing on the question of whether coprocessing hazardous waste affects the composition of the residues from a Bevill device, some commenters would have it that the mixture and derived-from rules apply to the residues, so that the residues are subject to subtitle C (assuming listed wastes are coprocessed) regardless of the actual effect of burning hazardous waste. At the least, the statute does not compel this result. In the case of utility boilers burning fossil fuels, the statute states explicity that wastes "generated primarily from the combustion of coal or other fossil fuels" is to be excluded. See section 3001(b)(3)(A)(i). Thus, some type of co-combustion is expressly authorized. With respect to the two remaining categories of Bevill waste (wastes from processing ores and minerals and cement kiln dust), the Bevill amendment (section 3001(b)(3)(A)) does not use the term "primarily", but does not expressly address the question of whether the exemption applies when the residues are produced in part from burning hazardous waste. Thus, read literally, dust from a cement kiln that burns hazardous waste along with normal raw materials could be termed "cement kiln dust." [84]

If there were doubt on this point, the Agency is convinced that it is dispelled by the 1984 amendments. Sections 3004(q)(1) and 3010(a) both state explicitly that "(n)othing in this subsection shall be construed to affect or impair the provisions of section 3001(b)(3)" (the Bevill amendment). This language would be meaningless unless it allowed some residues from Bevill devices burning hazardous wastes (specifically hazardous waste fuels) to remain within the scope of the Bevill amendment. Although commenters argued, based on passages from the legislative history, that the provision should not be given this natural meaning, the Agency does not find the argument persuasive. Rather, the legislative history appears to state that Bevill devices burning hazardous waste fuels will be subject to the emission standards developed pursuant to section 3004(q). See H. Rep. No. 198, 98th Cong. 1st Sess. 41; S. Rep. No. 284, 98th Cong. 1st Sess. 37. Today's rules accomplish that result.

At the same time, the Agency is concerned about reading the Bevill amendment in a manner that gives it undue scope, such as by allowing Bevill devices to serve as a dumping ground for other hazardous wastes. We do not view the interpretation adopted today as allowing the exemption to have undue scope. In the first place, emissions from the Bevill device itself are regulated. Second, the facility becomes subject to the facility-wide corrective action provisions of sections 3008(h) and 3004(u) by virtue of regulation of the combustion activity. Thus, potential problems relating to mismanagement of waste residues must be evaluated and addressed no later than during the permitting process.

Most importantly, the Agency believes that the reading adopted strikes a reasonable balance between the terms of the Bevill amendment and other provisions and regulations relating to hazardous waste management. A reading that would disqualify residues from the Bevill amendment if any hazardous waste is burned in the device would exalt form over substance by barring from Bevill eligibility a residue that was not discernably affected by burning hazardous waste. Given that such material could be exactly the high volume/low hazard residue that Congress told the Agency to study before regulating, EPA does not agree with an interpretation that automatically forecloses it from Bevill status.[85] In addition, use of Bevill devices for combusting hazardous wastes provides needed treatment capacity for a number of hazardous wastes, and the Agency would be reluctant to adopt an interpretation that discouraged safe processing of hazardous waste by necessarily imposing hazardous waste disposal costs on residues that might not be affected by the hazardous waste combustion.

For all of these reasons, therefore, the Agency is reading the statute in a way that does not automatically disqualify residues from coprocessing hazardous wastes in Bevill devices from eligibility for Bevill exempt status.

B. Evolution of Interpretations

To determine whether the Bevill exclusion continues to apply when the devices described above [86] burn hazardous waste fuel, the Agency stated in 1985 (see 50 FR 49190 (Nov. 29, 1985)) that the exclusion continues to apply as long as the hazardous waste is burned for energy recovery (i.e., not for destruction). The underlying principle for this determination was that when hazardous waste is used as fuel, the character of the residue would continue to be determined by the Bevill material (e.g., coal, ores or minerals, or cement raw materials) being burned or processed. Thus, the residue should remain within the Bevill exclusion pending special study before it could be regulated under subtitle C.

In the May 6, 1987 proposed rule (52 FR 17012–013), the Agency suggested refining these determinations to address residues from industrial furnaces processing ores or minerals and that also process hazardous waste for materials recovery, and residues from cement kilns that may process hazardous waste as an ingredient.

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[84] EPA does not accept the argument that the omission of the word "primarily" in regard to ore/mineral processing wastes and cement kiln dust means that the residues must come exclusively from processing raw materials exclusively. This type of negative inference is not a compelled reading of the statute, and the legislative history to the provision in fact indicates that Congress used the term "primarily" with respect to utility wastes to overrule a 1978 EPA proposed regulation on the scope of utility wastes, rather than to affect the scope of the remaining two Bevill categories. 126 Cong. Rec. 3368 (1980).

[85] EPA notes that in assessing whether residues have been affected by hazardous waste burning it is using a somewhat more rigorous test for assessing inorganic contamination—use of the TCLP rather than the synthetic acid rain leaching procedure—than it used in making the high volume/low hazard determination for mineral processing wastes. 54 FR at 36630 (Sept. 1, 1989). The Agency views this as an additional safeguard to assess the possible effect coprocessing of hazardous waste may have had on the residues.

[86] This is, a boiler burning primarily coal, an industrial furnace processing primarily ores or minerals, or a cement kiln processing primarily raw materials.

Under that proposal, such residues would remain within the Bevill exclusion provided that at least 50 percent of the raw material fed to the device consisted of a virgin ore, mineral, or normal raw material. However, residues from devices burning hazardous waste for the purpose of destruction (i.e., for neither energy nor materials recovery) would not qualify for the Bevill exclusion.

The Agency has evaluated these interpretations of the applicability of the Bevill exclusion to waste-derived residues in light of its stated principle that residue that results from coburning hazardous waste and Bevill raw materials should remain within the Bevill exclusion provided that the character of the residue is determined by the Bevill material (i.e., the residue is not significantly affected by the hazardous waste). As discussed in the October 1989 supplement to the proposed rule (54 FR 43733–36), the Agency does not believe that its data base for making these interpretations is sufficient to ensure that, in every case, the residue would not be significantly affected by the hazardous waste. Further, the Agency has reconsidered whether the interpretation that residues generated by the subject devices when burning waste for destruction are not within the Bevill amendment is consistent with the stated principle. Consequently, the Agency proposed in the supplemental notice to require case-by-case determinations of the effect of burning hazardous waste on residuals. That case-by-case approach is promulgated in today's rule.

C. Case-By-Case Determinations

We discuss below which devices are eligible for the Bevill exclusion of residues and how the two-part test works for determining whether combustion of the waste has significantly affected the residue.

1. Eligible Devices

Until further studies were completed, Congress intended to exclude from subtitle C regulation residues from: (1) Devices that burn primarily fossil fuel; (2) industrial furnaces that process ores or minerals; and (3) cement kilns. As the Agency reads these provisions, to be eligible for exclusion from subtitle C regulation under the Bevill amendment, the waste-derived residue must be generated from: (1) A boiler burning primarily coal [87] (2) an industrial furnace processing primarily ores or minerals (otherwise, residues could not be said to come from processing ores and minerals, but rather from processing other materials), or (3) a cement kiln processing primarily raw materials. To implement the provision that, to be eligible for the Bevill exclusion the device must burn primarily Bevill material, EPA is requiring that a boiler must burn at least 50 percent coal, an industrial furnace must process at least 50 percent ores or minerals, and at least 50 percent of the feed stock to a cement kiln must consist of normal raw materials. This requirement also confirms the Agency's long-standing interpretation that the Bevill exclusion applies only to primary facilities and not to secondary facilities such as secondary smelters.[88] See § 266.112(a).

2. Two-Part Test

Today's rule requires a case-by-case determination as to whether the hazardous waste being burned or processed significantly affects the character of the residue with respect to inorganic and organic toxic (i.e., appendix VIII, part 261) constituents. The residue is considered to be significantly affected if both: (1) Concentrations of toxic (Appendix VIII) compounds in the waste-derived residue are significantly higher than in normal (i.e., without burning/processing hazardous waste) residue; and (2) toxic compounds are present in the waste-derived residue at levels that could pose significant risk to human health. Part One of the test need not be conducted if the waste-derived residue passes Part Two of the test (i.e., if the health-based concentration limits are not exceeded). Such a waste would still meet the high volume/low hazard Bevill threshold.

a. Part One—Comparison with Normal Residues. Part One of the test requires a comparison of hazardous waste-derived residues with normal residues to determine if toxic compounds are present at statistically significant higher levels. See § 266.112((b)(1). The toxic compounds of concern are any compound listed on appendix VIII, part 261, that may reasonably be expected to be a constituent in the hazardous waste plus the list (see appendix VIII to the rule) of organic compounds that are common products of incomplete combustion (PICs) from burning hazardous waste. The total concentration of each compound of concern in the residues must be determined.[89] Analytical procedures are provided in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW–846) incorporated by reference in § 260.11(a).

The rule requires the use of a statistical test to compare the concentrations of toxic constituents in samples of normal (without burning/processing hazardous waste) residues with samples of waste-derived residues. In the statistical test, the 95th percent confidence interval about the mean of the normal residue concentrations (using a "t" distribution) is used to determine the upper 95th percent confidence interval about the mean. Procedures that must be used to determine the upper 95th percent confidence interval about the mean are prescribed in "Statistical Methodology for Bevill Residue Determinations" in Methods Manual for Compliance with the BIF Regulation, incorporated in today's rule as appendix IX of part 266. A minimum of ten composite samples must be obtained and analyzed to represent the normal residue in order to effectively calculate the upper 95th percent confidence interval about the mean. This is the concentration that the waste-derived residue may not exceed to pass Part One of the test. The waste-derived residue must be characterized by composite samples with a composite period not to exceed 24 hours to ensure that residues are managed properly and promptly (i.e., as exempt residues or hazardous waste) and to provide for effective enforcement. The sampling approach must be based on (and be consistent with) representative sampling protocols described in SW–846 and must be documented by recordkeeping.

If operating conditions change so that concentrations of toxic compounds in normal residue may (would have) decrease(d), the owner and operator must re-establish the "baseline" concentrations in normal residue and use the lower baseline levels for the test. This is necessary to ensure that owners/operators do not use the most contaminated raw materials in order to burn more hazardous waste, and then switch back to their normal raw materials.

[87] The Agency has determined that residues from cofiring hazardous waste with oil or gas are not excluded under the Bevill amendment because the character of the residue would be determined by the hazardous waste. This is because oil and gas generally produce little residue when burned and, thus, toxic constituents from the hazardous waste can significantly affect any residue generated. See 50 FR 49190 (Nov. 29, 1985). The Agency is not reopening this determination in today's rule.

[88] In support of this reading, one court has held that residues from a secondary lead smelter are not covered by the Bevill amendment. *Ilco Co. versus EPA* (W.D. Ala. 1986).

[89] We note that Part One of the test considers the total concentration of each compound, while Part Two of the test considers, for metals, the concentration in an extract generated from the Toxicity Characteristic Leachate Procedure (TCLP).

b. Part Two.—Comparison With Health-Based Limits. Part Two of the test requires a comparison of the concentration of toxic constituents in the waste-derived residues with health-based limits the Agency has established in appendix VII to the rule. The comparison is made to determine if toxic compounds in the waste-derived residue are present at levels higher than the health-based limits. The toxic compounds of concern are the same as for Part One of the test—any compound listed on appendix VIII, part 261, that may reasonably be expected to be a constituent in the hazardous waste plus the list (see appendix VIII to the rule) of organic compounds that are common products of incomplete combustion (PICs) from burning hazardous waste. The total concentration of each nonmetal compound of concern in the waste-derived residue must be compared with the health-based limit. In addition, the concentration of each metal of concern in an extract from the Toxicity Characteristic Leaching Procedure (TCLP) must not exceed the health-based limits.

The Agency does not have adequate health effects data (e.g., MCLs, RfDs, unit risk values) to establish health-based limits for many compounds listed in appendix VIII, part 261. Consequently, we have conservatively established a health-based limit for such compounds based on the 5th lowest percentile value of the health-based values for nonmetal compounds established in appendix VII to the rule. That value is 0.002 ug/kg. This is the same approach EPA used to establish a RAC for compounds where insufficient health effects data were available to establish a RAC or RsD for the compound.

The rule requires the use of total concentrations of nonmetal compounds rather than extract concentrations for the test of health significance because of burning toxic nonmetal compounds in these devices should be to destroy the compounds. (Use of total nonmetal concentrations thus serves as a partial check that combustion is being conducted properly.) The health-based limits for the metals in appendix VII of the rule are the Toxicity Characteristic (TC) limits (see § 261.24) for those metals for which TC limits have been established. To establish health-based limits for the other metals, the Agency applied the same 100 fold dilution factor to leachate concentrations used to establish the TC limits. The Agency has also used this same dilution factor in assessing whether mineral processing wastes satisfy the low hazard prong of the Bevill test. See 54 FR 36630 (Sept. 1, 1989).

To determine if the concentrations of toxic compounds in the waste-derived residues are higher than the health-based limits, owners and operators must obtain and analyze composite samples of waste-derived residues with a composite period not to exceed 24 hours. The sampling approach must be based on (and be consistent with) representative sampling protocols described in SW-846 and must be documented by recordkeeping.

D. Recordkeeping

Owners and operators must maintain for a period of three years records of sampling and analyses of residues to support claims that the waste-derived residue retains the Bevill exclusion.

E. Other Considerations

1. Generic Determinations

In the October 26, 1989 supplement to the proposed rule, the Agency requested data and information that it could use to support: (1) Generic determinations of levels of toxic constituents in normal (i.e., generated without burning/processing hazardous waste) residues; and (2) generic determinations that certain waste-derived residues are not significantly affected by burning/processing hazardous waste, and, thus, remain excluded without the need to make the case-by-case demonstration.

a. Normal Residues. After review of comments on the 1989 supplemental notice, the Agency concluded that it is not practicable to establish generic concentrations of toxic constituents in normal residues. Commenters noted that there were so many site-specific variables that affect the concentration of toxic constituents in normal residues that this approach was not workable. Variables include the type of industrial furnace, type of fuels burned, and type and source of raw materials used by industrial furnaces. The Agency initially considered establishing generic concentration levels in normal residues to avoid giving an advantage to facilities that use fuels or raw materials with high (i.e., higher than normal for the industry) levels of toxic constituents. Normal residues from such facilities would have high levels of toxic constituents. Thus, waste-derived residues from such facilities could also have high levels of toxic constituents. Consequently, such facilities could burn/process hazardous waste with high levels of toxic constituents without losing the Bevill exclusion of residues. We note that enforcement officials will give priority consideration to those facilities whose residues fail part 2 (health-based limits) of the test to determine Bevill applicability and rely on part 1 (comparison with normal residues) to retain the exclusion. Owners and operators must be able to support, at any time, that the nonhazardous waste feedstreams being fed into the device when hazardous waste is fired are the same (or would not decrease the concentrations of toxic constituents in residues) as those fired when the concentrations of toxic constituents in normal residues were determined. If the concentrations of toxic constituents in nonhazardous feedstreams decrease significantly from those concentrations when the normal residue was generated for purposes of establishing normal concentrations of toxic constituents (or if design or operating conditions change such that levels of toxic constituents in normal residue could decrease significantly), then the owner/operator must establish new, lower, concentrations for normal residue.

b. Excluded Residues. The Agency also concluded that it is not practicable to make generic determinations that certain waste-derived residues are not significantly affected by burning or processing of hazardous waste and, so, remain excluded. This approach is not workable given that the exclusion would have to be conditioned on a number of factors including: (1) The composition, feed rate, and method of feeding the harzardous waste; (2) the type of device; (3) the composition, feed rate, and method of feeding any other fuels; and (3) the composition, feed rate, and method of feeding any raw materials. The data base to support such determination is not available. Moreover, any such generic exclusion that is necessarily conditioned on so many factors would be of little practical use to the regulated community given the variability of normal operations.

2. Burning for Destruction

The case-by-case approach to determine the effect of coburning on residues from Bevill devices focuses on the residues that are actually generated rather than on the purpose for which the hazardous waste is burned. Thus, residues generated from burning hazardous waste in boilers and industrial furnances for the purpose of destruction [90] are eligible to retain the

[90] For example, wastes with low heating value that are not burned for materials recovery or as an ingredient are burned for destruction. We note that such wastes may be burned only by new facilities as incinerators under an operating permit or by those existing facilities operating under interim status that also have certified compliance with the applicable emissions standards.

Bevill exclusion. The Agency's historic approach to the issue of cogenerated residues has been to focus on the character of the residues to ascertain what determines their character—the Bevill material or the hazardous waste being burned/processed (see 50 FR 49190 (November 29, 1987)). The statute itself does not directly specify that the purpose of the burning is a relevant criterion, but instead states that certain types of waste are excluded from subtitle C regulation pending completion of required special studies. Since the Bevill devices would still be engaged in the Bevill activity, and composition of the residues would potentially be unaffected, the Agency sees no absolute bar to allowing Bevill status for such residues.

Part Four: Miscellaneous Provisions

I. Regulation of Carbon Regeneration Units

A. Basis for Regulating Carbon Regenerating Units as Thermal Treatment Units

In today's rule, EPA is clarifying the regulatory status of carbon regeneration [91] units. Since 1980, controlled flame (direct flame) carbon regeneration units which destroy organic contaminants adsorbed onto activated carbon have met the definition of incinerator and were subject to regulation as such, while carbon regeneration nonflame thermal units were treated as exempt reclamation units. Today's rule defines carbon regeneration unit and incinerator (see § 260.10) to ensure that both direct flame and nonflame thermal carbon regeneration units are regulated as thermal treatment units under the interim status standards of part 265, subpart P, and the permit standards of part 264 subpart X.

One commenter expressed concern that the thermal treatment standards of subpart X were vague. EPA disagrees and points out that subpart X, part 264 covers miscellaneous hazardous waste management units that do not or may not fit the description of any of the units covered by other part 264 regulations. Without subpart X, these unregulated units could only operate as interim status facilities and could not be fully permitted, thereby preventing the construction of new units or some expansions of existing units. EPA recognized that some types of new units that were not previously allowed to be constructed could reduce risks to human health and the environment from the management of hazardous waste. Promulgation of subpart X generic permitting standards was intended to allow such construction and flexibility for technical development and innovation and to cover diverse technologies and units. The subpart X standards specify that health and environmental safety must be a primary concern during the management of hazardous wastes in miscellaneous units. If the need arises, the Agency may develop specific technology standards in the future (see 52 FR 46964, December 10, 1987). Although several commenters supported the application of part 264, subpart O incinerator standards to direct flame and nonflame devices, EPA has decided against this since demonstration of conformance with the DRE standards (and the proposed CO/THC standards) may not be achievable or warranted for carbon regeneration units considering the relatively low levels of toxic organic compounds adsorbed onto the activated carbon.

B. Definition of Carbon Regeneration Unit and Revised Definition of Incinerator

Several commenters requested that EPA consider revising the definition of a carbon regeneration unit so that certain units used for air emissions control, wet oxidation, and general recycling, would not be regulated. Activated carbon units used as air emission control devices of gaseous industrial process emissions will not necessarily be regulated because trapped organics in such columns are not hazardous wastes because the gas originally being treated is not a solid waste (it is an uncontained gas [92]), and therefore any condensed organics do not derive from treatment of a hazardous waste. (The nongas residues from these devices could be hazardous wastes if they are listed or if they exhibit a characteristic, however.) However, regeneration or reactivation of carbon used to control air emissions from hazardous waste treatment, storage, or disposal facilities (e.g., under 40 CFR parts 264 and 265, subpart AA, June 21, 1990, 55 FR 25454) is subject to regulations as a RCRA thermal treatment unit.

We considered whether other units truly are engaged in reclamation, or whether the regeneration of the carbon is just the concluding aspect of the waste treatment process that commenced with the use of activated carbon to adsorb waste contaminants, which are now destroyed in the "regeneration" process (just as rinsing out a container of hazardous waste is a stage in the storage process and does not constitute recycling of the container). Irrespective of whether these units are better classified as waste treatment or recycling units (or whether the units are flame or nonflame devices), we are concerned, as indicated above, that emissions from the regeneration process can pose a serious hazard to public health if not properly controlled, and therefore are clarifying today that they are regulated as thermal treatment units.

We note that this revision also applies to those carbon regeneration units that, while in active service treating wastewater, meet the definition of wastewater treatment units in § 260.10. Such units are exempt from RCRA permitting standards while treating wastewater. However, these units are not exempt from RCRA regulation when they are being regenerated because they are not treating wastewater during the regeneration process. Rather, the activated carbon columns themselves are being treated thermally. The thermal regeneration unit is subject to part 265, subpart P (existing units) or part 264, subpart X (new units).

C. Units in Existence on the Effective Date of the Rule are Eligible for Interim Status

Although certain carbon regeneration units may technically have met either the 1980 or 1985 definitions of incinerator, the Agency believes that there has been legitimate doubt as to these units' regulatory status (which is why the Agency undertook this rulemaking to clarify the status). The units might potentially have been classified as incinerators, thermal treatment units, or perhaps exempt recycling units. It would also have been confusing to interpret the rules in a manner that carbon regeneration units were not all regulated in the same way, given that their functions and activities are roughly identical whether or not the units are direct-fired. In fact, the most natural classification of these units, and the one the Agency intended, is as thermal treatment units. (EPA does not believe that these are recycling units, but rather that regeneration is a continuation of the waste treatment process, that process consisting of removal of pollutants by adsorption followed by their destruction. Nor does the Agency believe that incinerator standards make technical sense for these devices, as noted above). In addition, few if any of these units have actually been regulated as incinerators in practice.

[91] The term "regeneration" includes reactivation of used carbon for reuse.

[92] See 47 FR at 27530 (June 30, 1982) and 54 FR at 50973 (Dec. 11, 1989).

For these reasons, EPA is finding pursuant to § 270.10(e)(2) that there was substantial confusion as to which owners or operators of carbon regeneration units were required to submit a part A application and that this confusion is attributable to ambiguities in the subtitle C rules. Accordingly, such owners and operators may submit part A applications by the effective date of today's regulations and be eligible for interim status under part 265, subpart P (assuming they meet remaining requirements for interim status eligibility, and the facility is not already subject to interim status for other units).

II. Sludge Dryers

In today's rule, the Agency is clarifying the regulatory status of sludge dryers. In particular, the rule adds a definition of "sludge dryer" to § 260.10 and amends the definition of "incinerator" in § 260.10 to specifically exclude sludge dryers.

On November 17, 1980 (45 FR 76074), EPA suspended the applicability of the RCRA permitting requirements (40 CFR part 122, which is now codified as part 270) and hazardous waste management facility standards (40 CFR parts 264 and 265) to owners and operators of devices meeting the definition of "wastewater treatment unit" in 40 CFR 260.10 and 270.2.

Since promulgation of this wastewater treatment unit exclusion from RCRA permitting requirements, the Agency has received numerous requests to determine if certain types of units satisfy the definition of "wastewater treatment unit" and, therefore, would not require a RCRA permit. Many of these requests have concerned the regulatory status of thermal treatment units, particularly sludge dryers. Commenters have also requested clarification of the regulatory status of sludges from thermal treatment units. Most of the requests have been from owners and manufacturers of sludge dryers. The Agency believes that approximately 40 sludge dryers are currently being used in the metal finishing industry to dehydrate metal hydroxide sludges (EPA Hazardous Waste F006) generated in the treatment of wastewater.

In response to these inquiries, EPA distributed policy memoranda to the Regional offices explaining that a sludge dryer is included within the scope of the wastewater treatment tank exclusion, provided that it meets the definition of "wastewater treatment unit." (See OSWER Policy Directives 9503.52-1A and 9503.51-1A, available upon request from the RCRA Hotline.) In addition, with respect to the status of the sludges themselves, they are hazardous waste if identified or listed (including by application of the mixture and derived-from rules) and are subject to regulation when removed from the tanks.

Despite the original November 17, 1980 preamble discussion and the policy clarification, the regulatory status of sludge dryers has continued to be unclear. One reason for the confusion is because it is not clear whether a sludge dryer satisfies the third component of the definition of wastewater treatment unit (i.e., whether it meets the definition of a "tank" or "tank system"). The Agency has determined that sludge dryers that are integrally equipped with feed or discharge hoppers that provide for an accumulation of waste satisfy the definition of "tank system." [93] Based on information available to EPA at this time, it appears that most sludge dryers are so equipped. (Those sludge dryers that are not so designed may still be considered tanks, but a case-by-case decision must be made.) The Agency has also determined that other types of equipment not obviously meeting the "tank" definition, such as presses, filters, sumps, and other types of processing equipment, are covered within the meaning of the term "tank" or "tank system" when used in the context of this exclusion (see OSWER Policy Directive 9503.52-1A).

Another reason that the regulatory status of sludge dryers has been the subject of many questions may be because some sludge dryers technically meet the current definition of an "incinerator," although EPA never intended to regulate direct-flame (or nonflame) sludge dryers as incinerators. When EPA amended the definition of "incinerator" to use physical design criteria rather than a primary purpose test (i.e., purpose of burning) to define an incinerator, it did not intend to bring sludge dryers under regulatory control as incinerators. (See 50 FR 625, January 4, 1985, indicating that the revised definition would not bring large numbers of devices other than incinerators under incinerator standards.) Under the former primary purpose definition, sludge dryers were not incinerators. Although under the 1985 revised definition of incinerator sludge dryers could be classified as incinerators, this was not EPA's intention. The Agency is clarifying this ambiguity by clearly regulating all nonexempt sludge dryers (i.e., those not meeting the definition of "wastewater treatment unit" under today's rule, as discussed below) under the interim status standards of part 265, subpart P ("Thermal Treatment"), and the permit standards of part 264, subpart X ("Miscellaneous Units"). See 55 FR 17866 (April 27, 1990) for details. Given that such units managing hazardous waste always were subject to some type of regulation, they are not newly eligible for interim status as a result of today's clarification.

Even though as a result of this amendment sludge dryers are potentially subject to regulation under subpart P of part 265 and subpart X of part 264 as other thermal treatment units, sludge dryers that meet the § 260.10 definitions of "wastewater treatment unit" and "tank" or "tank system" continue to be exempt wastewater treatment units under §§ 264.1(g)(6) and 265.1(c)(10). The Agency believes that virtually all sludge dryers meet the tank/tank system definition and, therefore, would be exempt when used as part of a wastewater treatment system.

A. July 1990 Proposal

To better clarify the regulatory status of sludge dryers, the Agency proposed on July 18, 1990 (55 FR 29280) a definition for "sludge dryer" to clearly distinguish them from other thermal treatment units: Sludge dryer means any enclosed thermal treatment device that is used to dehydrate sludge and that has a maximum total thermal input of 1,500 Btu/lb of sludge treated on a wet-weight basis.

In the same notice, the Agency also proposed to amend the definition of a wastewater treatment unit to say that sludge dryers were the only thermal treatment devices (heretofore) meeting the definition of a wastewater treatment unit that were exempt from regulation.

Today's rule clarifies that sludge dryers meeting the definition of a wastewater treatment unit are exempt from regulation (by promulgating a definition of sludge dryer and revising the definition of incinerator to exclude sludge dryers). EPA also proposed a further clarification that other devices that use heat to treat wastewaters were not to be considered eligible for the wastewater treatment tank exemption. The Agency indicated, without discussion, that it had not intended for such units to be eligible for the exemption and that the proposal was a simple clarification which reflected common understanding within the Agency and the regulated community.

[93] We note that sludge dryers that are a part of a wastewater treatment facility that is subject to regulation under either section 402 or 307(b) of the Clean Water Act and that *do not* meet the definition of a tank system are subject to RCRA regulation as thermal treatment units, just like sludge dryers that are not a part of a wastewater treatment system.

Commenters disagreed with this assessment of the regulations, and the Agency has since studied the issue in more depth. It appears that the Agency was mistaken in its assessment both of the current intended scope of the rule and of common understanding of what the rule covers. With respect to such devices as evaporators and steam strippers used in wastewater treatment, the Agency has in fact traditionally regarded such units as eligible for the wastewater treatment exemption. See 55 FR at 25467 (June 21, 1990). Commenters likewise indicated their understanding that current rules exempt such devices.

Given the narrow scope of the proposal, the clear indication that any change would not be a clarification of existing rules (as indicated) but rather a potentially far-reaching alteration, and the absence of any discussion (or study) of whether a substantive change in regulatory status of these devices is warranted, EPA cannot go forward. Consequently, we are not adopting any other part of the definition of wastewater treatment unit discussed in the 1990 notice.

B. Summary of Public Comments

EPA received comments regarding the status of sludge dryers in response to the April 27, 1990 BIF notice and the July 18, 1990 notice discussed above.

Many of the commenters to these notices supported the inclusion of sludge dryers in the wastewater treatment unit (WWTU) definition. The commenters, however, requested clarification on whether units similar to sludge dryers (e.g., evaporators) would also be eligible for the WWTU exclusion. As discussed above, other devices using heat that meet the definition of wastewater treatment unit would continue to be exempt from RCRA regulation (except, of course, an incinerator, boiler, or industrial furnace burning hazardous waste).

Eleven commenters to these proposals stated that the maximum 1,500 Btu/lb thermal input requirement in the sludge dryer definition is too low. Citing low thermal efficiencies (especially for indirect-fired dryers), these commenters recommended thermal input requirements ranging from 1,700 to 3,300 Btu/lb.

After consideration of the commenters' concerns and further review of the technical background information on the thermal input limit, the Agency is today revising the thermal input limit to 2,500 Btu/lb wet sludge. The Agency believes that depending on the nature of the treatment system, the thermal input to a *bona fide* sludge dryer (i.e., a device that is not an incinerator) can be as high as 2,500 Btu/lb.

Several commenters also requested that EPA clarify that the total thermal input limit was not to include the heating value of the sludge itself given that a number of sludges that are dried have as-fired heating values of 1,000 to 2,700 Btu/lb. The Agency agrees. The final rule explicitly excludes the heating value of the sludge from the 2,500 Btu/lb limit on thermal input. With this clarification, however, we note that the primary purpose test—dehydration—is the primary distinction between a sludge dryer and an incinerator. This is because a sludge incinerator can readily meet the thermal heat input limit of 2,500 Btu/lb when the heating value of the sludge itself is not included. However, the primary purpose of a sludge dryer is dehydration while the primary purpose of an incinerator is volume reduction to produce an ash residue. Thus, we believe that the definition in today's rule adequately distinguishes between sludge dryers and incinerators. Nevertheless, it should be noted that any person claiming the wastewater treatment unit exemption for a sludge dryer must have documentation to support that the primary purpose of the device is to dehydrate sludge, not to destroy sludge to produce an ash residue.

The Agency received many responses to its request for comments on whether it is necessary to specify a minimum percent volume reduction in the definition of a sludge dryer. Although one commenter stated that a percent volume reduction should be specified in the sludge dryer definition, twelve of the commenters stated that such a requirement would be arbitrary, confusing, unworkable, and costly to enforce. Two of the commenters stated that a minimum percent weight reduction would be more appropriate. In today's rule, the Agency has decided not to specify a minimum percent volume (or weight) reduction in the definition of a sludge dryer. The Agency believes that such a specification would be difficult to support and would not be needed to distinguish sludge dryers from incinerators.

Several commenters stated that the Agency should address emissions of volatile organics from units such as sludge dryers. In addition, two commenters recommend a 1,000 Btu/lb thermal input limit for the device to control volatile emissions from sludge dryers. EPA recognizes the need to address volatile emissions from sludge dryers and intends to evaluate alternatives for regulating these units at a later date. However, because this rule simply clarifies that EPA intended for sludge dryers that meet the definition of a wastewater treatment unit to be exempt from the RCRA rules, it would be inappropriate to address volatile organic emissions at this time. Nonetheless, sludge dryers that do not meet the definition of a wastewater treatment unit (e.g., sludge dryers that are not a part of a wastewater treatment facility that is subject to regulation under either section 402 or 307(b) of the Clean Water Act) are subject to regulation as thermal treatment units under subpart X of part 264. Under those standards, the Agency may apply controls on volatile organic (and other) emissions as necessary to protect human health and the environment.

After considering comments on the proposed sludge dryer definition, EPA is today promulgating the following definitions:

Sludge dryer means any enclosed thermal treatment device that is used to dehydrate sludge and that has a maximum total thermal input, excluding the heating value of the sludge itself, of 2,500 Btu/lb of sludge treated on a wet-weight basis.

Incinerator means any enclosed device that: (1) uses controlled flame combustion and neither meets the criteria for classification as a boiler, carbon regeneration unit, or a sludge dryer, nor is listed as an industrial furnace; or (2) meets the definition of infrared incinerator or plasma arc incinerator.

III. Classification of Coke and By-Product Coal Tar

A. AISI Petition

The American Iron and Steel Institute (AISI) petitioned EPA with respect to the practice of recycling tar decanter sludge by the following means:

1. Applying the sludge to coal prior to or just after charging the coal into the coke oven; and

2. Combining the sludge with coal tar prior to its being sold.

The coke and the coal tar are often used as fuel and so have been classified as solid wastes and hazardous wastes since they are fuels produced or otherwise containing a hazardous waste—EPA Hazardous Waste No. K087, tar decanter sludge. See § 261.2(c)(2)(i)(B). These hazardous waste fuels have been exempt from regulation under § 261.6(a)(3)(vii) and 50 FR 49170–171 (November 29, 1985). The AISI has requested that EPA not classify such coke or coal tar as solid wastes. AISI submits that recycling the decanter sludge in this manner does not

nificantly affect the concentration of ic metal and organic constituents of the coke or coal tar. EPA has indicated that waste-derived fuels could be classified as products under such circumstances, "since the more waste-derived fuels from a process are like products from the same process produced by virgin materials, the less likely EPA is to classify the waste-derived fuel as a waste." 50 FR 49169 (Nov. 29, 1985). To support its request, the AISI submitted data on the metals and organic constituents in coke, coal tar, and tar decanter sludge both with and without sludge recycling, the data and the Agency's response are discussed below.

B. Process Description

Coke used for making iron is manufactured through the destructive distillation of coal in ovens. A typical oven holds aproximately 13 tons of coal which is heated to a temperature of about 2000°F. Generally 20 to 100 ovens are located adjacent to each other in a "coke oven battery." The destructive distillation or "coking" process takes about 15–18 hours. During that time period, about 20–35 percent of the coal is converted to coke oven gas (COG) nsisting of water vapor, tar, light oils, avy hydrocarbons, and other chemical compounds. The COG is collected from the top of the coke oven and, in most cases, sent to the by-product plant via the coke battery main. The COG is then cleaned by removing wastes and by-products prior to being burned, generally in the coke oven under-firing system. As a first step in the COG cleaning process, the coal tars, consisting of heavy hydrocarbons, are condensed from the gas. In addition, most of the particulate that escapes from the ovens is collected in the tar. This particulate is believed to consist principally of coal fines. The particulate or solids are then removed from the tar in the tar decanter. The coal tar is then burned as fuel or sold for use in various products such as roofing cement. The sludge has been listed as EPA Hazardous Waste No. K087 and is disposed of or recycled either by mixing with coal prior to being charged to the coke oven or mixing with coal tar after physical processing (grinding) prior to sale.

Approximately 8–12 gallons of tar are produced per ton of coke. In addition, approximately one pound of tar decanter sludge is produced for every 40 pounds of tar produced.

Basis for Approval of the AISI etition

The AISI submitted data from metal and organic chemical analyses for the coke, coal tar, and tar decanter sludge from four plants. The Agency reviewed these results and determined the following:

1. The recycling of tar decanter sludge by application to the coal charge does not appear to have a significant effect on the chemical composition of coke;

2. The organic chemical composition of the tar decanter sludge does not appear to be significantly different from the coal tar; and,

3. The concentration of one metal, lead, in the sludge appears to be slightly higher than in the coal tar. However, the increase does not appear to be statistically significant due to the high variability of the concentration values.

Based on the above and the fact that there is such a small quantity of sludge relative to the quantity of coke and coal tar produced by the coking process, EPA believes that sludge recycling, as described here, does not significantly affect the concentration of toxic metals and organic constituents in coal tar or coke. Furthermore, coke, coal tar, and the decanter tank tar sludge are similar materials formed in a single process and contain the same contaminants. In this circumstance, when the coke and the decanter tank tar sludge are very nearly the identical substance and, moreover, come from a single process, the Agency is warranted in exercising its discretion to determine that this management of the sludge is "not part of the waste diposal problem", and hence that the coke product is no longer a RCRA solid waste. *American Mining Congress* v. *EPA*, 907 F. 2d 1179, 1186 (D.C. Cir. 1990). Therefore, in today's rule, EPA is classifying such coke and coal tar as products, not wastes. As a result, the coke and coal tar will be excluded under 40 CFR 261.4 from the definition of solid waste and not subject to RCRA hazardous waste management regulations, when used as a fuel. A necessary corollary to this action is also to exclude the coking process from regulation when K087 is used as an ingredient to produce coke. Given that K087 is for practical purposes just like other materials used to produce coke and comes the the same process as these other materials, it would be anomalous to assert RCRA control over the coking process. Again, this form of sludge management—which is the same as raw material management—does not appear to EPA to be part of the waste disposal problem.[84] (In addition, coke ovens are subject to a special regulatory regime under amended section 112(i)(8) of the Clean Air Act, and RCRA regulation of this particular practice could disrupt the Clean Air Act regulatory scheme. Thus, the Agency views RCRA regulation of this practice as inappropriate in any case.)

This exemption applies only to the waste-derived fuels and only when derived from tar decanter sludge, K087. Thus the tar decanter sludge, K087, is subject to full RCRA regulation prior to recycling. In addition, the exemption does not extend to coke or coal tar produced from hazardous waste (e.g., spent solvents) other than tar decanter sludge, EPA Hazardous Waste K087.

IV. Regulation of Landfill Gas

In the November 29, 1985 final rules regulating hazardous waste burned for energy recovery, the Agency indicated that gas recovered from hazardous waste landfills that is burned for energy recovery in boilers or industrial furnaces is not regulated under the waste-as-fuel rules. 50 FR 49171. EPA took this action in order to study further the extent to which there might be jurisdictional limits on the Agency's authority under section 3004(n) of RCRA to regulate gaseous emissions from hazardous waste. *Id.* In today's rule, we are amending this language slightly by indicating that the exemption also applies to gas recovered from solid waste landfills. Therefore, gas recovered from a solid waste landfill that exhibits a hazardous characteristic would also be exempt from today's rule when burned for energy recovery in a boiler and industrial furnace.

In addition, the Agency solicited comment, in the May 6, 1987 proposed rule, on whether the hydrocarbon phase of the condensate removed from recovered gas should also be exempt from regulation when burned as fuel (52 FR 17021). Two commenters responded that the condensate contains chemical constituents similar to fossil fuels such as kerosene or gasoline and that the handling and burning of the gas condensate poses no significant hazard to human health. The commenters encouraged the Ageny not to regulate the hydrocarbon phase of the landfill gas condensate unless the hydrocarbons exhibit a subtitle C characteristic of a hazardous waste. However, data on condensate composition provided by one respondent was vague and represented only one source of condensate. Absent adequate data EPA

[84] The Agency is not aware of any other hazardous wastes that are burned in coke ovens as an ingredient that are just like other materials used to produce coke. If such materials are used, the Agency would encourage the industry to provide the necessary information in order to determine whether the exclusion should be modified.

's not promulgating an exemption from egulation of the hydrocarbon phase of the landfill gas condensate at this time. Facilities that wish to burn a landfill gas condensate may consider whether they are eligible for the small quantity burner exemption promulgated in this rule.

V. Definitions of Infrared and Plasma Arc Incinerators

Today's rule establishes definitions for infrared and plasma arc incinerators and revises the definition of incinerator to explicitly include these devices. As discussed in the April 27, 1990 proposed amendments to the incinerator standards (55 FR at 17869–70), EPA is clarifying that these devices are incinerators rather than (other) thermal treatment units subject to regulation under subpart X of part 264 (or subpart P of part 265 for interim status units) because: (1) although these devices use nonflame sources of thermal energy to treat waste in the primary chamber, they invariably employ controlled flame afterburners to combust hydrocarbons driven off by the primary process (and, thus, they meet the definition of an "incinerator" under § 260.10); and (2) the incinerator standards are workable and protective for these units.

We note that today's action merely .arifies the regulatory status of these devices. It does not subject them to regulation for the first time; they have been regulated since 1980. Thus, interim status is not reopened for these devices.

Part Five: Administrative, Economic, and Environmental Impacts, and List of Subjects

I. 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 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, .d EPA could not issue permits for any .acilities 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 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 achieve or retain final authorization, the HSWA applies in authorized States in the interim.

The majority of today's rule is promulgated pursuant to section 3004(q) of RCRA, a provision added by HSWA. (The provisions that are not promulgated pursuant to HSWA are the provisions for sludge dryers, carbon regeneration units, infrared incinerators, and plasma arc incinerators.) Therefore, the Agency is adding the requirements (except the non-HSWA provisions) 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.

B. Effect on State Authorizations

As noted above, EPA will implement the majority of the provisions of today's rule in authorized States until they modify their programs to adopt these rules and the modification is approved by EPA. Because these provisions of the rules are 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, for these provisions 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 § 271.24(c).)

The provisions of today's rule that are not promulgated pursuant to HSWA—provisions for sludge dryers, carbon regeneration units, infrared incinerators, and plasma are incinerators—are not effective in authorized States. Thus, these requirements will be applicable only in those States that do not have final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

40 CFR 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. The deadline by which the State must modify its program to adopt the HSWA portion of today's rule is July 1, 1993 if a statutory change is not needed, or July 1, 1994 if a statutory change is needed. The deadline by which the State must modify its program to adopt the non-HSWA portion of today's rule is July 1, 1992 if a statutory change in not needed, or July 1, 1993 if a 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 for the HSWA portion of today's rule, 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 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 deadlines 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. 40 CFR 271.3 sets forth the requirements a State

must meet when submitting its final authorization application.

II. Regulatory Impacts

A. Cost Analysis

1. Background

Prior to publication of the proposed regulations in May 1987, the Agency examined the projected compliance costs, economic impacts, and risk reductions associated with the proposed rules. This effort consisted of a detailed examination of the pre-proposal draft as it was drafted in mid-1986 and a supplement prepared in late 1986 [95] that examined several changes in tax policy and regulatory approach that occurred after the first analysis was completed.[96]

The analyses estimated that of the approximately 1,000 BIFs identified as firing hazardous wastes, approximately 20 percent were likely to discontinue burning hazardous wastes because of the rules, 60 percent would burn small amounts of waste and would qualify for the small quantity burner exemption (SQBE), and the remaining 15 percent would obtain full permits. Because the final 15 percent of devices represent large facilities, however, the impact on the total quantity of waste burned would be small. For example, under the "base case" scenario, although 20 percent of the devices would discontinue burning hazardous wastes and a number of other devices would reduce the quantity of hazardous waste they combust in order to qualify for the SQBE, only 3 percent of the quantity of waste combusted in the absence of regulations would be diverted to other devices. The mid-1986 analysis estimated that under this scenario, the aggregate after-tax cost of compliance to individual firms would be $5.2 million per year and that the before-tax social cost would be $8.2 million per year. Under other sets of assumptions (i.e., other scenarios), these costs were likely to be higher, but in all cases were estimated to be less than $100 million per year.

Based on these analyses, the Agency concluded that the total social costs, impact on market competition, and the impact on small businesses were such that the proposed regulations did not constitute a major rule, and that a formal Regulatory Impact Analysis as described in Executive Order 12291 was not required.

A number of comments on the economic analysis were received from affected businesses and other groups. Most of these commenters contended that the cost of compliance had been underestimated by the Agency. Based on these comments, as well as changes made in the final regulation compared to the proposed requirements, the Agency has reexamined and updated the earlier analyses.

2. Revised Cost Analysis

As indicated earlier, there have been a number of changes made in the regulations that are expected to increase the cost of compliance. In addition, the Federal tax code was changed in late 1986, the cost of goods and services to the economy as a whole has increased due to inflation, and the estimated cost of specific requirements associated with the BIF regulations have been reexamined. The new analysis focused on assessing the impact of changes in compliance costs on typical facilities, and did not reexamine the impact of these changes on the selection of regulatory options by individual facilities. In addition, no effort was made to explicitly examine the impact of the final rules on the economic competitiveness of individual firms or industries, nor on the reduction in public health risks.

The primary changes that have occurred in the regulations subsequent to proposal have been revised requirements for continuous emission monitoring of CO and HC; addition of the PM standard, interim status compliance procedures, and limits on emissions of several additional metals and Cl_2; and increases in recordkeeping, sampling, and analysis requirements. The impact of these changes plus the impact of tax code changes and inflation on the before- and after-tax costs of the BIF regulations are summarized in Table 1. When combined with the original "base case" cost estimates prepared in 1986, the revised cost estimate for the promulgated rule is $15.2 million per year before taxes and $10.3 million per year after-taxes.

The increased cost for CO and HC monitoring reflects the costs for installation of a more comprehensive CO monitoring system than was originally estimated and the cost of installing HC monitors on an estimated 20 devices (primarily cement kilns) that will operate under the Tier II CO and HC limits. The zero cost increase associated with the PM emission standard reflects the expectation that BIFs complying with the metals standards will achieve the 0.08 gr/dscf standard, and that most existing industrial furnaces and some boilers are already subject to this emission level (or a more stringent level) as the result of State Implementation Plans or New Source Performance Standards. As a result, no incremental increase for compliance with the PM emission limit is projected.

The additional costs for interim status compliance reflects the increase in annualized costs (over a 10 year period) for preparation of the precompliance and compliance certification packages (including compliance testing) by approximately 150 BIFs. The additional cost for the Cl_2 standard is based on the incremental cost of analysis for Cl_2 beyond that already required to determined HCl emissions.

The increase in annual recordkeeping, sampling, and analysis costs reflects a reassessment of the estimated costs in the 1986 analysis. These increased costs reflect a before-tax increase of approximately $2.4 million for recordkeeping and $0.6 million for sampling and analysis.

The impact of the 1986 tax code changes was to reduce the marginal tax rate imposed on before-tax profits and, thus, has the affect of increasing the impact of compliance costs on after-tax profits. As a result, the change in the 1986 tax code is to increase the after-tax cost of the regulations by an estimated $0.6 million per year. The increase in costs due to inflation reflects an estimated increase in compliance cost of 20 percent between the time of the initial analysis (based on 1985 dollars) and 1990.

TABLE 1

Cost element	Before taxes	After taxes	Note
CO and HC Monitoring	1,930,000	1,200,000	1
PM Standard	0	0	2
Interim Status Compliance	980,000	590,000	3
Cl_2 Standards	30,000	20,000	4
Recordkeeping/Sampling & Analysis	3,050,000	1,700,000	5
Tax Code Changes	0	600,000	6
Inflation	1,640,000	980,000	7
Total	7,630,000	5,090,000	

Notes:
1. Based on installing 20 CO monitors using capital and O&M costs from the revised ICR.
2. No incremental costs because BIFs already meet standard by meeting metals limits and existing SIP and NSPS limits.
3. Assumes all not small quantity burner BIFs submit precompliance and compliance certification packages, 50% of BIFs submit a revised certification of precompliance, and 75% of compliance test can be used in lieu of the trial burn to obtain an operating permit, thus reducing the cost of the Part B permit.

[95] U.S. EPA, "Regulatory Analysis for Waste-As-Fuel Technical Standards", Draft Report, October 1986.

[96] U.S. EPA, "Effects of Recent Changes on the Estimated Costs and Benefits of the Proposed Waste As Fuel Technical Standards", January 1987.

4. Assumes all BIFs complying with emissions limits (and not Tier I feed rate limits) conduct C_l testing during compliance certification and trial burn tests ($165/sample).

5. Increases waste sampling and analysis costs over those estimated at proposal for all non-small quantity burners by $300/month. Provides an additional 16 hours per month for all non-small quantity burners and 2 hours per month for small quantity burners for additional recordkeeping.

6. The 1986 revisions to the Federal tax code reduced the Federal marginal tax rate (MTR) from 48% to 34%. The 1986 analysis assumed a MTR of 50% (48% Federal plus 2% State). The revised analysis assumes a MTR of 40% (34% Federal plus 6% State).

7. Adjustment for 20% inflation between 1985 and 1990 ($8.2 million before tax cost estimate in 1985 dollars, adjusted to after-tax basis assuming a marginal tax rate of 40%.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) requires Federal regulatory agencies to evaluate the impacts of regulations on small entities. The RFA requires an initial screening analysis to determine whether the proposed rule will have a significant impact on a substantial number of small businesses. As indicated at proposal (52 FR 17030), the Agency estimates that a substantial number of small entities will not be significantly impacted by the rule. Although the Agency estimates that changes to the rule since proposal and re-evaluation of some cost estimates made during the initial impact analysis will result in a higher cost to the regulated industry, the Agency continues to believe that a substantial number of small entities will not be significantly impacted by the rule.

C. Paperwork Reduction Act

The information collection requirements in this rule have been submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act* 44 U.S.C. 3501 *et seq.*, and assigned OMB Control number 2050–0073.

III. List of Subjects in 40 CFR Parts 260, 261, 264, 265, 266, 270, and 271

Administrative practices and procedures, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Insurance, Incorporation by reference, Intergovernmental relations, Packaging and containers, Penalties, Recycling, Reporting and recordkeeping requirements, Security measures, Security bonds, Water pollution control, Water supply.

Dated: December 31, 1990.

F. Henry Habicht II,

Deputy Administrator and Acting Administrator.

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

I. In part 260:

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.

2. Section 260.10 is amended by: (1) revising the introductory text; (2) revising the definition of "incinerator"; (3) amending the definition of "industrial furnace" by revising the introductory text and redesignating paragraph (12) as (13) and by adding new paragraph (12); and (4) adding, in alphabetical order, definitions for "carbon regeneration unit", "infrared incinerator", "plasma arc incinerator" and "sludge dryer" to read as follows:

§ 260.10 Definitions.

When used in parts 260 through 266 and 268 of this chapter, the following terms have the meanings given below:

* * * * *

Carbon regeneration unit means any enclosed thermal treatment device used to regenerate spent activated carbon.

* * * * *

Incinerator means any enclosed device that:

(1) Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace; or

(2) Meets the definition of infrared incinerator or plasma arc incinerator.

* * * * *

Industrial furnace means any of the following enclosed devices that are integral components of manufacturing processes and that use thermal treatment to accomplish recovery of materials or energy:

* * * * *

(12) Halogen acid furnaces (HAFs) for the production of acid from halogenated hazardous waste generated by chemical production facilities where the furnace is located on the site of a chemical production facility, the acid product has a halogen acid content of at least 3%, the acid product is used in a manufacturing process, and, except for hazardous waste burned as fuel, hazardous waste fed to the furnace has a minimum halogen content of 20% as-generated.

* * * * *

Infrared incinerator means any enclosed device that uses electric powered resistance heaters as a source of radiant heat and which is not listed as an industrial furnace.

* * * * *

Plasma arc incinerator means any enclosed device using a high intensity electrical discharge or arc as a source of heat and which is not listed as an industrial furnace.

* * * * *

Sludge dryer means any enclosed thermal treatment device that is used to dehydrate sludge and that has a maximum total thermal input, excluding the heating value of the sludge itself, of 2,500 Btu/lb of sludge treated on a wet-weight basis.

* * * * *

3. Paragraph (a) of § 260.11 is amended by adding to the first listing the following reference in alphabetical order:

§ 260.11 References.

(a) * * *

U.S. EPA, *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources*, August 1988, Available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487–4600. The document number is PB89–159–396.

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

II. In part 261:

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 261.2 is amended by redesignating paragraph (d)(2) as (d)(3) and adding new paragraph (d)(2) to read as follows:

§ 261.2 Definition of solid waste.

* * * * *

(d) * * *

(2) Secondary materials fed to a halogen acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste as defined in subparts C or D of this part.

3. Section 261.4 is amended by adding paragraph (a)(10) and revising paragraphs (b)(4), the first sentence of (b)(7), and (b)(8) to read as follows:

§ 261.4 Exclusions.

(a) * * *

(10) When used as a fuel, coke and coal tar from the iron and steel industry that contains or is produced from decanter tank tar sludge, EPA Hazardous Waste K087. The process of producing coke and coal tar from such decanter tank tar sludge in a coke oven is likewise excluded from regulation.

(b) * * *

(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, generated primarily from

the combustion of coal or other fossil fuels, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

• • • • •

(7) Solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock and overburden from the mining of uranium ore), except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

• • •

(8) Cement kiln dust waste, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

• • • • •

4. Section 261.6 is amended by removing paragraph (a)(3)(vii) and redesignating paragraphs (a)(3) (viii) and (ix) as (a)(3) (vii) and (viii) respectively.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

III. In part 264:

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 264.112 is amended by revising paragraph (d)(1) to read as follows:

§ 264.112 Closure of plan; amendment of plan.

• • • • •

(d) *Notification of partial closure and final closure.* (1) The owner or operator must notify the Regional Administrator in writing at least 60 days prior to the date on which he expects to begin closure of a surface impoundment, waste pile, land treatment or landfill unit, or final closure of a facility with such a unit. The owner or operator must notify the Regional Administrator in writing at least 45 days prior to the date on which he expects to begin final closure of a facility with only treatment or storage tanks, container storage, or incinerator units to be closed. The owner or operator must notify the Regional Administrator in writing at least 45 days prior to the date on which he expects to begin partial or final closure of a boiler or industrial furnace, whichever is earlier.

• • • • •

3. Section 264.340 is amended by revising paragraph (a) to read as follows:

§ 264.340 Applicability.

(a) The regulations of this subpart apply to owners and operators of hazardous waste incinerators (as defined in § 260.10 of this chapter), except as § 264.1 provides otherwise.

• • • • •

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

IV. In part 265:

1. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

2. Section 265.112 is amended by revising paragraphs (a), (d)(1), and (d)(2) to read as follows:

§ 265.112 Closure plan; amendment of plan.

(a) *Written plan.* By May 19, 1981, or by six months after the effective date of the rule that first subjects a facility to provisions of this section, the owner or operator of a hazardous waste management facility must have a written closure plan. Until final closure is completed and certified in accordance with § 265.115, a copy of the most current plan must be furnished to the Regional Administrator upon request, including request by mail. In addition, for facilities without approved plans, it must also be provided during site inspections, on the day of inspection, to any officer, employee, or representative of the Agency who is duly designated by the Administrator.

• • • • •

(d) *Notification of partial closure and final closure.* (1) The owner or operator must submit the closure plan to the Regional Administrator at least 180 days prior to the date on which he expects to begin closure of the first surface impoundment, waste pile, land treatment, or landfill unit, or final closure if it involves such a unit, whichever is earlier. The owner or operator must submit the closure plan to the Regional Administrator at least 45 days prior to the date on which he expects to begin partial or final closure of a boiler or industrial furnace. The owner or operator must submit the closure plan to the Regional Administrator at least 45 days prior to the date on which he expects to begin final closure of a facility with only tanks, container storage, or incinerator units. Owners or operators with approved closure plans must notify the Regional Administrator in writing at least 60 days prior to the date on which he expects to begin closure of a surface impoundment, waste pile, landfill, or land treatment unit, or final closure of a facility involving such a unit. Owners or operators with approved closure plans must notify the Regional Administrator in writing at least 45 days prior to the date on which he expects to begin partial or final closure of a boiler or industrial furnace. Owners or operators with approved closure plans must notify the Regional Administrator in writing at least 45 days prior to the date on which he expects to begin final closure of a facility with only tanks, container storage, or incinerator units.

(2) Except for boilers and industrial furnaces that operate under interim status as specified by § 266.103(c)(7)(i)(B) or (C), the date when he "expects to begin closure" must be either within 30 days after the date on which any hazardous waste management unit receives the known final volume of hazardous wastes, or, if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous waste. If the owner or operator of a hazardous waste management unit can demonstrate to the Regional Administrator that the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes and he has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all interim status requirements, the Regional Administrator may approve an extension to this one-year limit. For boilers and industrial furnaces that operate under interim status as specified by § 266.103(c)(7)(i)(B) or (C), the date when he "expects to begin closure" must be within 30 days after failure to submit a complete certification of compliance by the applicable deadline under § 266.103(c)(7)(i)(B) or (C).

• • • • •

3. Section 265.113 is amended by revising paragraphs (a), introductory text, and (b), introductory text, to read as follows:

§ 265.113 Closure; time allowed for closure.

(a) Within 90 days after receiving the final volume of hazardous wastes at a hazardous waste management unit or facility, or within 90 days after approval of the closure plan, whichever is later, or, for a boiler or industrial furnace that does not submit a complete certification

of compliance by the applicable deadline under § 266.103(c)(7)(i) (B) or (C), within 90 days after the applicable deadline, the owner or operator must treat, remove from the unit or facility or dispose of on-site, all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if the owner or operator demonstrates that:

* * * * *

(b) The owner or operator must complete partial or final closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of hazardous wastes at the hazardous waste management unit or facility, or 180 days after approval of the closure plan, if that is later, or, for a boiler or industrial furnace that does not submit a complete certification of compliance by the applicable deadline under § 266.103(c)(7)(i) (B) or (C), within 180 days after the applicable deadline. The Regional Administrator may approve an extension to the closure period if the owner or operator demonstrates that:

* * * * *

4. Section 265.340 is amended by revising paragraph (a) to read as follows:

§ 265.340 Applicability.

(a) The regulations of this subpart apply to owners and operators of hazardous waste incinerators (as defined in § 260.10 of this chapter), except as § 265.1 provides otherwise.

* * * * *

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

V. In part 266:

1. The authority citation for part 266 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3014 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6924, and 6934).

2. Subpart D is hereby removed and reserved and subpart H is added to read as follows:

Subpart H—Hazardous Waste Burned in Boilers and Industrial Furnaces

Sec.

266.100 Applicability.
266.101 Management prior to burning.
266.102 Permit standards for burners.
266.103 Interim status standards for burners.
266.104 Standards to control organic emissions.
266.105 Standards to control particulate matter.
266.106 Standards to control metals emissions.
266.107 Standards to control hydrogen chloride (HCl) and chlorine gas (Cl_2) emissions.
266.108 Small quantity on-site burner exemption.
266.109 Low risk waste exemption.
266.110 Waiver of DRE trial burn for boilers.
266.111 Standards for direct transfer.
266.112 Regulation of residues.

§ 266.100 Applicability.

(a) The regulations of this subpart apply to hazardous waste burned or processed in a boiler or industrial furnace (as defined in § 260.10 of this chapter) irrespective of the purpose of burning or processing, except as provided by paragraphs (b), (c), and (d) of this section. In this subpart, the term "burn" means burning for energy recovery or destruction, or processing for materials recovery or as an ingredient. The emissions standards of §§ 266.104, 266.105, 266.106, and 266.107 apply to facilities operating under interim status or under a RCRA operating permit as specified in §§ 266.102 and 266.103.

(b) The following hazardous wastes and facilities are not subject to regulation under this subpart:

(1) Used oil burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in subpart C of part 261 of this chapter. Such used oil is subject to regulation under subpart E of part 266 rather than this subpart;

(2) Gas recovered from hazardous or solid waste landfills when such gas is burned for energy recovery.

(3) Hazardous wastes that are exempt from regulation under §§ 261.4 and 261.6(a)(3) (v–viii) of this chapter, and hazardous wastes that are subject to the special requirements for conditionally exempt small quantity generators under § 261.5 of this chapter.

(4) Coke ovens, if the only hazardous waste burned is EPA Hazardous Waste No. K087, decanter tank tar sludge from coking operations.

(c) Owners and operators of smelting, melting, and refining furnaces (including pyrometallurgical devices such as cupolas, sintering machines, roasters, and foundry furnaces, but not including cement kilns, aggregate kilns, or halogen acid furnaces burning hazardous waste) that process hazardous waste solely for metal recovery are conditionally exempt from regulation under this subpart, except for §§ 266.101 and 266.112.

(1) To be exempt from §§ 266.102 through 266.111, an owner or operator must:

(i) Provide a one-time written notice to the Director indicating the following:

(A) The owner or operator claims exemption under this paragraph;

(B) The hazardous waste is burned solely for metal recovery consistent with the provisions of paragraph (c)(2) of this section;

(C) The hazardous waste contains recoverable levels of metals; and

(D) The owner or operator will comply with the sampling and analysis and recordkeeping requirements of this paragraph;

(ii) Sample and analyze the hazardous waste and other feedstocks as necessary to comply with the requirements of this paragraph under procedures specified by Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW–846, incorporated by reference in § 260.11 of this chapter; and

(iii) Maintain at the facility for at least three years records to document compliance with the provisions of this paragraph including limits on levels of toxic organic constituents and Btu value of the waste, and levels of recoverable metals in the hazardous waste compared to normal nonhazardous waste feedstocks.

(2) A hazardous waste meeting either of the following criteria is not processed solely for metal recovery:

(i) The hazardous waste has a total concentration of organic compounds listed in part 261, appendix VIII, of this chapter exceeding 500 ppm by weight, as-generated, and so is considered to be burned for destruction; or

(ii) The hazardous waste has a heating value of 5,000 Btu/lb or more, as-generated or as-fired into the furnace, and so is considered to be burned as fuel.

(d) The standards for direct transfer operations under § 266.111 apply only to facilities subject to the permit standards of § 266.102 or the interim status standards of § 266.103.

(e) The management standards for residues under § 266.112 apply to any boiler or industrial furnace burning hazardous waste.

(Approved by the Office of Management and Budget under control number 2050–0073)

§ 266.101 Management prior to burning.

(a) *Generators.* Generators of hazardous waste that is burned in a boiler or industrial furnace are subject to part 262 of this chapter.

(b) *Transporters.* Transporters of hazardous waste that is burned in a

boiler or industrial furnace are subject to part 263 of this chapter.

(c) *Storage facilities.* (1) Owners and operators of facilities that store hazardous waste that is burned in a boiler or industrial furnace are subject to the applicable provisions of subparts A through L of part 264, subparts A through L of part 265, and part 270 of this chapter, except as provided by paragraph (c)(2) of this section. These standards apply to storage by the burner as well as to storage facilities operated by intermediaries (processors, blenders, distributors, etc.) between the generator and the burner.

(2) Owners and operators of facilities that burn, in an on-site boiler or industrial furnace exempt from regulation under the small quantity burner provisions of § 266.108, hazardous waste that they generate are exempt from regulation under subparts A through L of part 264, subparts A through L of part 265, and part 270 of this chapter with respect to the storage of mixtures of hazardous waste and the primary fuel to the boiler or industrial furnace in tanks that feed the fuel mixture directly to the burner. Storage of hazardous waste prior to mixing with the primary fuel is subject to regulation as prescribed in paragraph (c)(1) of this section.

§ 266.102 Permit standards for burners.

(a) *Applicability*—(1) *General.* Owners and operators of boilers and industrial furnaces burning hazardous waste and not operating under interim status must comply with the requirements of this section and §§ 270.22 and 270.66 of this chapter, unless exempt under the small quantity burner exemption of § 266.108.

(2) *Applicability of part 264 standards.* Owners and operators of boilers and industrial furnaces that burn hazardous waste are subject to the following provisions of part 264 of this chapter, except as provided otherwise by this subpart:

(i) In subpart A (General), 264.4;

(ii) In subpart B (General facility standards), §§ 264.11–264.18;

(iii) In subpart C (Preparedness and prevention), §§ 264.31–264.37;

(iv) In subpart D (Contingency plan and emergency procedures), §§ 264.51–264.56;

(v) In subpart E (Manifest system, recordkeeping, and reporting), the applicable provisions of §§ 264.71–264.77;

(vi) In subpart F (Corrective Action), §§ 264.90 and 264.101;

(vii) In subpart G (Closure and post-closure), §§ 264.111–264.115;

(viii) In subpart H (Financial requirements), §§ 264.141, 264.142, 264.143, and 264.147–264.151, except that States and the Federal government are exempt from the requirements of subpart H; and

(ix) Subpart BB (Air emission standards for equipment leaks), except §§ 264.1050(a).

(b) *Hazardous waste analysis.* (1) The owner or operator must provide an analysis of the hazardous waste that quantifies the concentration of any constituent identified in appendix VIII of part 261 of this chapter that may reasonably be expected to be in the waste. Such constituents must be identified and quantified if present, at levels detectable by analytical procedures prescribed by Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods (incorporated by reference, see § 260.11 of this chapter). The appendix VIII, part 261 constituents excluded from this analysis must be identified and the basis for their exclusion explained. This analysis will be used to provide all information required by this subpart and § 270.22 and § 270.66 of this chapter and to enable the permit writer to prescribe such permit conditions as necessary to protect human health and the environment. Such analysis must be included as a portion of the part B permit application, or, for facilities operating under the interim status standards of this subpart, as a portion of the trial burn plan that may be submitted before the part B application under provisions of § 270.66(g) of this chapter as well as any other analysis required by the permit authority in preparing the permit. Owners and operators of boilers and industrial furnaces not operating under the interim status standards must provide the information required by §§ 270.22 or 270.66(c) of this chapter in the part B application to the greatest extent possible.

(2) Throughout normal operation, the owner or operator must conduct sampling and analysis as necessary to ensure that the hazardous waste, other fuels, and industrial furnace feedstocks fired into the boiler or industrial furnace are within the physical and chemical composition limits specified in the permit.

(c) *Emissions standards.* Owners and operators must comply with emissions standards provided by §§ 266.104 through 266.107.

(d) *Permits.* (1) The owner or operator may burn only hazardous wastes specified in the facility permit and only under the operating conditions specified under paragraph (e) of this section, except in approved trial burns under the conditions specified in § 270.66 of this chapter.

(2) Hazardous wastes not specified in the permit may not be burned until operating conditions have been specified under a new permit or permit modification, as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with part B of a permit application under § 270.22 of this chapter.

(3) Boilers and industrial furnaces operating under the interim status standards of § 266.103 are permitted under procedures provided by § 270.66(g) of this chapter.

(4) A permit for a new boiler or industrial furnace (those boilers and industrial furnaces not operating under the interim status standards) must establish appropriate conditions for each of the applicable requirements of this section, including but not limited to allowable hazardous waste firing rates and operating conditions necessary to meet the requirements of paragraph (e) of this section, in order to comply with the following standards:

(i) For the period beginning with initial introduction of hazardous waste and ending with initiation of the trial burn, and only for the minimum time required to bring the device to a point of operational readiness to conduct a trial burn, not to exceed a duration of 720 hours operating time when burning hazardous waste, the operating requirements must be those most likely to ensure compliance with the emission standards of §§ 266.104 through 266.107, based on the Director's engineering judgment. If the applicant is seeking a waiver from a trial burn to demonstrate conformance with a particular emission standard, the operating requirements during this initial period of operation shall include those specified by the applicable provisions of § 266.104, § 266.105, § 266.106, or § 266.107. The Director may extend the duration of this period for up to 720 additional hours when good cause for the extension is demonstrated by the applicant.

(ii) For the duration of the trial burn, the operating requirements must be sufficient to demonstrate compliance with the emissions standards of §§ 266.104 through 266.107 and must be in accordance with the approved trial burn plan;

(iii) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, submission of the trial burn results by the applicant, review of

the trial burn results and modification of the facility permit by the Director to reflect the trial burn results, the operating requirements must be those most likely to ensure compliance with the emission standards §§ 266.104 through 266.107 based on the Director's engineering judgment.

(D) For the remaining duration of the permit, the operating requirements must be those demonstrated in a trial burn or by alternative data specified in § 270.22 of this chapter, as sufficient to ensure compliance with the emissions standards of §§ 266.104 through 266.107.

(e) *Operating requirements*—(1) *General.* A boiler or industrial furnace burning hazardous waste must be operated in accordance with the operating requirements specified in the permit at all times where there is hazardous waste in the unit.

(2) *Requirements to ensure compliance with the organic emissions standards*— (i) *DRE standard.* Operating conditions will be specified either on a case-by-case basis for each hazardous waste burned as those demonstrated (in a trial burn or by alternative data as specified in § 270.22) to be sufficient to comply with the destruction and removal efficiency (DRE) performance standard of § 266.104(a) or as those special operating requirements provided by § 266.104(a)(4) for the waiver of the DRE trial burn. When the DRE trial burn is not waived under § 266.104(a)(4), each set of operating requirements will specify the composition of the hazardous waste (including acceptable variations in the physical and chemical properties of the hazardous waste which will not affect compliance with the DRE performance standard) to which the operating requirements apply. For each such hazardous waste, the permit will specify acceptable operating limits including, but not limited to, the following conditions as appropriate:

(A) Feed rate of hazardous waste and other fuels measured and specified as prescribed in paragraph (e)(6) of this section;

(B) Minimum and maximum device production rate when producing normal product expressed in appropriate units, measured and specified as prescribed in paragraph (e)(6) of this section;

(C) Appropriate controls of the hazardous waste firing system;

(D) Allowable variation in boiler and industrial furnace system design or operating procedures;

(E) Minimum combustion gas temperature measured at a location indicative of combustion chamber temperature, measured and specified as prescribed in paragraph (e)(6) of this section;

(F) An appropriate indicator of combustion gas velocity, measured and specified as prescribed in paragraph (e)(6) of this section, unless documentation is provided under § 270.66 of this chapter demonstrating adequate combustion gas residence time; and

(G) Such other operating requirements as are necessary to ensure that the DRE performance standard of § 266.104(a) is met.

(ii) *Carbon monoxide and hydrocarbon standards.* The permit must incorporate a carbon monoxide (CO) limit and, as appropriate, a hydrocarbon (HC) limit as provided by paragraphs (b), (c), (d), (e) and (f) of § 266.104. The permit limits will be specified as follows:

(A) When complying with the CO standard of § 266.104(b)(1), the permit limit is 100 ppmv;

(B) When complying with the alternative CO standard under § 266.104(c), the permit limit for CO is based on the trial burn and is established as the average over all valid runs of the highest hourly rolling average CO level of each run, and the permit limit for HC is 20 ppmv (as defined in § 266.104(c)(1)), except as provided in § 266.104(f).

(C) When complying with the alternative HC limit for industrial furnaces under § 266.104(f), the permit limit for HC and CO is the baseline level when hazardous waste is not burned as specified by that paragraph.

(iii) *Start-up and shut-down.* During start-up and shut-down of the boiler or industrial furnace, hazardous waste (except waste fed solely as an ingredient under the Tier I (or adjusted Tier I) feed rate screening limits for metals and chloride/chlorine, and except low risk waste exempt from the trial burn requirements under §§ 266.104(a)(5), 266.105, 266.106, and 266.107) must not be fed into the device unless the device is operating within the conditions of operation specified in the permit.

(3) *Requirements to ensure conformance with the particulate standard.* (i) Except as provided in paragraphs (e)(3) (ii) and (iii) of this section, the permit shall specify the following operating requirements to ensure conformance with the particulate standard specified in § 266.105:

(A) Total ash feed rate to the device from hazardous waste, other fuels, and industrial furnace feedstocks, measured and specified as prescribed in paragraph (e)(6) of this section;

(B) Maximum device production rate when producing normal product expressed in appropriate units, and measured and specified as prescribed in paragraph (e)(6) of this section;

(C) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

(D) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

(E) Such other operating requirements as are necessary to ensure that the particulate standard in § 266.111(b) is met.

(ii) Permit conditions to ensure conformance with the particulate matter standard shall not be provided for facilities exempt from the particulate matter standard under § 266.105(b);

(iii) For cement kilns and light-weight aggregate kilns, permit conditions to ensure compliance with the particulate standard shall not limit the ash content of hazardous waste or other feed materials.

(4) *Requirements to ensure conformance with the metals emissions standard.* (i) For conformance with the Tier I (or adjusted Tier I) metals feed rate screening limits of paragraphs (b) or (e) of § 266.106, the permit shall specify the following operating requirements:

(A) Total feed rate of each metal in hazardous waste, other fuels, and industrial furnace feedstocks measured and specified under provisions of paragraph (e)(6) of this section;

(B) Total feed rate of hazardous waste measured and specified as prescribed in paragraph (e)(6) of this section;

(C) sampling and metals analysis program for the hazardous waste, other fuels, and industrial furnace feedstocks;

(ii) For conformance with the Tier II metals emission rate screening limits under § 266.106(c) and the Tier III metals controls under § 266.106(d), the permit shall specify the following operating requirements:

(A) Maximum emission rate for each metal specified as the average emission rate during the trial burn;

(B) Feed rate of total hazardous waste and pumpable hazardous waste, each measured and specified as prescribed in paragraph (e)(6)(i) of this section;

(C) Feed rate of each metal in the following feedstreams, measured and specified as prescribed in paragraphs (e)(6) of this section:

(1) Total feed streams;

(2) Total hazardous waste feed; and

(3) Total pumpable hazardous waste feed;

(D) Total feed rate of chlorine and chloride in total feed streams measured and specified as prescribed in paragraph (e)(6) of this section;

(E) Maximum combustion gas temperature measured at a location indicative of combustion chamber temperature, and measured and specified as prescribed in paragraph (e)(6) of this section;

(F) Maximum flue gas temperature at the inlet to the particulate matter air pollution control system measured and specified as prescribed in paragraph (e)(6) of this section;

(G) Maximum device production rate when producing normal product expressed in appropriate units and measured and specified as prescribed in paragraph (e)(6) of this section;

(H) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

(I) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

(J) Such other operating requirements as are necessary to ensure that the metals standards under §§ 266.106(c) or 266.106(d) are met.

(iii) For conformance with an alternative implementation approach approved by the Director under § 266.106(f), the permit will specify the following operating requirements:

(A) Maximum emission rate for each metal specified as the average emission rate during the trial burn;

(B) Feed rate of total hazardous waste and pumpable hazardous waste, each measured and specified as prescribed in paragraph (e)(6)(i) of this section;

(C) Feed rate of each metal in the following feedstreams, measured and specified as prescribed in paragraph (e)(6) of this section:

(1) Total hazardous waste feed; and

(2) Total pumpable hazardous waste feed;

(D) Total feed rate of chlorine and chloride in total feed streams measured and specified prescribed in paragraph (e)(6) of this section;

(E) Maximum combustion gas temperature measured at a location indicative of combustion chamber temperature, and measured and specified as prescribed in paragraph (e)(6) of this section;

(F) Maximum flue gas temperature at the inlet to the particulate matter air pollution control system measured and specified as prescribed in paragraph (e)(6) of this section;

(G) Maximum device production rate when producing normal product expressed in appropriate units and measured and specified as prescribed in paragraph (e)(6) of this section;

(H) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

(I) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

(J) Such other operating requirements as are necessary to ensure that the metals standards under § 266.106(c) or 266.106(d) are met.

(5) *Requirements to ensure conformance with the hydrogen chloride and chlorine gas standards.* (i) For conformance with the Tier I total chloride and chlorine feed rate screening limits of § 266.107(b)(1), the permit will specify the following operating requirements:

(A) Feed rate of total chloride and chlorine in hazardous waste, other fuels, and industrial furnace feedstocks measured and specified as prescribed in paragraph (e)(6) of this section;

(B) Feed rate of total hazardous waste measured and specified as prescribed in paragraph (e)(6) of this section;

(C) A sampling and analysis program for total chloride and chorline for the hazardous waste, other fuels, and industrial furnace feestocks;

(ii) For conformance with the Tier II HCl and Cl_2 emission rate screening limits under § 266.107(b)(2) and the Tier III HCl and Cl_2 controls under § 266.107(c), the permit will specify the following operating requirements:

(A) Maximum emission rate for HCl and for Cl_2 specified as the average emission rate during the trial burn;

(B) Feed rate of total hazardous waste measured and specified as prescribed in paragraph (e)(6) of this section;

(C) Total feed rate of chlorine and chloride in total feed streams, measured and specified as prescribed in paragraph (e)(6) of this section;

(D) Maximum device production rate when producing normal product expressed in appropriate units, measured and specified as prescribed in paragraph (e)(6) of this section;

(E) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

(F) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

(G) Such other operating requirements as are necessary to ensure that the HCl and Cl_2 standards under § 266.107 (b)(2) or (c) are met.

(6) *Measuring paramenters and establishing limits based on trial burn data*—(i) *General requirements.* As specified in paragraphs (e)(2) through (e)(5) of this section, each operating parameter shall be measured, and permit limits on the parameter shall be established, according to either of the following procedures:

(A) *Instantaneous limits.* A parameter may be measured and recorded on an instantaneous basis (i.e., the value that occurs at any time) and the permit limit specified as the time-weighted average during all valid runs of the trial burn; or

(B) *Hourly rolling average.* (*1*) The limit for a parameter may be established and continuously monitored on an hourly rolling average basis defined as follows:

(*i*) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(*ii*) An hourly rolling average is the arithmetic means of the 60 most recent 1-minute average values recorded by the continuous monitoring system.

(2) The permit limit for the parameter shall be established based on trial burn data as the average over all valid test runs of the highest hourly rolling average value for each run.

(ii) *Rolling average limits for carcinogenic metals and lead.* Feed rate limits for the carcinogenic metals (i.e., arsenic, beryllium, cadmium and chromium) and lead may be established either on an hourly rolling average basis as prescribed by paragraph (e)(6)(i) of this section or on (up to) a 24 hour rolling average basis. If the owner or opeator elects to use an average period from 2 to 24 hours:

(A) The feed rate of each metal shall be limited at any time to ten times the feed rate that would be allowed on an hourly rolling average basis;

(B) The continuous monitor shall meet the following specifications:

(*1*) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(2) The rolling average for the selected averaging period is defined as the arithmetic mean of the most recent one hour block average for the average period. A one hour block average is the arithmetic mean of the one minute averages recorded during the 60-minute period beginning at one minute after the beginning of preceding clock hour; and

(C) The permit limit for the feed rate of each metal shall be established based on trial burn data as the average over all valid test runs of the highest hourly rolling average feed rate for each run.

(iii) *Feed rate limits for metals, total chloride and chlorine, and ash.* Feed rate limits for metals, total chlorine and chloride, and ash are established and monitored by knowing the concentration of the substance (i.e., metals, chloride/chlorine, and ash) in each feedstream and the flow rate of the feedstream. To monitor the feed rate of these substances, the flow rate of each feedstream must be monitored under the continuous monitoring requirements of paragraphs (e)(6) (i) and (ii) of this section.

(iv) *Conduct of trial burn testing.* (A) If compliance with all applicable emissions standards of §§ 266.104 through 266.107 is not demonstrated simultaneously during a set of test runs, the operating conditions of additional test runs required to demonstrate compliance with remaining emissions standards must be as close as possible to the original operating conditions.

(B) Prior to obtaining test data for purposes of demonstrating compliance with the emissions standards of §§ 266.104 through 266.107 or establishing limits on operating parameters under this section, the facility must operate under trial burn conditions for a sufficient period to reach steady-state operations. The Director may determine, however, that industrial furnaces that recycle collected particulate matter back into the furnace and that comply with an alternative implementation approach for metals under § 266.106(f), need not reach steady state conditions with respect to the flow of metals in the system prior to beginning compliance testing for metals emissions.

(C) Trial burn data on the level of an operating parameter for which a limit must be established in the permit must be obtained during emissions sampling for the pollutant(s) (i.e., metals, PM, HCl/Cl_2, organic compounds) for which the parameter must be established as specified by paragraph (e) of this section.

(7) *General requirements*—(i) *Fugitive emissions.* Fugitive emissions must be controlled by:

(A) Keeping the combustion zone totally sealed against fugitive emissions; or

(B) Maintaining the combustion zone pressure lower than atmospheric pressure; or

(C) An alternate means of control demonstrated (with part B of the permit application) to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(ii) *Automatic waste feed cutoff.* A boiler or industrial furnace must be operated with a functioning system that automatically cuts off the hazardous waste feed when operating conditions deviate from those established under this section. The Director may limit the number of cutoffs per an operating period on a case-by-case basis. In addition:

(A) The permit limit for (the indicator of) minimum combustion chamber temperature must be maintained while hazardous waste or hazardous waste residues remain in the combustion chamber,

(B) Exhaust gases must be ducted to the air pollution control system operated in accordance with the permit requirements while hazardous waste or hazardous waste residues remain in the combustion chamber; and

(C) Operating parameters for which permit limits are established must continue to be monitored during the cutoff, and the hazardous waste feed shall not be restarted until the levels of those parameters comply with the permit limits. For parameters that may be monitored on an instantaneous basis, the Director will establish a minimum period of time after a waste feed cutoff during which the parameter must not exceed the permit limit before the hazardous waste feed may be restarted.

(iii) *Changes.* A boiler or industrial furnace must cease burning hazardous waste when changes in combustion properties, or feed rates of the hazardous waste, other fuels, or industrial furnace feedstocks, or changes in the boiler or industrial furnace design or operating conditions deviate from the limits as specified in the permit.

(8) *Monitoring and Inspections.* (i) The owner or operator must monitor and record the following, at a minimum, while burning hazardous waste:

(A) If specified by the permit, feed rates and composition of hazardous waste, other fuels, and industrial furnace feedstocks, and feed rates of ash, metals, and total chloride and chlorine;

(B) If specified by the permit, carbon monoxide (CO), hydrocarbons (HC), and oxygen on a continuous basis at a common point in the boiler or industrial furnace downstream of the combustion zone and prior to release of stack gases to the atmosphere in accordance with operating requirements specified in paragraph (e)(2)(ii) of this section. CO, HC, and oxygen monitors must be installed, operated, and maintained in accordance with methods specified in appendix IX of this part.

(C) Upon the request of the Director, sampling and analysis of the hazardous waste (and other fuels and industrial furnace feedstocks as appropriate), residues, and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the applicable standards of §§ 266.104, 266.105, 266.106, and 266.107.

(ii) All monitors shall record data in units corresponding to the permit limit unless otherwise specified in the permit.

(iii) The boiler or industrial furnace and associated equipment (pumps, values, pipes, fuel storage tanks, etc.) must be subjected to thorough visual inspection when it contains hazardous waste, at least daily for leaks, spills, fugitive emissions, and signs of tampering.

(iv) The automatic hazardous waste feed cutoff system and associated alarms must be tested at least once every 7 days when hazardous waste is burned to verify operability, unless the applicant demonstrates to the Director that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate. At a minimum, operational testing must be conducted at least once every 30 days.

(v) These monitoring and inspection data must be recorded and the records must be placed in the operating record required by § 264.73 of this chapter.

(9) *Direct transfer to the burner.* If hazardous waste is directly transferred from a transport vehicle to a boiler or industrial furnace without the use of a storage unit, the owner and operator must comply with § 266.111.

(10) *Recordkeeping.* The owner or operator must keep in the operating record of the facility all information and data required by this section for not less than three years.

(11) *Closure.* At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the boiler or industrial furnace.

(Approved by the Office of Management and Budget under control number 2050-0073)

§ 266.103 Interim status standards for burners.

(a) *Purpose, scope, applicability.*—(1) *General.* (i) The purpose of this section is to establish minimum national standards for owners and operators of "existing" boilers and industrial furnaces that burn hazardous waste where such standards define the

acceptable management of hazardous waste during the period of interim status. The standards of this section apply to owners and operators of existing facilities until either a permit is issued under § 266.102(d) or until closure responsibilities identified in this section are fulfilled.

(ii) *Existing or in existence* means a boiler or industrial furnace that on or before August 21, 1991 is either in operation burning or processing hazardous waste or for which construction (including the ancillary facilities to burn to process the hazardous waste) has commenced. A facility has commenced construction if the owner or operator has obtained the Federal, State, and local approvals or permits necessary to begin physical construction; and either:

(A) A continuous on-site, physical construction program has begun; or

(B) The owner or operator has entered into contractual obligations—which cannot be canceled or modified without substantial loss—for physical construction of the facility to be completed within a reasonable time.

(iii) If a boiler or industrial furnace is located at a facility that already has a permit or interim status, then the facility must comply with the applicable regulations dealing with permit modifications in § 270.42 or changes in interim status in § 270.72 of this chapter.

(2) *Exemptions.* The requirements of this section do not apply to hazardous waste and facilities exempt under §§ 266.100(b), or 266.108.

(3) *Prohibition on burning dioxin-listed wastes.* Hazardous waste listed for dioxin or derived from any of the following dioxin-listed wastes may not be burned in a boiler or industrial furnace operating under interim status: EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027.

(4) *Applicability of part 265 standards.* Owners and operators of boilers and industrial furnaces that burn hazardous waste and are operating under interim status are subject to the following provisions of part 265 of this chapter, except as provided otherwise by this section:

(i) In subpart A (General), § 265.4;

(ii) In subpart B (General facility standards), §§ 265.11–265.17;

(iii) In subpart C (Preparedness and prevention), §§ 265.31–265.37;

(iv) In subpart D (Contingency plan and emergency procedures), §§ 265.51–265.56;

(v) In subpart E (Manifest system, recordkeeping, and reporting), §§ 265.71–265.77, except that §§ 265.71, 265.72, and 265.76 do not apply to owners and operators of on-site facilities that do not receive any hazardous waste from off-site sources;

(vi) In subpart G (Closure and post-closure), §§ 265.111–265.115;

(vii) In subpart H (Financial requirements), §§ 265.141, 265.142, 265.143, and 265.147–265.151, except that States and the Federal government are exempt from the requirements of subpart H; and

(viii) Subpart BB (Air emission standards for equipment leaks), except § 265.1050(a).

(5) *Special requirements for furnaces.* The following controls apply during interim status to industrial furnaces (e.g., kilns, cupolas) that feed hazardous waste for a purpose other than solely as an ingredient (see paragraph (a)(5)(ii) of this section) at any location other than the hot end where products are normally discharged and where fuels are normally fired:

(i) *Controls.* (A) The hazardous waste shall be fed at a location where combustion gas temperatures are at least 1800 °F;

(B) The owner or operator must determine that adequate oxygen is present in combustion gases to combust organic constituents in the waste and retain documentation of such determination in the facility record;

(C) For cement kiln systems, the hazardous waste shall be fed into the kiln; and

(D) The hydrocarbon controls of § 266.104(c) or paragraph (c)(7)(ii) of this section apply upon certification of compliance under paragraph (c) of this section irrespective of the CO level achieved during the compliance test.

(ii) *Burning hazardous waste solely as an ingredient.* A hazardous waste is burned for a purpose other than solely as an ingredient if it meets either of these criteria:

(A) The hazardous waste has a total concentration of nonmetal compounds listed in part 261, appendix VIII, of this chapter exceeding 500 ppm by weight as-generated (and, so, is considered to be burned for destruction); or

(B) The hazardous waste has a heating value of 5,000 Btu/lb or more, as-generated or as-fired (and, so, is considered to be burned as fuel).

(6) *Restrictions on burning hazardous waste that is not a fuel.* Prior to certification of compliance under paragraph (c) of this section, owners and operators shall not feed hazardous waste (other than hazardous waste burned solely as an ingredient) in a boiler or industrial furnace that has a heating value less than 5,000 Btu/lb, as-generated, except for purposes of compliance testing (or testing prior to compliance testing) for a total period of time not to exceed 720 hours.

(7) *Direct transfer to the burner.* If hazardous waste is directly transferred from a transport vehicle to a boiler or industrial furnace without the use of a storage unit, the owner and operator must comply with § 266.111.

(b) *Certification of precompliance*—(1) *General.* The owner or operator must provide complete and accurate information specified in paragraph (b)(2) of this section to the Director on or before August 21, 1991, and must establish limits for the operating parameters specified in paragraph (b)(3) of this section. Such information is termed a "certification of precompliance" and constitutes a certification that the owner or operator has determined that, when the facility is operated within the limits specified in paragraph (b)(3) of this section, the owner or operator believes that, using best engineering judgment, emissions of particulate matter, metals, and HCl and Cl_2 are not likely to exceed the limits provided by §§ 266.105, 266.106, and 266.107. The facility may burn hazardous waste only under the operating conditions that the owner or operator establishes under paragraph (b)(3) of this section until the owner or operator submits a revised certification of precompliance under paragraph (b)(8) of this section or a certification of compliance under paragraph (c) of this section, or until a permit is issued.

(2) *Information required.* The following information must be submitted with the certification of precompliance to support the determination that the limits established for the operating parameters identified in paragraph (b)(3) of this section are not likely to result in an exceedance of the allowable emission rates for particulate matter, metals, and HCl and Cl_2:

(i) General facility information:

(A) EPA facility ID number;

(B) Facility name, contact person, telephone number, and address;

(C) Description of boilers and industrial furnaces burning hazardous waste, including type and capacity of device;

(D) A scaled plot plan showing the entire facility and location of the boilers and industrial furnaces burning hazardous waste; and

(E) A description of the air pollution control system on each device burning hazardous waste, including the temperature of the flue gas at the inlet to the particulate matter control system.

(ii) Except for facilities complying with the Tier I feed rate screening limits for metals or total chlorine and chloride

provided by §§ 266.106 (b) or (e) and 266.107 (b)(1) or (e) respectively, the estimated uncontrolled (at the inlet to the air pollution control system) emissions of particulate matter, each metal controlled by § 266.106, and hydrogen chloride and chlorine, and the following information to support such determinations:

(A) The feed rate (lb/hr) of ash, chlorine, antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, thallium in each feedstream (hazardous waste, other fuels, industrial furnace feedstocks);

(B) The estimated partitioning factor to the combustion gas for the materials identified in paragraph (b)(ii)(A) of this section and the basis for the estimate and an estimate of the partitioning to HCl and Cl_2 of total chloride and chlorine in feed materials. To estimate the partitioning factor, the owner or operator must use either best engineering judgment or the procedures specified in appendix IX of this part.

(C) For industrial furnaces that recycle collected particulate matter (PM) back into the furnace and that will certify compliance with the metals emissions standards under paragraph (c)(3)(ii)(A), the estimated enrichment factor for each metal. To estimate the enrichment factor, the owner or operator must use either best engineering judgment or the procedures specified in "Alternative Methodology for Implementing Metals Controls" in appendix IX of this part.

(D) If best engineering judgment is used to estimate partitioning factors or enrichment factors under paragraphs (b)(ii)(B) or (b)(ii)(C) respectively, the basis for the judgment. When best engineering judgment is used to develop or evaluate data or information and make determinations under this section, the determinations must be made by a qualified, registered professional engineer and a certification of his/her determinations in accordance with § 270.11(d) of this chapter must be provided in the certification of precompliance.

(iii) For facilities complying with the Tier I feed rate screening limits for metals or total chlorine and chloride provided by §§ 266.106 (b) or (e) and 266.107 (b)(1) or (e), the feed rate (lb/hr) of total chloride and chlorine, antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, and thallium in each feedstream (hazardous waste, other fuels, industrial furnace feedstocks).

(iv) For facilities complying with the Tier II or Tier III emission limits for metals or HCl and Cl_2 (under §§ 266.106 (c) or (d) or 266.107(b)(2) or (c)), the estimated controlled (outlet of the air pollution control system) emissions rates of paticulate matter, each metal controlled by § 266.106, and HCl and Cl_2, and the following information to support such determinations:

(A) The estimated air pollution control system (APCS) removal efficiency for particulate matter, HCl, Cl_2, antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, and thallium.

(B) To estimate APCS removal efficiency, the owner or operator must use either best engineering judgment or the procedures prescribed in appendix IX of this part.

(C) If best engineering judgment is used to estimate APCS removal efficiency, the basis for the judgment. Use of best engineering judgment must be in conformance with provisions of paragraph (b)(2)(ii)(D) of this section.

(v) Determination of allowable emissions rates for HCl, Cl_2, antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, and thallium, and the following information to support such determinations:

(A) For all facilities:

(*1*) Physical stack height;

(*2*) Good engineering practice stack height as defined by 40 CFR 51.100(ii);

(*3*) Maximum flue gas flow rate;

(*4*) Maximum flue gas temperature;

(*5*) Attach a US Geological Service topographic map (or eqivalent) showing the facility location and surrounding land within 5 km of the facility.

(*6*) Identify terrain type: complex or noncomplex; and

(*7*) Identify land use: urban or rural.

(B) For owners and operators using Tier III site specific dispersion modeling to determine allowable levels under § 266.106(d) or § 266.107(c), or adjusted Tier I feed rate screening limits under §§ 266.106(e) or 266.107(e):

(*1*) Dispersion model and version used;

(*2*) Source of meterological data;

(*3*) The dilution factor in micrograms per cubic meter per gram per second of emissions for the maximum annual average off-site (unless on-site is required) ground level concentration (MEI location); and

(*4*) Indicate the MEI location on the map required under paragraph (b)(2)(v)(A)(*5*);

(vi) For facilities complying with the Tier II or III emissions rate controls for metals or HC1 and Cl_2, a comparison of the estimated controlled emissions rates determined under paragraph (b)(2)(iv) with the allowable emission rates determined under paragraph (b)(2)(v);

(vii) For facilities complying with the Tier I (or adjusted Tier I) feed rate screening limits for metals or total chloride and chlorine, a comparison of actual feed rates of each metal and total chlorine and chloride determined under paragraph (b)(2)(iii) of this section to the Tier I allowable feed rates; and

(viii) For industrial furnaces that feed hazardous waste for any purpose other than solely as an ingredient (as defined by paragraph (a)(5)(ii) of this section) at any location other than the product discharge end of the device, documentation of compliance with the requirements of paragraphs (a)(5)(i) (A), (B), and (C) of this section.

(ix) For industrial furnaces that recycle collected particulate matter (PM) back into the furnace and that will certify compliance with the metals emissions standards under paragraph (c)(3)(ii) (A) of this section:

(A) The applicable particulate matter standard in lb/hr; and

(B) The precompliance limit on the concentration of each metal in collected PM.

(3) *Limits on operating conditions.* The owner and operator shall establish limits on the following parameters consistent with the determinations made under paragraph (b)(2) of this section and certify (under provisions of paragraph (b)(9) of this section) to the Director that the facility will operate within the limits during interim status when there is hazardous waste in the unit until revised certification of precompliance under paragraph (b)(8) of this section or certification of compliance under paragraph (c) of this section:

(i) Feed rate of total hazardous waste and (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106(b) or (e)) pumpable hazardous waste;

(ii) Feed rate of each metal in the following feed streams;

(A) Total feed streams, except that industrial furnaces that comply with the alternative metals implementation approach under paragraph (b)(4) of this section must specify limits on the concentration of each metal in collected particulate matter in lieu of feed rate limits for total feedstreams;

(B) Total hazardous waste feed; and

(C) Total pumpable hazardous waste feed, unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e);

(iii) Total feed rate of chlorine and chloride in total feed streams;

(iv) Total feed rate of ash in total feed streams, except that the ash feed rate for cement kilns and light-weight aggregate kilns is not limited; and

(v) Maximum production rate of the device in appropriate units when producing normal product.

(4) *Operating requirements for furnaces that recycle PM.* Owners and operators of furnaces that recycle collected particulate matter (PM) back into the furnace and that will certify compliance with the metals emissions controls under paragraph (c)(3)(ii)(A) of this section must comply with the special operating requirements provided in "Alternative Methodology for Implementing Metals Controls" in appendix IX of this part.

(5) *Measurement of feed rates and production rate*—(i) *General requirements.* Limits on each of the parameters specified in paragraph (b)(3) of this section (except for limits on metals concentrations in collected particulate matter (PM) for industrial furnaces that recycle collected PM) shall be established and continuously monitored under either of the following methods:

(A) *Instantaneous limits.* A limit for a parameter may be established and continuously monitored on an instantaneous basis (i.e., the value that occurs at any time) not to be exceeded at any time; or

(B) *Hourly rolling average limits.* A limit for a parameter may be established and continuously monitored on an hourly rolling average basis defined as follows:

(1) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(2) An hourly rolling average is the arithmetic mean of the 60 most recent 1-minute average values recorded by the continuous monitoring system.

(ii) *Rolling average limits for carcinogenic metals and lead.* Feed rate limits for the carcinogenic metals (arsenic, beryllium, cadmium, and chromium) and lead may be established either on an hourly rolling average basis as prescribed by paragraph (b)(5)(i)(B) or on (up to) a 24 hour rolling average basis. If the owner or operator elects to use an averaging period from 2 to 24 hours:

(A) The feed rate of each metal shall be limited at any time to ten times the feed rate that would be allowed on a hourly rolling average basis;

(B) The continuous monitor shall meat the following specifications:

(1) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(2) The rolling average for the selected averaging period is defined as the arithmetic mean of the most recent one hour block averages for the averaging period. A one hour block average is the arithmetic mean of the one minute averages recorded during the 60-minute period beginning at one minute after the beginning of preceding clock hour.

(iii) *Feed rate limits for metals, total chloride and chlorine, and ash.* Feed rate limits for metals, total chlorine and chloride, and ash are established and monitored by knowing the concentration of the substance (i.e., metals, chloride/chlorine, and ash) in each feedstream and the flow rate of the feedstream. To monitor the feed rate of these substances, the flow rate of each feedstream must be monitored under the continuous monitoring requirements of paragraphs (b)(5) (i) and (ii) of this section.

(6) *Public notice requirements at precompliance.* On or before [the effective date of this rule] the owner or operator must submit a notice with the following information for publication in a major local newspaper of general circulation and send a copy of the notice to the appropriate units of State and local government. The owner and operator must provide to the Director with the certification of precompliance evidence of submitting the notice for publication. The notice, which shall be entitled "Notice of Certification of Precompliance with Hazardous Waste Burning Requirements of 40 CFR 266.103(b)", must include:

(i) Name and address of the owner and operator of the facility as well as the location of the device burning hazardous waste;

(ii) Date that the certification of precompliance is submitted to the Director;

(iii) Brief description of the regulatory process required to comply with the interim status requirements of this section including required emissions testing to demonstrate conformance with emissions standards for organic compounds, particulate matter, metals, and HCl and Cl_2;

(iv) Types and quantities of hazardous waste burned including, but not limited to, source, whether solids or liquids, as well as an appropriate description of the waste;

(v) Type of device(s) in which the hazardous waste is burned including a physical description and maximum production rate of each device;

(vi) Types and quantities of other fuels and industrial furnace feedstocks fed to each unit;

(vii) Brief description of the basis for this certification of precompliance as specified in paragraph (b)(2) of this section;

(viii) Locations where the operating record for the facility can be viewed and copied by interested parties. These locations shall at a minimum include:

(A) The Agency office where the supporting documentation was submitted or another location designated by the Director; and

(B) The facility site where the device is located;

(ix) Notification of the establishment of a facility mailing list whereby interested parties shall notify the Agency that they wish to be placed on the mailing list to receive future information and notices about this facility; and

(x) Location (mailing address) of the applicable EPA Regional Office, Hazardous Waste Division, where further information can be obtained on EPA regulation of hazardous waste burning.

(7) *Monitoring other operating parameters.* When the monitoring systems for the operating parameters listed in paragraphs (c)(1)(v through xiii) of this section are installed and operating in conformance with vendor specifications or (for CO, HC, and oxygen) specifications provided by appendix IX of this part, as appropriate, the parameters shall be continuously monitored and records shall be maintained in the operating record.

(8) *Revised certification of precompliance.* The owner or operator may revise at any time the information and operating conditions documented under paragraphs (b)(2) and (b)(3) of this section in the certification of precompliance by submitting a revised certification of precompliance under procedures provided by those paragraphs.

(i) The public notice requirements of paragraph (b)(6) of this section do not apply to recertifications.

(ii) The owner and operator must operate the facility within the limits established for the operating parameters under paragraph (b)(3) of this section until a revised certification is submitted under this paragraph or a certification of compliance is submitted under paragraph (c) of this section.

(9) *Certification of precompliance statement.* The owner or operator must include the following signed statement with the certification of precompliance submitted to the Director:

"I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information and supporting documentation. Copies of all emissions tests, dispersion modeling results and other information used to determine conformance with the requirements of § 266.103(b) are available at the facility and can be obtained from the facility contact person listed above. Based on my inquiry of the person or persons who manages the facility, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also acknowledge that the operating limits established in this certification pursuant to § 266.103(b) (3) and (4) are enforceable limits at which the facility can legally operate during interim status until: (1) A revised certification of precompliance is submitted, (2) a certification of compliance is submitted, or (3) an operating permit is issued."

(c) *Certification of compliance.* On or before August 21, 1992, the owner or operator shall conduct emissions testing to document compliance with the emissions standards of §§ 266.104 (b) through (e), 266.105, 266.106, 266.107, and paragraph (a)(5)(i)(D) of this section, under the procedures prescribed by this paragraph, except under extensions of time provided by paragraph (c)(7). Based on the compliance test, the owner or operator shall submit to the Director a complete and accurate "certification of compliance" (under paragraph (c)(4) of this section) with those emission standards establishing limits on the operating parameters specified in paragraph (c)(1).

(1) *Limits on operating conditions.* The owner or operator shall establish limits on the following parameters based on operations during the compliance test (under procedures prescribed in paragraph (c)(4)(iv) of this section) and include these limits with the certification of compliance. The boiler or industrial furnace must be operated in accordance with these operating limits at all times when there is hazardous waste in the unit until an operating permit is issued.

(i) Feed rate of total hazardous waste and (unless complying the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e)), pumpable hazardous waste;

(ii) Feed rate of each metal in the following feedstreams:

(A) Total feedstreams, except that industrial furnaces that must comply with the alternative metals implementation approach under paragraph (c)(3)(ii) of this section must specify limits on the concentration of each metal in collected particulate matter in lieu of feed rate limits for total feedstreams;

(B) Total hazardous waste feed (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e)); and

(C) Total pumpable hazardous waste feed;

(iii) Total feed rate of chlorine and chloride in total feed streams;

(iv) Total feed rate of ash in total feed streams, except that the ash feed rate for cement kilns and light-weighted aggregate kilns is not limited;

(v) Carbon monoxide concentration, and where required, hydrocarbon concentration in stack gas. When complying with the CO controls of § 266.104(b), the CO limit is 100 ppmv, and when complying with the HC controls of § 266.104(c), the HC limit is 20 ppmv. When complying with the CO controls of § 266.104(c), the CO limit is established based on the compliance test;

(vi) Maximum production rate of the device in appropriate units when producing normal product;

(vii) Maximum combustion chamber temperature where the temperature measurement is as close to the combustion zone as possible and is upstream of any quench water injection, (unless complying with the Tier I adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e));

(viii) Maximum flue gas temperature entering a particulate matter control device (unless complying with Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e));

(ix) For systems using wet scrubbers, including wet ionizing scrubbers (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e) and the total chlorine and chloride feed rate screening limits under § 266.107(b) (1) or (e));

(A) Minimum liquid to flue gas ratio;

(B) Minimum scrubber blowdown from the system or maximum suspended solids content of scrubber water; and

(C) Minimum pH level of the scrubber water;

(x) For systems using venturi scrubbers, the minimum differential gas pressure across the venturi (unless complying the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e) and the total chlorine and chloride feed rate screening limits under § 266.107(b) (1) or (e));

(xi) For system using dry scrubbers (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e) and the total chlorine and chloride feed rate screening limits under § 266.107(b) (1) or (e));

(A) Minimum caustic feed rate; and

(B) Maximum flue gas flow rate;

(xii) For systems using wet ionizing scrubbers or electrostatic precipitators (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e) and the total chlorine and chloride feed rate screening limits under § 266.107(b) (1) or (e));

(A) Minimum electrical power in kilovolt amperes (kVA) to the precipitator plates; and

(B) Maximum flue gas flow rate;

(xiii) For systems using fabric filters (baghouses), the minimum pressure drop (unless complying with the Tier I or adjusted Tier I metals feed rate screening limits under § 266.106 (b) or (e) and the total chlorine and chloride feed rate screening limits under § 266.107(b)(1) or (e)).

(2) *Prior notice of compliance testing.* At least 30 days prior to the compliance testing required by paragraph (c)(3) of this section, the owner or operator shall notify the Director and submit the following information:

(i) General facility information including:

(A) EPA facility ID number;

(B) Facility name, contact person, telephone number, and address;

(C) Person responsible for conducting compliance test, including company name, address, and telephone number, and a statement of qualifications;

(D) Planned date of the compliance test;

(ii) Specific information on each device to be tested including:

(A) Description of boiler or industrial furnace;

(B) A scaled plot plan showing the entire facility and location of the boiler or industrial furnace;

(C) A description of the air pollution control system;

(D) Identification of the continuous emission monitors that are installed, including:

(*1*) Carbon monoxide monitor;

(*2*) Oxygen monitor;

(*3*) Hydrocarbon monitor, specifying the minimum temperature of the system and, if the temperature is less than 150 °C, an explanation of why a heated system is not used (see paragraph (c)(5)

of this section) and a brief description of the sample gas conditioning system;

(E) Indication of whether the stack is shared with another device that will be in operation during the compliance test;

(F) Other information useful to an understanding of the system design or operation.

(iii) Information on the testing planned, including a complete copy of the test protocol and Quality Assurance/Quality Control (QA/QC) plan, and a summary description for each test providing the following information at a minimum:

(A) Purpose of the test (e.g., demonstrate compliance with emissions of particulate matter); and

(B) Planned operating conditions, including levels for each pertinent parameter specified in paragraph (c)(1) of this section.

(3) *Compliance testing*—(i) *General.* Compliance testing must be conducted under conditions for which the owner or operator has submitted a certification of precompliance under paragraph (b) of this section and under conditions established in the notification of compliance testing required by paragraph (c)(2) of this section.

(ii) *Special requirements for industrial furnaces that recycle collected PM.* Owners and operators of industrial furnaces that recycle back into the furnace particulate matter (PM) from the air pollution control system must comply with one of the following procedures for testing to determine compliance with the metals standards of § 266.106(c) or (d):

(A) The special testing requirements prescribed in "Alternative Method for Implementing Metals Controls" in appendix IX of this part; or

(B) Stack emissions testing for a minimum of 6 hours each day while hazardous waste is burned during interim status. The testing must be conducted when burning normal hazardous waste for that day at normal feed rates for that day and when the air pollution control system is operated under normal conditions. During interim status, hazardous waste analysis for metals content must be sufficient for the owner or operator to determine if changes in metals content may affect the ability of the facility to meet the metals emissions standards established under §§ 266.106(c) or (d). Under this option, operating limits (under paragraph (c)(1) of this section) must be established during compliance testing under paragraph (c)(3) of this section only on the following parameters:

(1) Feed rate of total hazardous waste;

(2) Total feed rate of chlorine and chloride in total feed streams;

(3) Total feed rate of ash in total feed streams, except that the ash feed rate for cement kilns and light-weight aggregate kilns is not limited;

(4) Carbon monoxide concentration, and where required, hydrocarbon concentration in stack gas;

(5) Maximum production rate of the device in appropriate units when producing normal product; or

(C) Conduct compliance testing to determine compliance with the metals standards to establish limits on the operating parameters of paragraph (c)(1) of this section only after the kiln system has been conditioned to enable it to reach equilibrium with respect to metals fed into the system and metals emissions. During conditioning, hazardous waste and raw materials having the same metals content as will be fed during the compliance test must be fed at the feed rates that will be fed during the compliance test.

(iii) *Conduct of compliance testing.* (A) If compliance with all applicable emissions standards of §§ 266.104 through 266.107 is not demonstrated simultaneously during a set of test runs, the operating conditions of additional test runs required to demonstrate compliance with remaining emissions standards must be as close as possible to the original operating conditions.

(B) Prior to obtaining test data for purposes of demonstrating compliance with the applicable emissions standards of §§ 266.104 through 266.107 or establishing limits on operating parameters under this section, the facility must operate under compliance test conditions for a sufficient period to reach steady-state operations. Industrial furnaces that recycle collected particulate matter back into the furnace and that comply with paragraphs (c)(3)(ii)(A) or (B) of this section, however, need not reach steady state conditions with respect to the flow of metals in the system prior to beginning compliance testing for metals.

(C) Compliance test data on the level of an operating parameter for which a limit must be established in the certification of compliance must be obtained during emissions sampling for the pollutant(s) (i.e., metals, PM, HCl/Cl_2, organic compounds) for which the parameter must be established as specified by paragraph (c)(1) of this section.

(4) Certification of compliance. Within 90 days of completing compliance testing, the owner or operator must certify to the Director compliance with the emissions standards of §§ 266.104(b), (c), and (e), 266.105, 266.106, 266.107, and paragraph (a)(5)(i)(D) of this section. The certification of compliance must include the following information:

(i) General facility and testing information including:

(A) EPA facility ID number;

(B) Facility name, contact person, telephone number, and address;

(C) Person responsible for conducting compliance test, including company name, address, and telephone number, and a statement of qualifications;

(D) Date(s) of each compliance test;

(E) Description of boiler or industrial furnace tested;

(F) Person responsible for quality assurance/quality control (QA/QC), title, and telephone number, and statement that procedures prescribed in the QA/QC plan submitted under § 266.103(c)(2)(iii) have been followed, or a description of any changes and an explanation of why changes were necessary.

(G) Description of any changes in the unit configuration prior to or during testing that would alter any of the information submitted in the prior-notice of compliance testing under paragraph (c)(2) of this section, and an explanation of why the changes were necessary;

(H) Description of any changes in the planned test conditions prior to or during the testing that alter any of the information submitted in the prior notice of compliance testing under paragraph (c)(2) of this section, and an explanation of why the changes were necessary; and

(I) The complete report on results of emissions testing.

(ii) Specific information on each test including:

(A) Purpose(s) of test (e.g., demonstrate conformance with the emissions limits for particulate matter, metals, HCl, Cl_2, and CO)

(B) Summary of test results for each run and for each test including the following information:

(1) Date of run;

(2) Duration of run;

(3) Time-weighted average and highest hourly rolling average CO level for each run and for the test;

(4) Highest hourly rolling average HC level, if HC monitoring is required for each run and for the test;

(5) If dioxin and furan testing is required under § 266.104(e), time-weighted averge emissions for each run and for the test of chlorinated dioxin and furan emissions, and the predicted maximum annual average ground level concentration of the toxicity equivalency factor;

(6) Time-weighted average particulate matter emissions for each run and for the test;

(7) Time-weighted average HCl and Cl_2 emissions for each run and for the test;

(8) Time-weighted average emissions for the metals subject to regulation under § 266.106 for each run and for the test; and

(9) QA/QC results.

(iii) Comparison of the actual emissions during each test with the emissions limits prescribed by §§ 266.104 (b), (c), and (e), 266.105, 266.106, and 266.107 and established for the facility in the certification of precompliance under paragraph (b) of this section.

(iv) Determination of operating limits based on all valid runs of the compliance test for each applicable parameter listed in paragraph (c)(1) of this section using either of the following procedures:

(A) *Instantaneous limits.* A parameter may be measured and recorded on an instantaneous basis (i.e., the value that occurs at any time) and the operating limit specified as the time-weighted average during all runs of the compliance test; or

(B) *Hourly rolling average basis.* (1) The limit for a parameter may be established and continuously monitored on an hourly rolling average basis defined as follows:

(i) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(ii) An hourly rolling average is the arithmetic mean of the 60 most recent 1-minute average values recorded by the continuous monitoring system.

(2) The operating limit for the parameter shall be established based on compliance test data as the average over all test runs of the highest hourly rolling average value for each run.

(C) *Rolling average limits for carcinogenic metals and lead.* Feed rate limits for the carcinogenic metals (i.e., arsenic, beryllium, cadmium and chromium) and lead may be established either on an hourly rolling average basis as prescribed by paragraph (c)(4)(iv)(B) of this section or on (up to) a 24 hour rolling average basis. If the owner or operator elects to use an averaging period from 2 to 24 hours:

(1) The feed rate of each metal shall be limited at any time to ten times the feed rate that would be allowed on a hourly rolling average basis;

(2) The continuous monitor shall meet the following specifications:

(i) A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(ii) The rolling average for the selected averaging period is defined as the arithmetic mean of the most recent one hour block averages for the averaging period. A one hour block average is the arithmetic mean of the one minute averages recorded during the 60-minute period beginning at one minute after the beginning of preceding clock hour; and

(3) The operating limit for the feed rate of each metal shall be established based on compliance test data as the average over all test runs of the highest hourly rolling average feed rate for each run.

(D) *Feed rate limits for metals, total chloride and chlorine, and ash.* Feed rate limits for metals, total chlorine and chloride, and ash are established and monitored by knowing the concentration of the substance (i.e., metals, chloride/chlorine, and ash) in each feedstream and the flow rate of the feedstream. To monitor the feed rate of these substances, the flow rate of each feedstream must be monitored under the continuous monitoring requirements of paragraphs (c)(4)(iv) (A) through (C) of this section.

(v) *Certification of compliance statement.* The following statement shall accompany the certification of compliance:

"I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information and supporting documentation. Copies of all emissions tests, dispersion modeling results and other information used to determine conformance with the requirements of § 266.103(c) are available at the facility and can be obtained from the facility contact person listed above. Based on my inquiry of the person or persons who manages the facility, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also acknowledge that the operating conditions established in this certification pursuant to § 266.103(c)(4)(iv) are enforceable limits at which the facility can legally operate during interim status until a revised certification of compliance is submitted."

(5) *Special requirements for HC monitoring systems.* When an owner or operator is required to comply with the hydrocarbon (HC) controls provided by §§ 266.104(c) or paragraph (a)(5)(i)(D) of this section, a conditioned gas monitoring system may be used in conformance with specifications provided in appendix IX of this part provided that the owner or operator submits a certification of compliance without using extensions of time provided by paragraph (c)(7) of this section.

(6) *Special operating requirements for industrial furnaces that recycle collected PM.* Owners and operators of industrial furnaces that recycle back into the furnace particulate matter (PM) from the air pollution control system must:

(i) When complying with the requirements of paragraph (c)(3)(ii)(A) of this section, comply with the operating requirements prescribed in "Alternative Method to Implement the Metals Controls" in appendix IX of this part; and

(ii) When complying with the requirements of paragraph (c)(3)(ii)(B) of this section, comply with the operating requirements prescribed by that paragraph.

(7) *Extensions of time.* (i) If the owner or operator does not submit a complete certification of compliance for all of the applicable emissions standards of §§ 266.104, 266.105, 266.106, and 266.107 by August 21, 1992, he/she must either:

(A) Stop burning hazardous waste and begin closure activities under paragraph (1) of this section for the hazardous waste portion of the facility; or

(B) Limit hazardous waste burning to a total period of 720 hours for the period of time beginning August 21, 1992, submit a notification to the Director by August 21, 1992 stating that the facility is operating under restricted interim status and intends to resume burning hazardous waste, and submit a complete certification of compliance by August 23, 1993; or

(C) Obtain a case-by-case extension of time under paragraph (c)(7)(ii) of this section.

(ii) The owner or operator may request a case-by-case extension of time to extend any time limit provided by paragraph (c) of this section if compliance with the time limit is not practicable for reasons beyond the control of the owner or operator.

(A) In granting an extension, the Director may apply conditions as the facts warrant to ensure timely compliance with the requirements of this section and that the facility operates in a manner that does not pose a hazard to human health and the environment;

(B) When an owner and operator request an extension of time to enable them to obtain a RCRA operating permit

because the facility cannot meet the HC limit of § 266.104(c) of this chapter:

(*i*) The Director shall, in considering whether to grant the extension:

(*i*) Determine whether the owner and operator have submitted in a timely manner a complete Part B permit application that includes information required under § 270.22(b) of this chapter; and

(*ii*) Consider whether the owner and operator have made a good faith effort to certify compliance with all other emission controls, including the controls on dioxins and furans of § 266.104(e) and the controls on PM, metals, and HCl/Cl_2

(2) If an extension is granted, the Director shall, as a condition of the extension, require the facility to operate under flue gas concentration limits on CO and HC that, based on available information, including information in the part B permit application, are baseline CO and HC levels as defined by § 266.104(f)(1).

(8) *Revised certification of compliance.* The owner or operator may submit at any time a revised certification of compliance (recertification of compliance) under the following procedures:

(i) Prior to submittal of a revised certification of compliance, hazardous waste may not be burned for more than a total of 720 hours under operating conditions that exceed those established under a current certification of compliance, and such burning may be conducted only for purposes of determining whether the facility can operate under revised conditions and continue to meet the applicable emissions standards of §§ 266.104, 266.105, 266.106, and 266.107;

(*ii*) At least 30 days prior to first burning hazardous waste under operating conditions that exceed those established under a current certification of compliance, the owner or operator shall notify the Director and submit the following information:

(A) EPA facility ID number, and facility name, contact person, telephone number, and address;

(B) Operating conditions that the owner or operator is seeking to revise and description of the changes in facility design or operation that prompted the need to seek to revise the operating conditions;

(C) A determination that when operating under the revised operating conditions, the applicable emissions standards of §§ 266.104, 266.105, 266.106, and 266.107 are not likely to be exceeded. To document this determination, the owner or operator shall submit the applicable information required under paragraph (b)(2) of this section; and

(D) Complete emissions testing protocol for any pretesting and for a new compliance test to determine compliance with the applicable emissions standards of §§ 266.104, 266.105, 266.106, and 266.107 when operating under revised operating conditions. The protocol shall include a schedule of pre-testing and compliance testing. If the owner and operator revises the scheduled date for the compliance test, he/she shall notify the Director in writing at least 30 days prior to the revised date of the compliance test;

(iii) Conduct a compliance test under the revised operating conditions and the protocol submitted to the Director to determine compliance with the applicable emissions standards of §§ 266.104, 266.105, 266.106, and 266.107; and

(iv) Submit a revised certification of compliance under paragraph (c)(4) of this section.

(d) *Periodic Recertifications.* The owner or operator must conduct compliance testing and submit to the Director a recertification of compliance under provisions of paragraph (c) of this section within three years from submitting the previous certification or recertification. If the owner or operator seeks to recertify compliance under new operating conditions, he/she must comply with the requirements of paragraph (c)(8) of this section.

(e) *Noncompliance with certification schedule.* If the owner or operator does not comply with the interim status compliance schedule provided by paragraphs (b), (c), and (d) of this section, hazardous waste burning must terminate on the date that the deadline is missed, closure activities must begin under paragraph (l) of this section, and hazardous waste burning may not resume except under an operating permit issued under § 270.66 of this chapter.

(f) *Start-up and shut-down.* Hazardous waste (except waste fed solely as an ingredient under the Tier I (or adjusted Tier I) feed rate screening limits for metals and chloride/chlorine) must not be fed into the device during start-up and shut-down of the boiler or industrial furnace, unless the device is operating within the conditions of operation specified in the certification of compliance.

(g) *Automatic waste feed cutoff.* During the compliance test required by paragraph (c)(3) of this section, and upon certification of compliance under paragraph (c) of this section, a boiler or industrial furnace must be operated with a functioning system that automatically cuts off the hazardous waste feed when the applicable operating conditions specified in paragraphs (c)(1) (i) and (v through xiii) of this section deviate from those established in the certification of compliance. In addition:

(1) To minimize emissions or organic compounds, the minimum combustion chamber temperature (or the indicator of combustion chamber temperature) that occurred during the compliance test must be maintained while hazardous waste or hazardous waste residues remain in the combustion chamber, with the minimum temperature during the compliance test defined as either:

(i) If compliance with the combustion chamber temperature limit is based on a hourly rolling average, the minimum temperature during the compliance test is considered to be the average over all runs of the lowest hourly rolling average for each run; or

(ii) If compliance with the combustion chamber temperature limit is based on an instantaneous temperature measurement, the minimum temperature during the compliance test is considered to be the time-weighted average temperature during all runs of the test; and

(2) Operating parameters limited by the certification of compliance must continue to be monitored during the cutoff, and the hazardous waste feed shall not be restarted until the levels of those parameters comply with the limits established in the certification of compliance.

(h) *Fugitive emissions.* Fugitive emissions must be controlled by:

(1) Keeping the combustion zone totally sealed against fugitive emissions; or

(2) Maintaining the combustion zone pressure lower than atmospheric pressure; or

(3) An alternate means of control that the owner or operator can demonstrate provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure. Support for such demonstration shall be included in the operating record.

(i) *Changes.* A boiler or industrial furnace must cease burning hazardous waste when changes in combustion properties, or feed rates of the hazardous waste, other fuels, or industrial furnace feedstocks, or changes in the boiler or industrial furnace design or operating conditions deviate from the limits specified in the certification of compliance.

(j) *Monitoring and Inspections.* (1) The owner or operator must monitor and

record the following, at a minimum, while burning hazardous waste:

(i) Feed rates and composition of hazardous waste, other fuels, and industrial furnace feed stocks, and feed rates of ash, metals, and total chloride and chlorine as necessary to ensure conformance with the certification of precompliance or certification of compliance;

(ii) Carbon monoxide (CO), oxygen, and if applicable, hydrocarbons (HC), on a continuous basis at a common point in the boiler or industrial furnace downstream of the combustion zone and prior to release of stack gases to the atmosphere in accordance with the operating limits specified in the certification of compliance. CO, HC, and oxygen monitors must be installed, operated, and maintained in accordance with methods specified in Appendix IX of this part.

(iii) Upon the request of the Director, sampling and analysis of the hazardous waste (and other fuels and industrial furnace feed stocks as appropriate) and the stack gas emissions must be conducted to verify that the operating conditions established in the certification of precompliance or certification of compliance achieve the applicable standards of §§ 266.104, 266.105, 266.106, and 266.107.

(2) The boiler or industrial furnace and associated equipment (pumps, valves, pipes, fuel storage tanks, etc.) must be subjected to thorough visual inspection when they contain hazardous waste, at least daily for leaks, spills, fugitive emissions, and signs of tampering.

(3) The automatic hazardous waste feed cutoff system and associated alarms must be tested at least once every 7 days when hazardous waste is burned to verify operability, unless the owner or operator can demonstrate that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate. Support for such demonstration shall be included in the operating record. At a minimum, operational testing must be conducted at least once every 30 days.

(4) These monitoring and inspection data must be recorded and the records must be placed in the operating log.

(k) *Recordkeeping.* The owner or operator must keep in the operating record of the facility all information and data required by this section for a period of three years.

(l) *Closure.* At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the boiler or industrial furnace and must comply with §§ 265.111–265.115 of this chapter.

(Approved by the Office of Management and Budget under control number 2050–0073)

§ 266.104 Standards to control organic emissions.

(a) *DRE standard*—(1) *General.* Except as provided in paragraph (a)(3) of this section, a boiler or industrial furnace burning hazardous waste must achieve a destruction and removal efficiency (DRE) of 99.99% for all organic hazardous constituents in the waste feed. To demonstrate conformance with this requirement, 99.99% DRE must be demonstrated during a trial burn for each principal organic hazardous constituent (POHC) designated (under paragraph (a)(2) of this section) in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = \left[\frac{1 - W_{out}}{W_{in}}\right] \times 100$$

where:

W_{in} = Mass feed rate of one principal organic hazardous constituent (POHC) in the hazardous waste fired to the boiler or industrial furnace; and

W_{out} = Mass emission rate of the same POHC present in stack gas prior to release to the atmosphere.

(2) *Designation of POHCs.* Principal organic hazardous constituents (POHCs) are those compounds for which compliance with the DRE requirements of this section shall be demonstrated in a trial burn in conformance with procedures prescribed in § 270.66 of this chapter. One or more POHCs shall be designated by the Director for each waste feed to be burned. POHCs shall be designated based on the degree of difficulty of destruction of the organic constituents in the waste and on their concentrations or mass in the waste feed considering the results of waste analyses submitted with part B of the permit application. POHCs are most likely to be selected from among those compounds listed in part 261, appendix VIII of this chapter that are also present in the normal waste feed. However, if the applicant demonstrates to the Regional Administrator's satisfaction that a compound not listed in appendix VIII or not present in the normal waste feed is a suitable indicator of compliance with the DRE requirements of this section, that compound may be designated as a POHC. Such POHCs need not be toxic or organic compounds.

(3) *Dioxin-listed waste.* A boiler or industrial furnace burning hazardous waste containing (or derived from) EPA Hazardous Wastes Nos. F020, F021, F022, F023, F026, or F027 must achieve a destruction and removal efficiency (DRE) of 99.9999% for each POHC designated (under paragraph (a)(2) of this section) in its permit. This performance must be demonstrated on POHCs that are more difficult to burn than tetrra-, penta-, and hexachlorodibenzo-*p*-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in paragraph (a) of this section. In addition, the owner or operator of the boiler or industrial furnace must notify the Director of intent to burn EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027.

(4) *Automatic waiver of DRE trial burn.* Owners and operators of boilers operated under the special operating requirements provided by § 266.110 are considered to be in compliance with the DRE standard of paragraph (a)(1) of this section and are exempt from the DRE trial burn.

(5) *Low risk waste.* Owners and operators of boilers or industrial furnaces that burn hazardous waste in compliance with the requirements of § 266.109(a) are considered to be in compliance with the DRE standard of paragraph (a)(1) of this section and are exempt from the DRE trial burn.

(b) *Carbon monoxide standard.* (1) Except as provided in paragraph (c) of this section, the stack gas concentration of carbon monoxide (CO) from a boiler or industrial furnace burning hazardous waste cannot exceed 100 ppmv on an hourly rolling average basis (i.e., over any 60 minute period), continuously corrected to 7 percent oxygen, dry gas basis.

(2) CO and oxygen shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen in Hazardous Waste Incinerators, Boilers, and Industrial Furnaces" in appendix IX of this part.

(3) Compliance with the 100 ppmv CO limit must be demonstrated during the trial burn (for new facilities or an interim status facility applying for a permit) or the compliance test (for interim status facilities). To demonstrate compliance, the highest hourly rolling average CO level during any valid run of the trial burn or compliance test must not exceed 100 ppmv.

(c) *Alternative carbon monoxide standard.* (1) The stack gas concentration of carbon monoxide (CO)

from a boiler or industrial furnace burning hazardous waste may exceed the 100 ppmv limit provided that stack gas concentrations of hydrocarbons (HC) do not exceed 20 ppmv, except as provided by paragraph (f) of this section for certain industrial furnaces.

(2) HC limits must be established under this section on an hourly rolling average basis (i.e., over any 60 minute period), reported as propane, and continuously corrected to 7 percent oxygen, dry gas basis.

(3) HC shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces" in appendix IX of this part. CO oxygen shall be continuously monitored in conformance with paragraph (b)(2) of this section.

(4) The alternative CO standard is established based on CO data during the trial burn (for a new facility) and the compliance test (for an interim status facility). The alternative CO standard is the average over all valid runs of the highest hourly average CO level for each run. The CO limit is implemented on an hourly rolling average basis, and continuously corrected to 7 percent oxygen, dry gas basis.

(d) *Special requirements for furnaces.* Owners and operators of industrial furnaces (e.g., kilns, cupolas) that feed hazardous waste for a purpose other than solely as an ingredient (see § 266.103(a)(5)(ii)) at any location other than the end where products are normally discharged and where fuels are normally fired must comply with the hydrocarbon limits provided by paragraphs (c) or (f) of this section irrespective of whether stack gas CO concentrations meet the 100 ppmv limit of paragraph (b) of this section.

(e) *Controls for dioxins and furans.* Owners and operators of boilers and industrial furnaces that are equipped with a dry particulate matter control device that operates within the temperature range of 450–750 °F, and industrial furnaces operating under an alternative hydrocarbon limit established under paragraph (f) of this section must conduct a site-specific risk assessment as follows to demonstrate that emissions of chlorinated dibenzo-p-dioxins and dibenzofurans do not result in an increased lifetime cancer risk to the hypothetical maximum exposed individual (MEI) exceeding 1 in 100,000:

(1) During the trial burn (for new facilities or an interim status facility applying for a permit) or compliance test (for interim status facilities), determine emission rates of the tetra-octa congeners of chlorinated dibenzo-p-dioxins and dibenzofurans (CDDs/CDFs) using Method 23, "Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans (PCDFs) from Stationary Sources", in appendix IX of this part.

(2) Estimate the 2,3,7,8-TCDD toxicity equivalence of the tetra-octa CDDs/CDFs congeners using "Procedures for Estimating the Toxicity Equivalence of Chlorinated Dibenzo-p-Dioxin and Dibenzofuran Congeners" in appendix IX of this part. Multiply the emission rates of CDD/CDF congeners with a toxicity equivalence greater than zero (see the procedure) by the calculated toxicity equivalence factor to estimate the equivalent emission rate of 2,3,7,8-TCDD.

(3) Conduct dispersion modeling using methods recommended in *Guideline on Air Quality Models (Revised)* or the "Hazardous Waste Combustion Air Quality Screening Procedure", which are provided in appendices X and IX, respectively, of this part, or "EPA SCREEN Screening Procedure" as described in *Screening Procedures for Estimating Air Quality Impact of Stationary Sources* (incorporated by reference in § 260.11) to predict the maximum annual average off-site ground level concentration of 2,3,7,8-TCDD equivalents determined under paragraph (e)(2) of this section. The maximum annual average on-site concentration must be used when a person resides on-site; and

(4) The ratio of the predicted maximum annual average ground level concentration of 2,3,7,8-TCDD equivalents to the risk-specific dose for 2,3,7,8-TCDD provided in appendix V of this part (2.2×10^{-7}) shall not exceed 1.0.

(f) *Alternative HC limit for furnaces with organic matter in raw material.* For industrial furnaces that cannot meet the 20 ppmv HC limit because of organic matter in normal raw material, the Director may establish an alternative HC limit on a case-by-case basis (under a part B permit proceeding) at a level that ensures that flue gas HC (and CO) concentrations when burning hazardous waste are not greater than when not burning hazardous waste (the baseline HC level) provided that the owner or operator complies with the following requirements. However, cement kilns equipped with a by-pass duct meeting the requirements of paragraph (g) of this section, are not eligible for an alternative HC limit.

(1) The owner or operator must demonstrate that the facility is designed and operated to minimize hydrocarbon emissions from fuels and raw materials when the baseline HC (and CO) level is determined. The baseline HC (and CO) level is defined as the average over all valid test runs of the highest hourly rolling average value for each run when the facility does not burn hazardous waste, and produces normal products under normal operating conditions feeding normal feedstocks and fuels. More than one baseline level may be determined if the facility operates under different modes that may generate significantly different HC (and CO) levels;

(2) The owner or operator must develop an approach to monitor over time changes in the operation of the facility that could reduce the baseline HC level;

(3) The owner or operator must conduct emissions testing during the trial burn to:

(i) Determine the baseline HC (and CO) level;

(ii) Demonstrate that, when hazardous waste is burned, HC (and CO) levels do not exceed the baseline level; and

(iii) Identify the types and concentrations of organic compounds listed in appendix VIII, part 261 of this chapter, that are emitted and conducts dispersion modeling to predict the maximum annual average ground level concentration of each organic compound. On-site ground level concentrations must be considered for this evaluation if a person resides on site.

(A) Sampling and analysis of organic emissions shall be conducted using procedures prescribed by the Director.

(B) Dispersion modeling shall be conducted according to procedures provided by paragraph (e)(2) of this section; and

(iv) Demonstrate that maximum annual average ground level concentrations of the organic compounds identified in paragraph (f)(3)(iii) of this section do not exceed the following levels:

(A) For the noncarcinogenic compounds listed in appendix IV of this part, the levels established in appendix IV;

(B) For the carcinogenic compounds listed in appendix V of this part, the sum for all compounds of the ratios of the actual ground level concentration to the level established in appendix V cannot exceed 1.0. To estimate the health risk from chlorinated dibenzo-p-dioxins and dibenzofuran congeners, use the procedures prescribed by paragraph (e)(3) of this section to estimate the 2,3,7,8-TCDD toxicity equivalence of the congeners.

(C) For compounds not listed in appendix IV or V, 0.1 micrograms per cubic meter.

(4) All hydrocarbon levels specified under this paragraph are to be monitored and reported as specified in paragraphs (c)(1) and (c)(2) of this section.

(g) *Monitoring CO and HC in the by-pass duct of a cement kiln.* Cement kilns may comply with the carbon monoxide and hydrocarbon limits provided by paragraphs (b), (c), and (d) of this section by monitoring in the by-pass duct provided that:

(1) Hazardous waste is fired only into the kiln and not at any location downstream from the kiln exit relative to the direction of gas flow; and

2. The by-pass duct diverts a minimum of 10% of kiln off-gas into the duct.

(h) *Use of emissions test data to demonstrate compliance and establish operating limits.* Compliance with the requirements of this section must be demonstrated simultaneously by emissions testing or during separate runs under identical operating conditions. Further, data to demonstrate compliance with the CO and HC limits of this section or to establish alternative CO or HC limits under this section must be obtained during the time that DRE testing, and where applicable, CDD/CDF testing under paragraph (e) of this section and comprehensive organic emissions testing under paragraph (f) is conducted.

(i) *Enforcement.* For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under § 266.102) will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of this section may be "information" justifying modification or revocation and re-issuance of a permit under § 270.41 of this chapter.

§ 266.105 Standards to control particulate matter.

(a) A boiler or industrial furnace burning hazardous waste may not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) after correction to a stack gas concentration of 7% oxygen, using procedures prescribed in 40 CFR part 60, appendix A, methods 1 through 5, and appendix IX of this part.

(b) An owner or operator meeting the requirements of § 266.109(b) for the low risk waste exemption is exempt from the particulate matter standard.

(c) For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under § 266.102) will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of this section may be "information" justifying modification or revocation and re-issuance of a permit under § 270.41 of this chapter.

§ 266.106 Standards to control metals emissions.

(a) *General.* The owner or operator must comply with the metals standards provided by paragraphs (b), (c), (d), (e), or (f) of this section for each metal listed in paragraph (b) of this section that is present in the hazardous waste at detectable levels using analytical procedures specified in Test Methods for Evaluation Solid Waste, Physical/Chemical Methods (SW-846), incorporated by reference in § 260.11 of this chapter.

(b) *Tier I feed rate screening limits.* Feed rate screening limits for metals are specified in appendix I of this part as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. Criteria for facilities that are not eligible to comply with the screening limits are provided in paragraph (b)(7) of this section.

(1) *Noncarcinogenic metals.* The feed rates of antimony, barium, lead, mercury, thallium, and silver in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed the screening limits specified in appendix I of this part.

(i) The feed rate screening limits for antimony, barium, mercury, thallium, and silver are based on either:

(A) An hourly rolling average as defined in § 266.102(e)(6)(i)(B); or

(B) An instantaneous limit not to be exceeded at any time.

(ii) The feed rate screening limit for lead is based on one of the following:

(A) An hourly rolling average as defined in § 266.102(e)(6)(i)(B);

(B) An averaging period of 2 to 24 hours as defined in § 266.102(e)(6)(ii) with an instantaneous feed rate limit not to exceed 10 times the feed rate that would be allowed on an hourly rolling average basis; or

(C) An instantaneous limit not to be exceeded at any time.

(2) *Carcinogenic metals.* (i) The feed rates of arsenic, cadmium, beryllium, and chromium in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed values derived from the screening limits specified in appendix I of this part. The feed rate of each of these metals is limited to a level such that the sum of the ratios of the actual feed rate to the feed rate screening limit specified in appendix I shall not exceed 1.0, as provided by the following equation:

$$\sum_{i=1}^{n} \frac{AFR_{(i)}}{FRSL_{(i)}} < 1.0$$

where:

n = numer of carcinogenic metals
AFR = actual feed rate to the device for metal "i"
FRSL = feed rate screening limit provided by appendix I of this part for metal "i".

(ii) The feed rate screening limits for the carcinogenic metals are based on either:

(A) An hourly rolling average; or

(B) An averaging period of 2 to 24 hours with an instantaneous feed rate limit not to exceed 10 times the feed rate that would be allowed on an hourly rolling average basis.

(3) *TESH.* (i) The terrain-adjusted effective stack height is determined according to the following equation:

$$TESH = Ha + H1 - Tr$$

where:

Ha = Actual physical stack height
H1 = Plume rise as determined from appendix VI of this part as a function of stack flow rate and stack gas exhaust temperature.
Tr = Terrain rise within five kilometers of the stack.

(ii) The stack height (Ha) may not exceed good engineering practice as specified in 40 CFR 51.100(ii).

(iii) If the TESH for a particular facility is not listed in the table in the appendices, the nearest lower TESH listed in the table shall be used. If the TESH is four meters or less, a value of four meters shall be used.

(4) *Terrain type.* The screening limits are a function of whether the facility is located in noncomplex or complex terrain. A device located where any part of the surrounding terrain within 5 kilometers of the stack equals or exceeds the elevation of the physical stack height (Ha) is considered to be in complex terrain and the screening limits for complex terrain apply. Terrain measurements are to be made from U.S. Geological Survey 7.5-minute topographic maps of the area surrounding the facility.

(5) *Land use.* The screening limits are a function of whether the facility is located in an area where the land use is urban or rural. To determine whether land use in the vicinity of the facility is urban or rural, procedures provided in appendices IX or X of this part.

(6) *Multiple stacks.* Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls of metals emissions under a RCRA operating permit or interim status controls must comply with the screening limits for all such units assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics. The worst-case stack is determined from the following equation as applied to each stack:

$$K = HVT$$

Where:

K = a parameter accounting for relative influence of stack height and plume rise;
H = physical stack height (meters);
V = stack gas flow rate (m^3/second); and
T = exhaust temperature (°K).

The stack with the lowest value of K is the worst-case stack.

(7) *Criteria for facilities not eligible for screening limits.* If any criteria below are met, the Tier I (and Tier II) screening limits do not apply. Owners and operators of such facilities must comply with the Tier III standards provided by paragraph (d) of this section.

(i) The device is located in a narrow valley less than one kilometer wide;

(ii) The device has a stack taller than 20 meters and is located such that the terrain rises to the physical height within one kilometer of the facility;

(iii) The device has a stack taller than 20 meters and is located within five kilometers of a shoreline of a large body of water such as an ocean or large lake;

(iv) The physical stack height of any stack is less than 2.5 times the height of any building within five building heights or five projected building widths of the stack and the distance from the stack to the closest boundary is within five building heights or five projected building widths of the associated building; or

(v) The Director determines that standards based on site-specific dispersion modeling are required.

(8) *Implementation.* The feed rate of metals in each feedstream must be monitored to ensure that the feed rate screening limits are not exceeded.

(c) *Tier II emission rate screening limits.* Emission rate screening limits are specified in Appendix I as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. Criteria for facilities that are not eligible to comply with the screening limits are provided in paragraph (b)(7) of this section.

(1) *Noncarcinogenic metals.* The emission rates of antimony, barium, lead, mercury, thallium, and silver shall not exceed the screening limits specified in Appendix I of this part.

(2) *Carcinogenic metals.* The emission rates of arsenic, cadmium, beryllium, and chromium shall not exceed values derived from the screening limits specified in Appendix I of this part. The emission rate of each of these metals is limited to a level such that the sum of the ratios of the actual emission rate to the emission rate screening limit specified in Appendix I shall not exceed 1.0, as provided by the following equation:

$$\sum_{i=1}^{n} \frac{AER_{(i)}}{ERSL_{(i)}} \leq 1.0$$

where:

n = number of carcinogenic metals
AER = actual emission rate for metal "i"
ERSL = emission rate screening limit provided by appendix I of this part for metal "i".

(3) *Implementation.* The emission rate limits must be implemented by limiting feed rates of the individual metals to levels during the trial burn (for new facilities or an interim status facility applying for a permit) or the compliance test (for interim status facilities). The feed rate averaging periods are the same as provided by paragraphs (b)(1)(i) and (ii) and (b)(2)(ii) of this section. The feed rate of metals in each feedstream must be monitored to ensure that the feed rate limits for the feedstreams specified under §§ 266.102 or 266.103 are not exceeded.

(4) *Definitions and limitations.* The definitions and limitations provided by paragraph (b) of this section for the following terms also apply to the Tier II emission rate screening limits provided by paragraph (c) of this section: terrain-adjusted effective stack height, good engineering practice stack height, terrain type, land use, and criteria for facilities not eligible to use the screening limits.

(5) *Multiple stacks.* (i) Owners and operators of facilities with more than one onsite stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on metals emissions under a RCRA operating permit or interim status controls must comply with the emissions screening limits for any such stacks assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics.

(ii) The worst-case stack is determined by procedures provided in paragraph (b)(6) of this section.

(iii) For each metal, the total emissions of the metal from those stacks shall not exceed the screening limit for the worst-case stack.

(d) *Tier III site-specific risk assessment*—(1) *General.* Conformance with the Tier III metals controls must be demonstrated by emissions testing to determine the emission rate for each metal, air dispersion modeling to predict the maximum annual average off-site ground level concentration for each metal, and a demonstration that acceptable ambient levels are not exceeded.

(2) *Acceptable ambient levels.* Appendices IV and V of this part list the acceptable ambient levels for purposes of this rule. Reference air concentrations (RACs) are listed for the noncarcinogenic metals and 10^{-6} risk-specific doses (RSDs) are listed for the carcinogenic metals. The RSD for a metal is the acceptable ambient level for that metal provided that only one of the four carcinogenic metals is emitted. If more than one carcinogenic metal is emitted, the acceptable ambient level for the carcinogenic metals is a fraction of the RSD as described in paragraph (d)(3) of this section.

(3) *Carcinogenic metals.* For the carcinogenic metals, arsenic, cadmium, beryllium, and chromium, the sum of the ratios of the predicted maximum annual average off-site ground level concentrations (except that on-site concentrations must be considered if a person resides on site) to the risk-specific dose (RSD) for all carcinogenic metals emitted shall not exceed 1.0 as determined by the following equation:

$$\sum_{i=1}^{n} \frac{\text{Predicted Ambient Concentration}_{(i)}}{\text{Risk-Specific Dose}_{(i)}} \leq 1.0$$

where: n = number of carcinogenic metals

(4) *Noncarcinogenic metals.* For the noncarcinogenic metals, the predicted maximum annual average off-site ground level concentration for each metal shall not exceed the reference air concentration (RAC).

(5) *Multiple stacks.* Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on metals emissions under a RCRA operating permit or interim status controls must conduct emissions testing and dispersion modeling to demonstrate that the aggregate emissions from all such on-site stacks do not result in an exceedance of the acceptable ambient levels.

(6) *Implementation.* Under Tier III, the metals controls must be implemented by limiting feed rates of the individual metals to levels during the trial burn (for new facilities or an interim status facility applying for a permit) or the compliance test (for interim status facilities). The feed rate averaging periods are the same as provided by paragraphs (b)(1) (i) and (ii) and (b)(2)(ii) of this section. The feed rate of metals in each feedstream must be monitored to ensure that the feed rate limits for the feedstreams specified under §§ 266.102 or 266.103 are not exceeded.

(e) *Adjusted Tier I feed rate screening limits.* The owner or operator may adjust the feed rate screening limits provided by appendix I of this part to account for site-specific dispersion modeling. Under this approach, the adjusted feed rate screening limit for each metal is determined by back-calculating from the acceptable ambient levels provided by appendices IV and V of this part using dispersion modeling to determine the maximum allowable emission rate. This emission rate becomes the adjusted Tier I feed rate screening limit. The feed rate screening limits for carcinogenic metals are implemented as prescribed in paragraph (b)(2) of this section.

(f) *Alternative implementation approaches.* (1) The Director may approve on a case-by-case basis approaches to implement the Tier II or Tier III metals emission limits provided by paragraphs (c) or (d) of this section alternative to monitoring the feed rate of metals in each feedstream.

(2) The emission limits provided by paragraph (d) of this section must be determined as follows:

(i) For each noncarcinogenic metal, by back-calculating from the RAC provided in appendix IV of this part to determine the allowable emission rate for each metal using the dilution factor for the maximum annual average ground level concentration predicted by dispersion modeling in conformance with paragraph (h) of this section; and

(ii) For each carcinogenic metal: by:

(A) Back-calculating from the RSD provided in appendix V of this part to determine the allowable emission rate for each metal if that metal were the only carcinogenic metal emitted using the dilution factor for the maximum annual average ground level concentration predicted by dispersion modeling in conformance with paragraph (h) of this section; and

(B) If more than one carcinogenic metal is emitted, selecting an emission limit for each carcinogenic metal not to exceed the emission rate determined by paragraph (f)(2)(ii)(A) of this section such that the sum for all carcinogenic metals of the ratio of the selected emission limit to the emission rate determined by that paragraph does not exceed 1.0.

(g) *Emission testing*—(1) *General.* Emission testing for metals shall be conducted using the Multiple Metals Train as described in appendix IX of this part.

(2) *Hexavalent chromium.* Emissions of chromium are assumed to be hexavalent chromium unless the owner or operator conducts emissions testing to determine hexavalent chromium emissions using procedures prescribed in Appendix IX of this part.

(h) *Dispersion modeling.* Dispersion modeling required under this section shall be conducted according to methods recommended in appendix X of this part, the "Hazardous Waste Combustion Air Quality Screening Procedure" described in appendix IX of this part, or "EPA SCREEN Screening Procedure" as described in Screening Procedures for Estimating Air Quality Impact of Stationary Sources (the latter document is incorporated by reference, see § 260.11) to predict the maximum annual average off-site ground level concentration. However, on-site concentrations must be considered when a person resides on-site.

(i) *Enforcement.* For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under § 266.102) will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of this section may be "information" justifying modification or revocation and re-issuance of a permit under § 270.41 of this chapter.

§ 266.107 Standards to control hydrogen chloride (HCl) and chlorine gas (Cl_2) emissions.

(a) *General.* The owner or operator must comply with the hydrogen chloride (HCl) and chlorine (Cl_2) controls provided by paragraphs (b), (c), or (d) of this section.

(b) *Screening limits*—(1) *Tier I feed rate screening limits.* Feed rate screening limits are specified for total chlorine in Appendix II of this part as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. The feed rate of total chlorine and chloride, both organic and inorganic, in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed the levels specified.

(2) *Tier II emission rate screen limits.* Emission rate screening limits for HCl and Cl_2 are specified in Appendix III of this part as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. The stack emission rates of HCl and Cl_2 shall not exceed the levels specified.

(3) *Definitions and limitations.* The definitions and limitations provided by § 266.106(b) for the following terms also apply to the screening limits provided by this paragraph: terrain-adjusted effective stack height, good engineering practice stack height, terrain type, land use, and criteria for facilities not eligible to use the screen limits.

(4) *Multiple stacks.* Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on HCl or Cl_2 emissions under a RCRA operating permit or interim status controls must comply with the Tier I and Tier II screening limits for those stacks assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics.

(i) The worst-case stack is determined by procedures provided in § 266.106(b)(6).

(ii) Under Tier I, the total feed rate of chlorine and chloride to all subject devices shall not exceed the screening limit for the worst-case stack.

(iii) Under Tier II, the total emissions of HCl and Cl_2 from all subject stacks shall not exceed the screening limit for the worst-case stack.

(c) *Tier III site-specific risk assessments*—(1) *General.* Conformance with the Tier III controls must be demonstrated by emissions testing to determine the emission rate for HCl and Cl_2, air dispersion modeling to predict the maximum annual average off-site ground level concentration for each compound, and a demonstration that acceptable ambient levels are not exceeded.

(2) *Acceptable ambient levels.* Appendix IV of this part lists the reference air concentrations (RACs) for HCl (7 micrograms per cubic meter) and Cl_2 (0.4 micrograms per cubic meter).

(3) *Multiple stacks.* Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on HCl or Cl_2 emissions under a RCRA operating permit or interim status controls must conduct emissions testing and dispersion modeling to demonstrate that the aggregate emissions from all such on-site stacks do not result in an

exceedance of the acceptable ambient levels for HCl and Cl_2.

(d) *Averaging periods.* The HCl and Cl_2 controls are implemented by limiting the feed rate of total chlorine and chloride in all feedstreams, including hazardous waste, fuels, and industrial furnace feed stocks. Under Tier I, the feed rate of total chloride and chlorine is limited to the Tier I Screening Limits. Under Tier II and Tier III, the feed rate of total chloride and chlorine is limited to the feed rates during the trial burn (for new facilities or an interim status facility applying for a permit) or the compliance test (for interim status facilities). The feed rate limits are based on either:

(i) An hourly rolling average as defined in § 266.102(e)(6); or

(ii) An instantaneous basis not to be exceeded at any time.

(e) *Adjusted Tier I feed rate screening limits.* The owner or operator may adjust the feed rate screening provided by Appendix I of this part to account for site-specific dispersion modeling. Under this approach, the adjusted feed rate screening limit is determined by back-calculating from the acceptable ambient level for Cl_2 provided by Appendix IV of this part using dispersion modeling to determine the maximum allowable emission rate. This emission rate becomes the adjusted Tier I feed rate screening limit.

(f) *Emissions testing.* Emissions testing for HCl and Cl_2 shall be conducted using the procedures described in Appendix IX of this part.

(g) *Dispersion modeling.* Dispersion modeling shall be conducted according to the provisions of § 266.106(h).

(h) *Enforcement.* For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under § 266.102) will be regarded as compliance with his section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of this section may be "information" justifying modification or revocation and re-issuance of a permit under § 270.41 of this chapter.

§ 266.108 Small quantity on-site burner exemption.

(a) *Exemption quantities.* Owners and operators of facilities that burn hazardous waste in an on-site boiler or industrial furnace are exempt from the requirements of this section provided that:

(1) The quantity of hazardous waste burned in a device for a calendar month does not exceed the limits provided in the following table based on the terrain-adjusted effective stack height as defined in § 266.106(b)(3):

EXEMPT QUANTITIES FOR SMALL QUANTITY BURNER EXEMPTION

Terrain-adjusted effective stack height of device (meters)	Allowable hazardous waste burning rate (gallons/month)	Terrain-adjusted effective stack height of device (meters)	Allowable hazardous waste burning rate (Gallons/month)
0 to 3.9	0	40.0 to 44.9	210
4.0 to 5.9	13	45.0 to 49.9	260
6.0 to 7.9	18	50.0 to 54.9	330
8.0 to 9.9	27	55.0 to 59.9	400
10.0 11.9	40	60.0 to 64.9	490
12.0 to 13.9	48	65.0 to 69.9	610
14.0 to 15.9	59	70.0 to 74.9	680
16.0 to 17.9	69	75.0 to 79.9	760
18.0 to 19.9	76	80.0 to 84.9	850
20.0 to 21.9	84	85.0 to 89.9	960
22.0 to 23.9	93	90.0 to 94.9	1,100
24.0 to 25.9	100	95.0 to 99.9	1,200
26.0 to 27.9	110	100.0 to 104.9	1,300
28.0 to 29.9	130	105.0 to 109.9	1,500
30.0 to 34.9	140	110.0 to 114.9	1,700
35.0 to 39.9	170	115.0 or greater.	1,900

(2) The maximum hazardous waste firing rate does not exceed at any time 1 percent of the total fuel requirements for the device (hazardous waste plus other fuel) on a volume basis;

(3) The hazardous waste has a minimum heating value of 5,000 Btu/lb, as generated; and

(4) The hazardous waste fuel does not contain (and is not derived from) EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027.

(b) *Mixing with nonhazardous fuels.* If hazardous waste fuel is mixed with a nonhazardous fuel, the quantity of hazardous waste before such mixing is used to comply with paragraph (a).

(c) *Multiple stacks.* If an owner or operator burns hazardous waste in more than one on-site boiler or industrial furnace exempt under this section, the quantity limits provided by paragraph (a)(1) of this section are implemented according to the following equation:

$$\sum_{i=1}^{n} \frac{\text{Actual Quantity Burned}_{(i)}}{\text{Allowable Quantity Burned}_{(i)}} < 1.0$$

where:

n means the number of stacks;

Actual Quantity Burned means the waste quantity burned per month in device "i";

Allowable Quantity Burned, means the maximum allowable exempt quantity for stack "i" from the table in (a)(1) above.

Note: Hazardous wastes that are subject to the special requirements for small quantity generators under § 261.5 of this chapter may be burned in an off-site device under the exemption provided by § 266.108, but must be included in the quantity determination for the exemption.

(d) *Notification requirements.* The owner or operator of facilities qualifying for the small quantity burner exemption under this section must provide a one-time signed, written notice to EPA indicating the following:

(1) The combustion unit is operating as a small quantity burner of hazardous waste;

(2) The owner and operator are in compliance with the requirements of this section; and

(3) The maximum quantity of hazardous waste that the facility may burn per month as provided by § 266.108(a)(1).

(e) *Recordkeeping requirements.* The owner or operator must maintain at the facility for at least three years sufficient records documenting compliance with the hazardous waste quantity, firing rate, and heating value limits of this section. At a minimum, these records must indicate the quantity of hazardous waste and other fuel burned in each unit per calendar month, and the heating value of the hazardous waste.

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§ 266.109 Low risk waste exemption.

(a) *Waiver of DRE standard.* The DRE standard of § 266.104(a) does not apply if the boiler or industrial furnace is operated in conformance with (a)(1) of this section and the owner or operator demonstrates by procedures prescribed in (a)(2) of this section that the burning will not result in unacceptable adverse health effects.

(1) The device shall be operated as follows:

(i) A minimum of 50 percent of fuel fired to the device shall be fossil fuel, fuels derived from fossil fuel, tall oil, or, if approved by the Director of a case-by-case basis, other nonhazardous fuel with combustion characteristics comparable to fossil fuel. Such fuels are termed "primary fuel" for purposes of this section. (Tall oil is a fuel derived from vegetable and rosin fatty acids.) The 50 percent primary fuel firing rate shall be determined on a total heat or volume input basis, whichever results in the larger volume of primary fuel fired;

(ii) Primary fuels and hazardous waste fuels shall have a minimum as-fired heating value of 8,000 Btu/lb;

(iii) The hazardous waste is fired directly into the primary fuel flame zone of the combustion chamber; and

(iv) The device operates in conformance with the carbon monoxide controls provided by § 266.104(b)(1)

Devices subject to the exemption provided by this section are not eligible for the alternative carbon monoxide controls provided by § 266.104(c).

(2) Procedures to demonstrate that the hazardous waste burning will not pose unacceptable adverse public health effects are as follows:

(i) Identify and quantify those nonmetal compounds listed in appendix VIII, part 261 of this chapter that could reasonably be expected to be present in the hazardous waste. The constituents excluded from analysis must be identified and the basis for their exclusion explained;

(ii) Calculate reasonable, worst case emission rates for each constitutent identified in paragraph (a)(2)(i) of this section by assuming the device achieves 99.9 percent destruction and removal efficiency. That is, assume that 0.1 percent of the mass weight of each constitutent fed to the device is emitted.

(iii) For each constituent identified in paragraph (a)(2)(i) of this section, use emissions dispersion modeling to predict the maximum annual average ground level concentration of the constituent.

(A) Dispersion modeling shall be conducted using methods specified in § 266.106(h).

(B) Owners and operators of facilities with more than one on-site stack from a boiler or industrial furnace that is exempt under this section must conduct dispersion modeling of emissions from all stacks exempt under this section to predict ambient levels prescribed by this paragraph.

(iv) Ground level concentrations of constituents predicted under paragraph (a)(iii) of this section must not exceed the following levels:

(A) For the noncarcinogenic componds listed in appendix IV of this part, the levels established in appendix IV;

(B) For the carcinogenic compounds listed in appendix V of this part, the sum for all constituents of the ratios of the actual ground level concentration to the level established in appendix V cannot exceed 1.0; and

(C) For constituents not listed in appendix IV or V, 0.1 micrograms per cubic meter.

(b) *Waiver of particular matter standard.* The particulate matter standard of § 266.105 does not apply if:

(1) The DRE standard is waived under paragraph (a) of this section; and

(2) The owner or operator complies with the Tier I metals feed rate screening limits provided by § 266.106 (b) or (e).

§ 266.110 Waiver of DRE trial burn for boilers.

Boilers that operate under the special requirements of this section, and that do not burn hazardous waste containing (or derived from) EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027, are considered to be in conformance with the DRE standard of § 266.104(a), and a trial burn to demonstrate DRE is waived. When burning hazardous waste:

(a) A minimum of 50 percent of fuel fired to the boiler shall be fossil fuel, fuels derived from fossil fuel, tall oil, or, if approved by the Director on a case-by-case basis, other nonhazardous fuel with combustion characteristics comparable to fossil fuel. Such fuels are termed "primary fuel" for purposes of this section. (Tall oil is a fuel derived from vegetable and rosin fatty acids.) The 50 percent primary fuel firing rate shall be determined on a total heat or volume input basis, whichever results in the larger volume of primary fuel fired;

(b) Boiler load shall not be less than 40 percent. Boiler load is the ratio at any time of the total heat input to the maximum design heat input;

(c) Primary fuels and hazardous waste fuels shall have a minimum as-fired heating value of 8,000 Btu/lb, and each material fired in a burner where hazardous waste is fired must have a heating value of at least 8,000 Btu/lb, as-fired;

(d) The device shall operate in conformance with the carbon monoxide standard provided by § 266.104(b)(1). Boilers subject to the waiver of the DRE trial burn provided by this section are not eligible for the alternative carbon monoxide standard provided by § 266.104(c);

(e) The boiler must be a watertube type boiler that does not feed fuel using a stoker or stoker type mechanism; and

(f) The hazardous waste shall be fired directly into the primary fuel flame zone of the combustion chamber with an air or steam atomization firing system, mechanical atomization system, or a rotary cup atomization system under the following conditions:

(1) *Viscosity.* The viscosity of the hazardous waste fuel as-fired shall not exceed 300 SSU;

(2) *Particle size.* When a high pressure air or steam atomizer, low pressure atomizer, or mechanical atomizer is used, 70% of the hazardous waste fuel must pass through a 200 mesh (74 micron) screen, and when a rotary cup atomizer is used, 70% of the hazardous waste must pass through a 100 mesh (150 micron) screen;

(3) *Mechanical atomization systems.* Fuel pressure within a mechanical atomization system and fuel flow rate shall be maintained within the design range taking into account the viscosity and volatility of fuel;

(4) *Rotary cup atomization systems.* Fuel flow rate through a rotary cup atomization system must be maintained within the design range taking into account the viscosity and volatility of the fuel.

§ 266.111 Standards for direct transfer.

(a) *Applicability.* The regulations in this section apply to owners and operators of boilers and industrial furnaces subject to §§ 266.102 or 266.103 if hazardous waste is directly transferred from a transport vehicle to a boiler or industrial furnace without the use of a storage unit.

(b) *Definitions.* (1) When used in this section, the following terms have the meanings given below:

Direct transfer equipment means any device (including but not limited to, such devices as piping, fittings, flanges, valves, and pumps) that is used to distribute, meter, or control the flow of hazardous waste between a container (i.e., transport vehicle) and a boiler or industrial furnace.

Container means any portable device in which hazardous waste is transported, stored, treated, or otherwise handled, and includes transport vehicles that are containers themselves (e.g., tank trucks, tanker-trailers, and rail tank cars), and containers placed on or in a transport vehicle.

(2) This section references several requirements provided in subparts I and J of parts 264 and 265. For purposes of this section, the term "tank systems" in those referenced requirements means direct transfer equipment as defined in paragraph (b)(1) of this section.

(c) *General operating requirements.* (1) No direct transfer of a pumpable hazardous waste shall be conducted from an open-top container to a boiler or industrial furnace.

(2) Direct transfer equipment used for pumpable hazardous waste shall always be closed, except when necessary to add or remove the waste, and shall not be opened, handled, or stored in a manner that may cause any rupture or leak.

(3) The direct transfer of hazardous waste to a boiler or industrial furnace shall be conducted so that it does not:

(i) Generate extreme heat or pressure, fire, explosion, or violent reaction;

(ii) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;

(iii) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(iv) Damage the structural integrity of the container or direct transfer equipment containing the waste;

(v) Adversely affect the capability of the boiler or industrial furnace to meet the standards provided by §§ 266.104 through 266.107; or

(vi) Threaten human health or the environment.

(4) Hazardous waste shall not be placed in direct transfer equipment, if it could cause the equipment or its secondary containment system to rupture, leak, corrode, or otherwise fail.

(5) The owner or operator of the facility shall use appropriate controls and practices to prevent spills and overflows from the direct transfer equipment or its secondary containment systems. These include at a minimum:

(i) Spill prevention controls (e.g., check valves, dry discount couplings); and

(ii) Automatic waste feed cutoff to use if a leak or spill occurs from the direct transfer equipment.

(d) *Areas where direct transfer vehicles (containers) are located.* Applying the definition of container under this section, owners and operators must comply with the following requirements:

(1) The containment requirements of § 264.175 of this chapter;

(2) The use and management requirements of subpart I, part 265 of this chapter, except for §§ 265.170 and 265.174; and

(3) The closure requirements of § 264.178 of this chapter.

(e) *Direct transfer equipment.* Direct transfer equipment must meet the following requirements:

(1) *Secondary containment.* Owners and operators shall comply with the secondary containment requirements of § 265.193 of this chapter, except for paragraphs 265.193 (a), (d), (e), and (i) as follows:

(i) For all new direct transfer equipment, prior to their being put into service; and

(ii) For existing direct transfer equipment within 2 years after August 21, 1991.

(2) *Requirements prior to meeting secondary containment requirements.* (i) For existing direct transfer equipment that does not have secondary containment, the owner or operator shall determine whether the equipment is leaking or is unfit for use. The owner or operator shall obtain and keep on file at the facility a written assessment reviewed and certified by a qualified, registered professional engineer in accordance with § 270.11(d) of this chapter that attests to the equipment's integrity by August 21, 1992.

(ii) This assessment shall determine whether the direct transfer equipment is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment shall consider the following:

(A) Design standard(s), if available, according to which the direct transfer equipment was constructed;

(B) Hazardous characteristics of the waste(s) that have been or will be handled;

(C) Existing corrosion protection measures;

(D) Documented age of the equipment, if available, (otherwise, an estimate of the age); and

(E) Results of a leak test or other integrity examination such that the effects of temperature variations, vapor pockets, cracks, leaks, corrosion, and erosion are accounted for.

(iii) If, as a result of the assessment specified above, the direct transfer equipment is found to be leaking or unfit for use, the owner or operator shall comply with the requirements of §§ 265.196 (a) and (b) of this chapter.

(3) *Inspections and recordkeeping.* (i) The owner or operator must inspect at least once each operating hour when hazardous waste is being transferred from the transport vehicle (container) to the boiler or industrial furnace:

(A) Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) to ensure that it is in good working order;

(B) The above ground portions of the direct transfer equipment to detect corrosion, erosion, or releases of waste (e.g., wet spots, dead vegetation); and

(C) Data gathered from monitoring equipment and leak-detection equipment, (e.g., pressure and temperature gauges) to ensure that the direct transfer equipment is being operated according to its design.

(ii) The owner or operator must inspect cathodic protection systems, if used, to ensure that they are functioning properly according to the schedule provided by § 265.195(b) of this chapter.

(iii) Records of inspections made under this paragraph shall be maintained in the operating record at the facility, and available for inspection for at least 3 years from the date of the inspection.

(4) *Design and installation of new ancillary equipment.* Owners and operators must comply with the requirements of § 265.192 of this chapter.

(5) *Response to leaks or spills.* Owners and operators must comply with the requirements of § 265.196 of this chapter.

(6) *Closure.* Owners and operators must comply with the requirements of § 265.197 of this chapter, except for § 265.197 (c)(2) through (c)(4).

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§ 266.122 Regulation of residues.

A residue derived from the burning or processing of hazardous waste in a boiler or industrial furnace is not excluded from the definition of a hazardous waste under § 261.4(b) (4), (7), or (8) unless the device and the owner or operator meet the following requirements:

(a) The device meets the following criteria:

(1) *Boilers.* Boilers must burn coal and at least 50% of the heat input to the boiler must be provided by the coal;

(2) *Ore or mineral furnaces.* Industrial furnaces subject to § 261.4(b)(7) must process at least 50% by weight normal, nonhazardous raw materials;

(3) *Cement kilns.* Cement kilns must process at least 50% by weight normal cement-production raw materials;

(b) The owner or operator demonstrates that the hazardous waste does not significantly affect the residue by demonstrating conformance with either of the following criteria:

(1) *Comparison of waste-derived residue with normal residue.* The waste-derived residue must not contain appendix VIII, part 261 constituents (toxic constituents) that could reasonably be attributable to the hazardous waste at concentrations significantly higher than in residue generated without burning or processing of hazardous waste, using the following procedure. Toxic compounds that could reasonably be attributable to burning or processing the hazardous waste (constituents of concern) include toxic constituents in the hazardous waste, and the organic compounds listed in appendix VIII of this part that may be generated as products of incomplete combustion. Sampling and analyses shall be in conformance with procedures prescribed in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, incorporated by reference in § 260.11(a) of this chapter.

(i) *Normal residue.* Concentrations of toxic constituents of concern in normal residue shall be determined based on analyses of a minimum of 10 composite samples. The upper 95% confidence level about the mean of the concentration in the normal residue shall be considered

the statistically-derived concentration in the normal residue. If changes in raw materials or fuels reduce the statistically-derived concentrations of the toxic constituents of concern in the normal residue, the statistically-derived concentrations must be revised or statistically-derived concentrations of toxic constituents in normal residue must be established for a new mode of operation with the new raw material or fuel. To determine the upper 95% confidence level about the mean of the concentration in the normal residue, the owner or operator shall use statistical procedures prescribed in "Statistical Methodology for Bevill Residue Determinations" in appendix IX of this part.

(ii) *Waste-derived residue.* Concentrations of toxic constituents of concern in waste-derived residue shall be determined based on analysis of samples composited over a period of not more than 24 hours. The concentration of a toxic constituent in the waste-derived residue is not considered to be significantly higher than in the normal residue if the concentration in the waste-derived residue does not exceed the concentration established for the normal residue under paragraph (b)(1)(i) of this section; or

(2) *Comparison of waste-derived residue concentrations with health-based limits*—(i) *Nonmetal constituents.* The concentrations of nonmetal toxic constituents of concern (specified in paragraph (b)(1) of this section) in the waste-derived residue must not exceed the health-based levels specified in appendix VII of this part. If a health-based limit for a constituent of concern is not listed in appendix VII of this part, then a limit of 0.002 micrograms per kilogram or the level of detection (using analytical procedures prescribed in SW-846), whichever is higher, shall be used; and

(ii) *Metal constituents.* The concentration of metals in an extract obtained using the Toxicity Characteristic Leaching Procedure of § 261.24 of this chapter must not exceed the levels specified in appendix VII of this part; and

(c) Records sufficient to document compliance with the provisions of this section must be retained for a period of three years. At a minimum, the following shall be recorded:

(1) Levels of constituents in appendix VIII, part 261, that are present in waste-derived residues;

(2) If the waste-derived residue is compared with normal residue under paragraph (b)(1) of this section:

(i) The levels of constituents in appendix VIII, part 261, that are present in normal residues; and

(ii) Data and information, including analyses of samples as necessary, obtained to determine if changes in raw materials or fuels would reduce the concentration of toxic constituents of concern in the normal residue.

3. Appendices I through X are added to part 266 as follows:

Appendix I.—Tier I and Tier II Feed Rate and Emissions Screening Limits for Metals

TABLE I-A.—TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR CARCINOGENIC METALS FOR FACILITIES IN NONCOMPLEX TERRAIN

[Values for urban areas]

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4	6.0E+01	1.0E+04	1.8E+01	6.0E+01	6.0E+02	6.0E+01
6	6.8E+01	1.1E+04	2.0E+01	6.8E+01	6.8E+02	6.8E+01
8	7.6E+01	1.3E+04	2.3E+01	7.6E+01	7.6E+02	7.6E+01
10	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	8.6E+01
12	9.6E+01	1.7E+04	3.0E+01	9.6E+01	9.6E+02	9.6E+01
14	1.1E+02	1.8E+04	3.4E+01	1.1E+02	1.1E+03	1.1E+02
16	1.3E+02	2.1E+04	3.6E+01	1.3E+02	1.3E+03	1.3E+02
18	1.4E+02	2.4E+04	4.3E+01	1.4E+02	1.4E+03	1.4E+02
20	1.6E+02	2.7E+04	4.6E+01	1.6E+02	1.6E+03	1.6E+02
22	1.8E+02	3.0E+04	5.4E+01	1.8E+02	1.8E+03	1.8E+02
24	2.0E+02	3.4E+04	6.0E+01	2.0E+02	2.0E+03	2.0E+02
26	2.3E+02	3.9E+04	6.8E+01	2.3E+02	2.3E+03	2.3E+02
28	2.6E+02	4.3E+04	7.8E+01	2.6E+02	2.6E+03	2.6E+02
30	3.0E+02	5.0E+04	9.0E+01	3.0E+02	3.0E+03	3.0E+02
35	4.0E+02	6.6E+04	1.1E+02	4.0E+02	4.0E+03	4.0E+02
40	4.6E+02	7.8E+04	1.4E+02	4.6E+02	4.6E+03	4.6E+02
45	6.0E+02	1.0E+05	1.8E+02	6.0E+02	6.0E+03	6.0E+02
50	7.8E+02	1.3E+05	2.3E+02	7.8E+02	7.8E+03	7.8E+02
55	9.6E+02	1.7E+05	3.0E+02	9.6E+02	9.6E+03	9.6E+02
60	1.2E+03	2.0E+05	3.6E+02	1.2E+03	1.2E+04	1.2E+03
65	1.5E+03	2.5E+05	4.3E+02	1.5E+03	1.5E+04	1.5E+03
70	1.7E+03	2.8E+05	5.0E+02	1.7E+03	1.7E+04	1.7E+03
75	1.9E+03	3.2E+05	5.8E+02	1.9E+03	1.9E+04	1.9E+03
80	2.2E+03	3.6E+05	6.4E+02	2.2E+03	2.2E+04	2.2E+03
85	2.5E+03	4.0E+05	7.6E+02	2.5E+03	2.5E+04	2.5E+03
90	2.8E+03	4.6E+05	8.2E+02	2.8E+03	2.8E+04	2.8E+03
95	3.2E+03	5.4E+05	9.6E+02	3.2E+03	3.2E+04	3.2E+03
100	3.6E+03	6.0E+05	1.1E+03	3.6E+03	3.6E+04	3.6E+03
105	4.0E+03	6.6E+05	1.2E+03	4.0E+03	4.0E+04	4.0E+03
110	4.6E+03	7.8E+05	1.4E+03	4.6E+03	4.6E+04	4.6E+03
115	5.4E+03	8.6E+05	1.6E+03	5.4E+03	5.4E+04	5.4E+03
120	6.0E+03	1.0E+06	1.8E+03	6.0E+03	6.0E+04	6.0E+03

TABLE I–B.—TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR NONCARCINOGENIC METALS FOR FACILITIES IN NONCOMPLEX TERRAIN

(Values for rural areas)

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4	3.1E+01	5.2E+03	9.4E+00	3.1E+01	3.1E+02	3.1E+01
6	3.6E+01	6.0E+03	1.1E+01	3.6E+01	3.6E+02	3.6E+01
8	4.0E+01	6.8E+03	1.2E+01	4.0E+01	4.0E+02	4.0E+01
10	4.6E+01	7.8E+03	1.4E+01	4.6E+01	4.6E+02	4.6E+01
12	5.8E+01	9.6E+03	1.7E+01	5.8E+01	5.8E+02	5.8E+01
14	6.8E+01	1.1E+04	2.1E+01	6.8E+01	6.8E+02	6.8E+01
16	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	8.6E+01
18	1.1E+02	1.8E+04	3.2E+01	1.1E+02	1.1E+03	1.1E+02
20	1.3E+02	2.2E+04	4.0E+01	1.3E+02	1.3E+03	1.3E+02
22	1.7E+02	2.8E+04	5.0E+01	1.7E+02	1.7E+03	1.7E+02
24	2.2E+02	3.6E+04	6.4E+01	2.2E+02	2.2E+03	2.2E+02
26	2.8E+02	4.6E+04	8.2E+01	2.8E+02	2.8E+03	2.8E+02
28	3.5E+02	5.8E+04	1.0E+02	3.5E+02	3.5E+03	3.5E+02
30	4.3E+02	7.6E+04	1.3E+02	4.3E+02	4.3E+03	4.3E+02
35	7.2E+02	1.2E+05	2.1E+02	7.2E+02	7.2E+03	7.2E+02
40	1.1E+03	1.8E+05	3.2E+02	1.1E+03	1.1E+04	1.1E+03
45	1.5E+03	2.5E+05	4.6E+02	1.5E+03	1.5E+04	1.5E+03
50	2.0E+03	3.3E+05	6.0E+02	2.0E+03	2.0E+04	2.0E+03
55	2.6E+03	4.4E+05	7.8E+02	2.6E+03	2.6E+04	2.6E+03
60	3.4E+03	5.8E+05	1.0E+03	3.4E+03	3.4E+04	3.4E+03
65	4.6E+03	7.6E+05	1.4E+03	4.6E+03	4.6E+04	4.6E+03
70	5.4E+03	9.0E+05	1.6E+03	5.4E+03	5.4E+04	5.4E+03
75	6.4E+03	1.1E+06	1.9E+03	6.4E+03	6.4E+04	6.4E+03
80	7.6E+03	1.3E+06	2.3E+03	7.6E+03	7.6E+04	7.6E+03
85	9.4E+03	1.5E+06	2.8E+03	9.4E+03	9.4E+04	9.4E+03
90	1.1E+04	1.8E+06	3.3E+03	1.1E+04	1.1E+05	1.1E+04
95	1.3E+04	2.2E+06	3.9E+03	1.3E+04	1.3E+05	1.3E+04
100	1.5E+04	2.6E+06	4.6E+03	1.5E+04	1.5E+05	1.5E+04
105	1.8E+04	3.0E+06	5.4E+03	1.8E+04	1.8E+05	1.8E+04
110	2.2E+04	3.6E+06	6.6E+03	2.2E+04	2.2E+05	2.2E+04
115	2.6E+04	4.4E+06	7.8E+03	2.6E+04	2.6E+05	2.6E+04
120	3.1E+04	5.0E+06	9.2E+03	3.1E+04	3.1E+05	3.1E+04

TABLE I–C.—TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR NONCARCINOGENIC METALS FOR FACILITIES IN COMPLEX TERRAIN

Values for urban and rural areas

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4	1.4E+01	2.4E+03	4.3E+00	1.4E+01	1.4E+02	1.4E+01
6	2.1E+01	3.5E+03	6.2E+00	2.1E+01	2.1E+02	2.1E+01
8	3.0E+01	5.0E+03	9.2E+00	3.0E+01	3.0E+02	3.0E+01
10	4.3E+01	7.6E+03	1.3E+01	4.3E+01	4.3E+02	4.3E+01
12	5.4E+01	9.0E+03	1.7E+01	5.4E+01	5.4E+02	5.4E+01
14	6.8E+01	1.1E+04	2.0E+01	6.8E+01	6.8E+02	6.8E+01
16	7.8E+01	1.3E+04	2.4E+01	7.8E+01	7.8E+02	7.8E+01
18	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	8.6E+01
20	9.6E+01	1.6E+04	2.9E+01	9.6E+01	9.6E+02	9.6E+01
22	1.0E+02	1.8E+04	3.2E+01	1.0E+02	1.0E+03	1.0E+02
24	1.2E+02	1.9E+04	3.5E+01	1.2E+02	1.2E+03	1.2E+02
26	1.3E+02	2.2E+04	3.6E+01	1.3E+02	1.3E+03	1.3E+02
28	1.4E+02	2.4E+04	4.3E+01	1.4E+02	1.4E+03	1.4E+02
30	1.6E+02	2.7E+04	4.6E+01	1.6E+02	1.6E+03	1.6E+02
35	2.0E+02	3.3E+04	5.6E+01	2.0E+02	2.0E+03	2.0E+02
40	2.4E+02	4.0E+04	7.2E+01	2.4E+02	2.4E+03	2.4E+02
45	3.0E+02	5.0E+04	9.0E+01	3.0E+02	3.0E+03	3.0E+02
50	3.6E+02	6.0E+04	1.1E+02	3.6E+02	3.6E+03	3.6E+02
55	4.6E+02	7.6E+04	1.4E+02	4.6E+02	4.6E+03	4.6E+02
60	5.8E+02	9.4E+04	1.7E+02	5.8E+02	5.8E+03	5.8E+02
65	6.8E+02	1.1E+05	2.1E+02	6.8E+02	6.8E+03	6.8E+02
70	7.8E+02	1.3E+05	2.4E+02	7.8E+02	7.8E+03	7.8E+02
75	8.6E+02	1.4E+05	2.6E+02	8.6E+02	8.6E+03	8.6E+02
80	9.6E+02	1.6E+05	2.9E+02	9.6E+02	9.6E+03	9.6E+02
85	1.1E+03	1.8E+05	3.3E+02	1.1E+03	1.1E+04	1.1E+03
90	1.2E+03	2.0E+05	3.6E+02	1.2E+03	1.2E+04	1.2E+03
95	1.4E+03	2.3E+05	4.0E+02	1.4E+03	1.4E+04	1.4E+03
100	1.5E+03	2.6E+05	4.6E+02	1.5E+03	1.5E+04	1.5E+03
105	1.7E+03	2.8E+05	5.0E+02	1.7E+03	1.7E+04	1.7E+03
110	1.9E+03	3.2E+05	5.8E+02	1.9E+03	1.9E+04	1.9E+03
115	2.1E+03	3.6E+05	6.4E+02	2.1E+03	2.1E+04	2.1E+03
120	2.4E+03	4.0E+05	7.2E+02	2.4E+03	2.4E+04	2.4E+03

TABLE I-D.—TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR CARCINOGENIC METALS FOR FACILITIES IN NONCOMPLEX TERRAIN

	Values for use in urban areas				Values for use in rural areas			
Terrain adjusted eff. stack ht. (m)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryllium (g/hr)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryllium (g/hr)
4	4.6E−01	1.1E+00	1.7E−01	8.2E−01	2.4E−01	5.8E−01	8.6E−02	4.3E−01
6	5.4E−01	1.3E+00	1.9E−01	9.4E−01	2.8E−01	6.6E−01	1.0E−01	5.0E−01
8	6.0E−01	1.4E+00	2.2E−01	1.1E+00	3.2E−01	7.6E−01	1.1E−01	5.6E−01
10	6.8E−01	1.6E+00	2.4E−01	1.2E+00	3.6E−01	8.6E−01	1.3E−01	6.4E−01
12	7.6E−01	1.8E+00	2.7E−01	1.4E+00	4.3E−01	1.1E+00	1.6E−01	7.8E−01
14	8.6E−01	2.1E+00	3.1E−01	1.5E+00	5.4E−01	1.3E+00	2.0E−01	9.6E−01
16	9.6E+01	2.3E+00	3.5E−01	1.7E+00	6.8E−01	1.6E+00	2.4E−01	1.2E+00
18	1.1E+00	2.6E+00	4.0E−01	2.0E+00	8.2E−01	2.0E+00	3.0E−01	1.5E+00
20	1.2E+00	3.0E+00	4.4E−01	2.2E+00	1.0E+00	2.5E+00	3.7E−01	1.9E+00
22	1.4E+00	3.4E+00	5.0E−01	2.5E+00	1.3E+00	3.2E+00	4.8E−01	2.4E+00
24	1.6E+00	3.9E+00	5.8E−01	2.8E+00	1.7E+00	4.0E+00	6.0E−01	3.0E+00
26	1.8E+00	4.3E+00	6.4E−01	3.2E+00	2.1E+00	5.0E+00	7.6E−01	3.9E+00
28	2.0E+00	4.8E+00	7.2E−01	3.6E+00	2.7E+00	6.4E+00	9.8E−01	5.0E+00
30	2.3E+00	5.4E+00	8.2E−01	4.0E+00	3.5E+00	8.2E+00	1.2E+00	6.2E+00
35	3.0E+00	6.8E+00	1.0E+00	5.4E+00	5.4E+00	1.3E+01	1.9E+00	9.6E+00
40	3.6E+00	9.0E+00	1.3E+00	6.8E+00	8.2E+00	2.0E+01	3.0E+00	1.5E+01
45	4.6E+00	1.1E+01	1.7E+00	8.6E+00	1.1E+01	2.8E+01	4.2E+00	2.1E+01
50	6.0E+00	1.4E+01	2.2E+00	1.1E+01	1.5E+01	3.7E+01	5.4E+00	2.8E+01
55	7.6E+00	1.8E+01	2.7E+00	1.4E+01	2.0E+01	5.0E+01	7.2E+00	3.6E+01
60	9.4E+00	2.2E+01	3.4E+00	1.7E+01	2.7E+01	6.4E+01	9.6E+00	4.8E+01
65	1.1E+01	2.8E+01	4.2E+00	2.1E+01	3.6E+01	8.6E+01	1.3E+01	6.4E+01
70	1.3E+01	3.1E+01	4.6E+00	2.4E+01	4.3E+01	1.0E+02	1.5E+01	7.6E+01
75	1.5E+01	3.6E+01	5.4E+00	2.7E+01	5.0E+01	1.2E+02	1.8E+01	9.0E+01
80	1.7E+01	4.0E+01	6.0E+00	3.0E+01	6.0E+01	1.4E+02	2.2E+01	1.1E+02
85	1.9E+01	4.6E+01	6.8E+00	3.4E+01	7.2E+01	1.7E+02	2.6E+01	1.3E+02
90	2.2E+01	5.0E+01	7.8E+00	3.9E+01	8.6E+01	2.0E+02	3.0E+01	1.5E+02
95	2.5E+01	5.8E+01	9.0E+00	4.4E+01	1.0E+02	2.4E+02	3.6E+01	1.8E+02
100	2.8E+01	6.8E+01	1.0E+01	5.0E+01	1.2E+02	2.9E+02	4.3E+01	2.2E+02
105	3.2E+01	7.6E+01	1.1E+01	5.6E+01	1.4E+02	3.4E+02	5.0E+01	2.6E+02
110	3.6E+01	8.6E+01	1.3E+01	6.4E+01	1.7E+02	4.0E+02	6.0E+01	3.0E+02
115	4.0E+01	9.6E+01	1.5E+01	7.2E+01	2.0E+02	4.8E+02	7.2E+01	3.6E+02
120	4.6E+01	1.1E+02	1.7E+01	8.2E+01	2.4E+02	5.8E+02	8.6E+01	4.3E+02

TABLE I-E.—TIER I AND TIER II FEED RATE AND EMISSIONS SCREENING LIMITS FOR CARCINOGENIC METALS FOR FACILITIES IN COMPLEX TERRAIN

	Values for use in urban and rural areas			
Terrain adjusted eff. stack ht. (m)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryllium (g/hr)
4	1.1E−01	2.6E−01	4.0E−02	2.0E−01
6	1.6E−01	3.9E−01	5.8E−02	2.9E−01
8	2.4E−01	5.8E−01	8.6E−02	4.3E−01
10	3.5E−01	8.2E−01	1.3E−01	6.2E−01
12	4.3−01	1.0E+00	1.5E−01	7.6E−01
14	5.0E−01	1.3E+00	1.9E−01	9.4E−01
16	6.0E−01	1.4E+00	2.2E−01	1.1E+00
18	6.6E−01	1 6E+00	2.4E−01	1.2E+00
20	7.6E−01	1.8E+00	2.7E−01	1.3E+00
22	8.2E−01	1.9E+00	3.0E−01	1.5E+00
24	9.0E−01	2.1E+00	3.3E−01	1.6E+00
26	1.0E+00	2.4E+00	3.6E−01	1.8E+00
28	1.1E+00	2.7E+00	4.0E−01	2.0E+00
30	1.2E+00	3.0E+00	4.4E−01	2.2E+00
35	1.5E+00	3.7E+00	5.4E−01	2.7E+00
40	1.9E+00	4.6E+00	6.8E−01	3.4E+00
45	2.4E+00	5.4E+00	8.4E−01	4.2E+00
50	2.9E+00	6.8E+00	1.0E+00	5.0E+00
55	3.5E+00	8.4E+00	1.3E+00	6.4E+00
60	4.3E+00	1.0E+01	1.5E+00	7.8E+00
65	5.4E+00	1.3E+01	1.9E+00	9.6E+00
70	6.0E+00	1.4E+01	2.2E+00	1.1E+01
75	6.8E+00	1.6E+01	2.4E+00	1.2E+01
90	7.6E+00	1.8E+01	2.7E+00	1.3E+01
85	8.2E+00	2.0E+01	3.0E+00	1.5E+01
90	9.4E+00	2.3E+01	3.4E+00	1.7E+01
95	1.0E+01	2.5E+01	4.0E+00	1.9E+01
100	1.2E+01	2.8E+01	4.3E+00	2.1E+01
105	1.3E+01	3.2E+01	4.8E+00	2.4E+01
110	1.5E+01	3.5E+01	5.4E+00	2.7E+01
115	1.7E+01	4.0E+01	6.0E+00	3.0E+01
120	1.9E+01	4.4E+01	6.4E+00	3.3E+01

Appendix II.—Tier I Feed Rate Screening Limits for Total Chlorine and Chloride

TIER I FEED RATE SCREENING LIMITS FOR CHLORINE FOR FACILITIES IN NONCOMPLEX AND COMPLEX TERRAIN

Terrain-adjusted effective stack height (m)	Noncomplex		Complex
	Urban (lb/hr)	Rural (lb/hr)	(lb/hr)
4	1.8E−02	9.2E−03	4.1E−03
6	2.0E−02	1.0E−02	6.1E−03
8	2.2E−02	1.2E−02	9.0E−03
10	2.5E−02	1.4E−02	1.3E−02
12	2.9E−02	1.7E−02	1.6E−02
14	3.3E−02	2.0E−02	2.0E−02
16	3.7E−02	2.5E−02	2.3E−02
18	4.1E−02	3.2E−02	2.5E−02
20	4.7E−02	3.9E−02	2.9E−02
22	5.3E−02	5.0E−02	3.1E−02
24	6.0E−02	6.3E−02	3.5E−02
26	6.8E−02	8.1E−02	3.8E−02
28	7.6E−02	1.0E−01	4.2E−02
30	8.7E−02	1.3E−01	4.7E−02
35	1.2E−01	2.1E−01	5.8E−02
40	1.4E−01	3.2E−01	7.2E−02
45	1.8E−01	4.4E−01	8.8E−02
50	2.3E−01	5.8E−01	1.1E−01
55	2.9E−01	7.7E−01	1.4E−01
60	3.6E−01	1.0E+00	1.7E−01
65	4.3E−01	1.4E+00	2.0E−01
70	5.0E−01	1.8E+00	2.3E−01
75	5.8E−01	1.9E+00	2.5E−01
80	6.3E−01	2.2E+00	2.9E−01
85	7.3E−01	2.8E+00	3.2E−01
90	8.3E−1	3.2E+00	3.6E−01
95	9.3E−01	3.8E+00	4.0E−01
100	1.1E+00	4.6E+00	4.4E−01
105	1.2E+00	5.4E+00	5.0E−01
110	1.4E+00	6.5E+00	5.6E−01
115	1.6E+00	7.7E+00	6.2E−01
120	1.8E+00	9.1E+00	7.1E−01

Appendix III.—Tier II Emission Rate Screening Limits for Free Chlorine and Hydrogen Chloride

TIER II EMISSIONS SCREENING LIMITS FOR Cl_2 AND HCl IN NONCOMPLEX TERRAIN

Terrain-adjusted effective stack height (m)	Values for use in urban areas		Values for use in rural areas	
	Cl_2 (g/sec)	HCl (g/sec)	Cl_2 (g/sec)	HCl (g/sec)
4	2.3E−03	4.0E−01	1.2E−03	2.0E−01
6	2.5E−03	4.4E−01	1.3E−03	2.3E−01
8	2.8E−03	4.9E−01	1.5E−03	2.6E−01
10	3.2E−03	5.6E−01	1.7E−03	3.0E−01
12	3.6E−03	6.3E−01	2.1E−03	3.7E−01
14	4.1E−03	7.2E−01	2.5E−03	4.4E−01
16	4.7E−03	8.2E−01	3.2E−03	5.6E−01
18	5.2E−03	9.1E−01	4.0E−03	7.0E−01
20	5.9E−03	1.0E+00	4.9E−03	8.6E−01
22	6.7E−03	1.2E+00	6.3E−03	1.1E+00
24	7.6E−03	1.3E+00	8.0E−03	1.4E+00
26	8.5E−03	1.5E+00	1.0E−02	1.8E+00
28	9.6E−03	1.7E+00	1.3E−02	2.3E+00
30	1.1E−02	1.9E+00	1.6E−02	2.8E+00
35	1.5E−02	2.6E+00	2.7E−02	4.7E+00
40	1.7E−02	3.0E+00	4.0E−02	7.0E+00
45	2.3E−02	4.0E+00	5.6E−02	9.8E+00
50	2.9E−02	5.1E+00	7.3E−02	1.3E+01
55	3.6E−02	6.3E+00	9.7E.02	1.7E+01
60	4.5E−02	7.9E+00	1.3E−01	2.2E+01
65	5.5E−02	9.6E+00	1.7E−01	3.0E+01
70	6.3E−02	1.1E+01	2.0E−01	3.5E+01
75	7.1E−02	1.2E+01	2.4E−01	4.2E+01
80	8.0E−02	1.4E+01	2.8E−01	4.9E+01
85	9.2E−02	1.6E+01	3.5E−01	6.1E+01
90	1.0E−01	1.8E+01	4.0E−01	7.0E+01
95	1.2E−01	2.1E+01	4.8E−01	8.4E+01

TIER II EMISSIONS SCREENING LIMITS FOR Cl_2 AND HCl IN NONCOMPLEX TERRAIN—Continued

Terrain-adjusted effective stack height (m)	Values for use in urban areas		Values for use in rural areas	
	Cl_2 (g/sec)	HCl (g/sec)	Cl_2 (g/sec)	HCl (g/sec)
100	1.3E−01	2.3E+01	5.7E−01	1.0E+02
105	1.5E−01	2.6E+01	6.6E−01	1.2E+02
110	1.7E−01	3.0E+01	8.1E−01	1.4E+02
115	2.0E−01	3.5E+01	9.7E−01	1.7E+02
120	2.3E−01	4.0E+01	1.1E+00	2.0E+02

TIER II EMISSIONS SCREENING LIMITS FOR Cl_2 AND HCl IN COMPLEX TERRAIN

Terrain-adjusted effective stack height (m)	Values for use in urban and rural areas	
	Cl_2 (g/sec)	HCl (g/sec)
4	5.2E−04	9.1E−02
6	7.7E−04	1.4E−01
8	1.1E−03	2.0E−01
10	1.6E−03	2.8E−01
12	2.0E−03	3.5E−01
14	2.5E−03	4.4E−01
16	2.9E−03	5.1E−01
18	3.2E−03	5.6E−01
20	3.6E−03	6.3E−01
22	3.9E−03	6.8E−01
24	4.4E−03	7.7E−01
26	4.6E−03	8.4E−01
28	5.3E−03	9.3E−01
30	5.9E−03	1.0E+00
35	7.3E−03	1.3E+00
40	9.1E−03	1.6E+00
45	1.1E−02	1.9E+00
50	1.3E−02	2.3E+00
55	1.7E−02	3.0E+00
60	2.1E−02	3.7E+00
65	2.5E−02	4.4E+00
70	2.9E−02	5.1E+00
75	3.2E−02	5.6E+00
80	3.6E−02	6.3E+00
85	4.0E−02	7.0E+00
90	4.5E−02	7.9E+00
95	5.1E−02	8.9E+00
100	5.6E−02	9.8E+00
105	6.3E−02	1.1E+01
110	7.1E−02	1.2E+01
115	7.9E−02	1.4E+01
120	8.9E−02	1.6E+01

APPENDIX IV.—REFERENCE AIR CONCENTRATIONS*

Constituent	CAS No.	RAC (ug/m³)
Acetaldehyde	75-07-0	10
Acetonitrile	75-05-8	10
Acetophenone	98-86-2	100
Acrolein	107-02-8	20
Aldicarb	116-06-3	1
Aluminum Phosphide	20859-73-8	0.2
Allyl Alcohol	107-18-6	5
Antimony	7440-36-0	0.3
Barium	7440-39-3	50
Barium Cyanide	542-62-1	50
Bromomethane	74-83-9	0.8
Calcium Cyanide	592-01-8	30
Carbon Disulfide	75-15-0	200
Chloral	75-87-6	2
Chlorine (free)		0.4
2-Chloro-1,3-butadiene	126-99-8	3
Chromium III	16065-83-1	1000
Copper Cyanide	544-92-3	5
Cresols	1319-77-3	50
Cumene	98-82-8	1

APPENDIX IV.—REFERENCE AIR CONCENTRATIONS*—Continued

Constituent	CAS No.	RAC (ug/m³)
Cyanide (free)	57-12-15	20
Cyanogen	460-19-5	30
Cyanogen Bromide	506-68-3	60
Di-n-butyl Phthalate	84-74-2	100
o-Dichlorobenzene	95-50-1	10
p-Dichlorobenzene	106-46-7	10
Dichlorodifluoromethane	75-71-8	200
2,4-Dichlorophenol	120-83-2	3
Diethyl Phthalate	84-66-2	800
Dimethoate	60-51-5	0.8
2,4-Dinitrophenol	51-28-5	2
Dinoseb	88-85-7	0.9
Diphenylamine	122-39-4	20
Endosulfan	115-29-1	0.05
Endrin	72-20-8	0.3
Fluorine	7782-41-4	50
Formic Acid	64-18-6	2000
Glycidylaldehyde	765-34-4	0.3
Hexachlorocyclopentadiene	77-47-4	5
Hexachlorophene	70-30-4	0.3
Hydrocyanic Acid	74-90-8	20
Hydrogen Chloride	7647-01-1	7
Hydrogen Sulfide	7783-06-4	3
Isobutyl Alcohol	78-83-1	300
Lead	7439-92-1	0.09
Maleic Anyhdride	108-31-6	100
Mercury	7439-97-6	0.3
Methacrylonitrile	126-98-7	0.1
Methomyl	16752-77-5	20
Methoxychlor	72-43-5	50
Methyl Chlorocarbonate	79-22-1	1000
Methyl Ethyl Ketone	78-93-3	60
Methyl Parathion	298-00-0	0.3
Nickel Cyanide	557-19-7	20
Nitric Oxide	10102-43-9	100
Nitrobenzene	98-95-3	0.8
Pentachlorobenzene	608-93-5	0.8
Pentachlorophenol	87-86-5	30
Phenol	108-95-2	30
M-Phenylenediamine	108-45-2	5
Phenylmercuric Acetate	62-38-4	0.075
Phosphine	7803-51-2	0.3
Phthalic Anhydride	85-44-9	2000
Potassium Cyanide	151-50-8	50
Potassium Silver Cyanide	506-61-6	200
Pyridine	110-86-1	1
Selenious Acid	7783-00-8	3
Selenourea	630-10-4	5
Silver	7440-22-4	3
Silver Cyanide	506-64-9	100
Sodium Cyanide	143-33-9	30
Strychnine	57-24-9	0.3
1,2,4,5-Tetrachlorobenzene	95-94-3	0.3
2,3,4,6-Tetrachlorophenol	58-90-2	30
Tetraethyl Lead	78-00-2	0.0001
Tetrahydrofuran	109-99-9	10
Thallic Oxide	1314-32-5	0.3
Thallium	7440-28-0	0.5
Thallium (I) Acetate	563-68-8	0.5

APPENDIX IV.—REFERENCE AIR CONCENTRATIONS*—Continued

Constituent	CAS No.	RAC (ug/m³)
Thallium (I) Carbonate	6533-73-9	0.3
Thallium (I) Chloride	7791-12-0	0.3
Thallium (I) Nitrate	10102-45-1	0.5
Thallium Selenite	12039-52-0	0.5
Thallium (I) Sulfate	7446-18-6	0.075
Thiram	137-26-8	5
Toluene	108-88-3	300
1,2,4-Trichlorobenzene	120-82-1	20
Trichloromonofluoromethane	75-69-4	300
2,4,5-Trichlorophenol	95-95-4	100
Vanadium Pentoxide	1314-62-1	20
Warfarin	81-81-2	0.3
Xylenes	1330-20-7	60
Zinc Cyanide	557-21-1	50
Zinc Phosphide	1314-84-7	0.3

*The RAC for other Appendix VIII Part 261 constituents not listed herein or in Appendix V of this Part is 0.1 ug/m³.

APPENDIX V.—RISK SPECIFIC DOSES (10^{-5})

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Acrylamide	79-06-1	1.3E−03	7.7E−03
Acrylonitrile	107-13-1	8.6E−05	1.5E−01
Aldrin	309-00-2	4.9E−03	2.0E−03
Aniline	62-53-3	7.4E−06	1.4E+00
Arsenic	7440-38-2	4.3E−03	2.3E−03
Benz(a)anthracene	56-55-3	9.9E−04	1.1E−02
Benzene	71-43-2	8.3E−06	1.2E+00
Benzidine	92-87-5	6.7E−02	1.5E−04
Benzo(a)pyrene	50-32-8	3.3E−03	3.0E−03
Beryllium	7440-41-7	2.4E−03	4.2E−03
Bis(2-chloroethyl)ether	111-44-4	3.3E−04	3.0E−02
Bis(chloromethyl)ether	542-88-1	6.2E−02	1.6E−04
Bis(2-ethylhexyl)-phthalate	117-81-7	2.4E−07	4.2E+01
1,3-Butadiene	106-99-0	2.8E−04	3.6E−02
Cadmium	7440-43-9	1.8E−03	5.6E−0
Carbon Tetrachloride	56-23-5	6.5E−06	1.7E−01

APPENDIX V.—RISK SPECIFIC DOSES (10^{-5})—Continued

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Chlordane	57-74-9	3.7E−04	2.7E−02
Chloroform	67-66-3	2.3E−05	4.3E−01
Chloromethane	74-87-3	3.6E−06	2.8E+00
Chromium VI	7440-47-3	1.2E−02	8.3E−04
DDT	50-29-3	9.7E−05	1.0E−01
Dibenz(a,h)anthracene	53-70-3	1.4E−02	7.1E−04
1,2-Dibromo-3-chloropropane	96-12-8	6.3E−03	1.6E−03
1,2-Dibromoethane	106-93-4	2.2E−04	4.5E−02
1,1-Dichloroethane	75-34-3	2.6E−05	3.8E−01
1,2-Dichloroethane	107-06-2	2.6E−05	3.8E−01
1,1-Dichloroethylene	75-35-4	5.0E−05	2.0E−01
1,3-Dichloropropene	542-75-6	3.5E−01	2.9E−05
Dieldrin	60-57-1	4.6E−03	2.2E−03
Diethylstilbestrol	56-53-1	1.4E−01	7.1E−05
Dimethylnitrosamine	62-75-9	1.4E−02	7.1E−04
2,4-Dinitrotoluene	121-14-2	8.8E−05	1.1E−01
1,2-Diphenylhydrazine	122-66-7	2.2E−04	4.5E−02
1,4-Dioxane	123-91-1	1.4E−06	7.1E+00
Epichlorohydrin	106-89-8	1.2E−06	8.3E+00
Ethylene Oxide	75-21-8	1.0E−04	1.0E−01
Ethylene Dibromide	106-93-4	2.2E−04	4.5E−02

APPENDIX V.—RISK SPECIFIC DOSES (10^{-5})—Continued

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Formaldehyde	50-00-0	1.3E−05	7.7E−01
Heptachlor	76-44-8	1.3E−03	7.7E−03
Heptachlor Epoxide	1024-57-3	2.6E−03	3.8E−03
Hexachlorobenzene	118-74-1	4.9E−04	2.0E−02
Hexachlorobutadiene	87-68-3	2.0E−05	5.0E−01
Alpha-hexachlorocyclohexane	319-84-6	1.8E−03	5.6E−03
Beta-hexachlorocyclohexane	319-85-7	5.3E−04	1.9E−02
Gamma-hexachlorocyclohexane	58-89-9	3.8E−04	2.6E−02
Hexachlorocyclohexane, Technical		5.1E−04	2.0E−02
Hexachlorodibenzo-p-dioxin(1,2 Mixture)		1.3E+0	7.7E−06
Hexachloroethane	67-72-1	4.0E−06	2.5E+00
Hydrazine	302-01-2	2.9E−03	3.4E−03
Hydrazine Sulfate	302-01-2	2.9E−03	3.4E−03
3-Methylcholanthrene	56-49-5	2.7E−03	3.7E−03
Methyl Hydrazine	60-34-4	3.1E−04	3.2E−02
Methylene Chloride	75-09-2	4.1E−06	2.4E+00
4,4'-Methylene-bis-2-chloroaniline	101-14-4	4.7E−05	2.1E−01
Nickel	7440-02-0	2.4E−04	4.2E−02
Nickel Refinery Dust	7440-02-0	2.4E−04	4.2E−02

APPENDIX V.—RISK SPECIFIC DOSES (10^{-5})—Continued

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Nickel Subsulfide	12035-72-2	4.8E−04	2.1E−02
2-Nitropropane	79-46-9	2.7E−02	3.7E−04
N-Nitroso-n-butylamine	924-16-3	1.6E−03	6.3E−03
N-Nitroso-n-methylurea	684-93-5	8.6E−02	1.2E−04
N-Nitrosodiethylamine	55-18-5	4.3E−02	2.3E−04
N-Nitrosopyrrolidine	930-55-2	6.1E−04	1.6E−02
Pentachloronitrobenzene	82-68-8	7.3E−05	1.4E−01
PCBs	1336-36-3	1.2E−03	8.3E−03
Pronamide	23950-58-5	4.6E−06	2.2E+00
Reserpine	50-55-5	3.0E−03	3.3E−03
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4.5E+01	2.2E−07
1,1,2,2-Tetrachloroethane	79-34-5	5.8E−05	1.7E−01
Tetrachloroethylene	127-18-4	4.8E−07	2.1E+01
Thiourea	62-56-6	5.5E−04	1.8E−02
1,1,2-Trichloroethane	79-00-5	1.6E−05	6.3E−01
Trichloroethylene	79-01-6	1.3E−06	7.7E+00
2,4,6-Trichlorophenol	88-06-2	5.7E−06	1.8E+00
Toxaphene	8001-35-2	3.2E−04	3.1E−02
Vinyl Chloride	75-01-4	7.1E−06	1.4E+00

APPENDIX VI.—STACK PLUME RISE

[Estimated Plume Rise (in Meters) Based on Stack Exit Flow Rate and Gas Temperature]

Flow rate (m3/s)	Exhaust Temperature (K°)										
	<325	325-349	350-399	400-449	450-499	500-599	600-699	700-799	800-999	1000-1499	>1499
<0.5	0	0	0	0	0	0	0	0	0	0	0
0.5-0.9	0	0	0	0	0	0	0	0	1	1	1
1.0-1.9	0	0	0	0	1	1	2	3	3	3	4
2.0-2.9	0	0	1	3	4	4	6	6	7	8	9
3.0-3.9	0	1	2	5	6	7	9	10	11	12	13
4.0-4.9	1	2	4	6	8	10	12	13	14	15	17
5.0-7.4	2	3	5	8	10	12	14	16	17	19	21
7.5-9.9	3	5	8	12	15	17	20	22	22	23	24
10.0-12.4	4	6	10	15	19	21	23	24	25	26	27
12.5-14.9	4	7	12	18	22	23	25	26	27	28	29
15.0-19.9	5	8	13	20	23	24	26	27	28	29	31
20.0-24.9	6	10	17	23	25	27	29	30	31	32	34
25.0-29.9	7	12	20	25	27	29	31	32	33	35	36
30.0-34.9	8	14	22	26	29	31	33	35	36	37	39
35.0-39.9	9	16	23	28	30	32	35	36	37	39	41
40.0-49.9	10	17	24	29	32	34	36	38	39	41	42
50.0-59.9	12	21	26	31	34	36	39	41	42	44	46
60.0-69.9	14	22	27	33	36	39	42	43	45	47	49
70.0-79.9	16	23	29	35	38	41	44	46	47	49	51
80.0-89.9	17	25	30	36	40	42	46	46	49	51	54
90.0-99.9	19	26	31	38	42	44	48	50	51	53	56
100.0-119.9	21	26	32	39	43	46	49	52	53	55	58

APPENDIX VI.—STACK PLUME RISE—Continued

[Estimated Plume Rise (in Meters) Based on Stack Exit Flow Rate and Gas Temperature]

Flow rate (m3/s)	Exhaust Temperature (K°)										
	<325	325–349	350–399	400–449	450–499	500–599	600–699	700–799	800–999	1000–1499	>1499
120.0–139.9	22	28	35	42	46	49	52	55	56	59	61
140.0–159.9	23	30	36	44	48	51	55	58	59	62	65
160.0–179.9	25	31	38	46	50	54	58	60	62	66	67
180.0–199.9	26	32	40	48	52	56	60	63	65	67	70
>199.9	26	33	41	49	54	58	62	65	67	69	73

Appendix VII.—Health-Based Limits for Exclusion of Waste-Derived Residues*

METALS—TCLP EXTRACT CONCENTRATION LIMITS

Constituent	CAS No.	Concentration limits (mg/kg)
Antimony	7440-36-0	1xE+00
Arsenic	7440-38-2	5xE+00
Barium	7440-39-3	1xE+02
Beryllium	7440-41-7	7xE-03
Cadmium	7440-43-9	1xE+00
Chromium	7440-47-3	5xE+00
Lead	7439-92-1	5xE+00
Mercury	7439-97-6	2xE-01
Nickel	7440-02-0	7xE+01
Selenium	7782-49-2	1xE+00
Silver	7440-22-4	5xE+00

NONMETALS—RESIDUE CONCENTRATION LIMITS

Constituent	CAS No.	Concentration limits for residues (mg/kg)
Acetonitrile	75-05-8	2xE-01
Acetophenone	98-86-2	4xE+00
Acrolein	107-02-8	5xE-01
Acrylamide	79-06-1	2xE-04
Acrylonitrile	107-13-1	7xE-04
Aldrin	309-00-2	2xE-05
Allyl alcohol	107-18-6	2xE-01
Aluminum phosphide	20859-73-8	1xE-02
Aniline	62-53-3	6xE-02
Barium cyanide	542-62-1	1xE+00
Benz(a)anthracene	56-55-3	1xE-04
Benzene	71-43-2	5xE-03
Benzidine	92-87-5	1xE-06
Bis(2-chloroethyl) ether.	111-44-4	3xE-04
Bis(chloromethyl) ether	542-88-1	2xE-06
Bis(2-ethylhexyl) phthalate.	117-81-7	3xE+01
Bromoform	75-25-2	7xE-01
Calcium cyanide	592-01-8	1xE-06
Carbon disulfide	75-15-0	4xE+00
Carbon tetrachloride	56-23-5	5xE-03
Chlordane	57-74-9	3xE-04
Chlorobenzene	108-90-7	1xE+00
Chloroform	67-66-3	6xE-02
Copper cyanide	544-92-3	2xE-01
Cresols (Cresylic acid)	1319-77-3	2xE+00
Cyanogen	460-19-5	1xE+00
DDT	50-29-3	1xE-03
Dibenz(a, h)-anthracene	53-70-3	7xE-06

NONMETALS—RESIDUE CONCENTRATION LIMITS—Continued

Constituent	CAS No.	Concentration limits for residues (mg/kg)
1,2-Dibromo-3-chloropropane.	96-12-8	2xE-05
p-Dichlorobenzene	106-46-7	7.5xE-02
Dichlorodifluoromethane.	75-71-8	7xE+00
1,1-Dichloroethylene	75-35-4	5xE-03
2,4-Dichlorophenol	120-83-2	1xE-01
1,3-Dichloropropene	542-75-6	1xE-03
Dieldrin	60-57-1	2xE-05
Diethyl phthalate	84-66-2	3xE+01
Diethylstilbesterol	56-53-1	7xE-07
Dimethoate	60-51-5	3xE-02
2,4-Dinitrotoluene	121-14-2	5xE-04
Diphenylamine	122-39-4	9xE-01
1,2-Diphenylhydrazine	122-66-7	5xE-04
Endosulfan	115-29-7	2xE-03
Endrin	72-20-8	2xE-04
Epichlorohydrin	106-89-8	4xE-02
Ethylene dibromide	106-93-4	4xE-07
Ethylene oxide	75-21-8	3xE-04
Fluorine	7782-41-4	4xE+00
Formic acid	64-18-6	7xE+01
Heptachlor	76-44-8	8xE-05
Heptachlor epoxide	1024-57-3	4xE-05
Hexachlorobenzene	118-74-1	2xE-04
Hexachlorobutadiene	87-68-3	5xE-03
Hexachlorocyclopentadiene.	77-47-4	2xE-01
Hexachlorodibenzo-p-dioxins.	19408-74-3	6xE-06
Hexachloroethane	67-72-1	3xE-02
Hydrazine	302-01-1	1xE-04
Hydrogen cyanide	74-90-8	7xE-05
Hydrogen sulfide	7783-06-4	1xE-06
Isobutyl alcohol	78-83-1	1xE+01
Methomyl	16752-77-5	1xE+00
Methoxychlor	72-43-5	1xE-01
3-Methylcholanthrene	56-49-5	4xE-05
4,4'-Methylenebis (2-chloroaniline).	101-14-4	2xE-03
Methylene chloride	75-09-2	5xE-02
Methyl ethyl ketone (MEK).	78-93-3	2xE+00
Methyl hydrazine	60-34-4	3xE-04
Methyl parathion	298-00-0	2xE-02
Naphthalene	91-20-3	1xE+01
Nickel cyanide	557-19-7	7xE-01
Nitric oxide	10102-43-9	4xE+00
Nitrobenzene	98-95-3	2xE-02
N-Nitrosodi-n-butylamine.	924-16-3	6xE-05
N-Nitrosodiethylamine	55-18-5	2xE-06
N-Nitroso-N-methylurea.	684-93-5	1xE-07
N-Nitrosopyrrolidine	930-55-2	2xE-04

NONMETALS—RESIDUE CONCENTRATION LIMITS—Continued

Constituent	CAS No.	Concentration limits for residues (mg/kg)
Pentachlorobenzene	608-93-5	3xE-02
Pentachloronitrobenzene (PCNB).	82-68-8	1xE-01
Pentachlorophenol	87-86-5	1xE+00
Phenol	108-95-2	1xE+00
Phenylmercury acetate	62-38-4	3xE-03
Phosphine	7803-51-2	1xE-02
Polychlorinated biphenyls, N.O.S.	1336-36-3	5xE-05
Potassium cyanide	151-50-8	2xE+00
Potassium silver cyanide.	506-61-6	7xE+00
Pronamide	23950-58-5	3xE+00
Pyridine	110-86-1	4xE-02
Reserpine	50-55-5	3xE-05
Selenourea	630-10-4	2xE-01
Silver cyanide	506-64-9	4xE+00
Sodium cyanide	143-33-9	1xE+00
Strychnine	57-24-9	1xE-02
1,2,4,5-Tetrachlorobenzene.	95-94-3	1xE-02
1,1,2,2-tetrachloroethane.	79-34-5	2xE-03
Tetrachloroethylene	127-18-4	7xE-01
2,3,4,6-Tetrachlorophenol.	58-90-2	1xE-02
Tetraethyl lead	78-00-2	4xE-06
Thallium	7440-28-0	7xE+00
Thallic oxide	1314-32-5	2xE-03
Thallium(I) acetate	563-68-8	3xE-03
Thallium(I) carbonate	6533-73-9	3xE-03
Thallium(I) chloride	7791-12-0	3xE-03
Thallium(I) nitrate	10102-45-1	3xE-03
Thallium selenite	12039-52-0	3xE-03
Thallium(I) sulfate	7446-18-6	3xE-03
Thiourea	62-56-6	2xE-04
Toluene	108-88-3	1xE+01
Toxaphene	8001-35-2	5xE-03
1,1,2-Trichloroethane	79-00-5	6xE-03
Trichloroethylene	79-01-6	5xE-03
Trichloromonofluoromethane.	75-69-4	1xE+01
2,4,5-Trichlorophenol	95-95-4	4xE+00
2,4,6-Trichlorophenol	88-06-2	4xE+00
Vanadium pentoxide	1314-62-1	7xE-01
Vinyl chloride	75-01-4	2xE-03

* Note: The health-based concentration limits for Appendix VIII Part 261 constituents for which a health-based concentration is not provided below is 2xE-06 mg/kg.

Appendix VIII—Potential PICs for Determination of Exclusion of Waste-Derived Residues

PICs FOUND IN STACK EFFLUENTS

Volatiles	Semivolatiles
Benzene	Bis(2-ethylhexyl)phthalate
Toluene	Naphthalene
Carbon tetrachloride	Phenol
nitoform	Diethyl phthalate
Methylene chloride	Butyl benzyl phthalate
Trichloroethylene	2,4-Dimethylphenol
Tetrachloroethylene	o-Dichlorobenzene
1,1,1-Trichloroethane	m-Dichlorobenzene
robenzene	p-Dichlorobenzene
cis-1,4-Dichloro-2-butene	Hexachlorobenzene
Bromochloromethane	2,4,6-Trichlorophenol
Bromodichloromethane	Fluoranthene
Bromoform	o-Nitrophenol
Bromomethane	1,2,4-Trichlorobenzene
Methylene bromide	o-Chlorophenol
Methyl ethyl ketone	Pentachlorophenol
	Pyrene
	Dimethyl phthalate
	Mononitrobenzene
	2,6-Toluene diisocyanate

Appendices IX and X will be published in the **Federal Register** in the near future. Appendix IX is Methods Manual for Compliance with BIF Regulations, U.S. EPA, December 1990, available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4600, document number PB91-120-006. Appendix X is Guideline on Air Quality Models (Revised) (1986), U.S. EPA, including Supplement A (1987), available from NTIS, 5285 Port Royal Road, Springfield, VA 22161, document numbers PB86-245-248 (Guideline) and PB88-150-958 (Supplement A).

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM.

VI. In part 270:

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.

2. Part 270 is amended by adding § 270.22 to read as follows:

§ 270.22 Specific Part B information requirements for boilers and industrial furnaces burning hazardous waste.

(a) *Trial burns*—(1) *General.* Except as provided below, owners and operators that are subject to the standards to control organic emissions provided by § 266.104 of this chapter, standards to control particulate matter provided by § 266.105 of this chapter, standards to control metals emissions provided by § 266.106 of this chapter, or standards to control hydrogen chloride or chlorine gas emissions provided by § 266.107 of this chapter must conduct a trial burn to demonstrate conformance with those standards and must submit a trial burn plan or the results of a trial burn, including all required determinations, in accordance with § 270.66.

(i) A trial burn to demonstrate conformance with a particular emission standard may be waived under provisions of §§ 266.104 through 266.107 of this chapter and paragraphs (a)(2) through (a)(5) of this section; and

(ii) The owner or operator may submit data in lieu of a trial burn, as prescribed in paragraph (a)(6) of this section.

(2) *Waiver of trial burn for DRE*—(i) *Boilers operated under special operating requirements.* When seeking to be permitted under §§ 266.104(a)(4) and 266.110 of this chapter that automatically waive the DRE trial burn, the owner or operator of a boiler must submit documentation that the boiler operates under the special operating requirements provided by § 266.110 of this chapter.

(ii) *Boilers and industrial furnaces burning low risk waste.* When seeking to be permitted under the provisions for low risk waste provided by §§ 266.104(a)(5) and 266.109(a) of this chapter that waive the DRE trial burn, the owner or operator must submit:

(A) Documentation that the device is operated in conformance with the requirements of § 266.109(a)(1) of this chapter.

(B) Results of analyses of each waste to be burned, documenting the concentrations of nonmetal compounds listed in appendix VIII of part 261 of this chapter, except for those constituents that would reasonably not be expected to be in the waste. The constituents excluded from analysis must be identified and the basis for their exclusion explained. The analysis must rely on analytical techniques specified in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods (incorporated by reference, see § 260.11).

(C) Documentation of hazardous waste firing rates and calculations of reasonable, worst-case emission rates of each constituent identified in paragraph (a)(1)(ii)(B) of this section using procedures provided by § 266.109(a)(2)(ii) of this chapter.

(D) Results of emissions dispersion modeling for emissions identified in paragraphs (a)(2)(ii)(C) of this section using modeling procedures prescribed by § 266.106(h) of this chapter. The Director will review the emission modeling conducted by the applicant to determine conformance with these procedures. The Director will either approve the modeling or determine that alternate or supplementary modeling is appropriate.

(E) Documentation that the maximum annual average ground level concentration of each constituent identified in paragraph (a)(2)(ii)(B) of this section quantified in conformance with paragraph (a)(2)(ii)(D) of this section does not exceed the allowable ambient level established in appendices IV or V of part 266. The acceptable ambient concentration for emitted constituents for which a specific Reference Air Concentration has not been established in appendix IV or Risk-Specific Dose has not been established in appendix V is 0.1 micrograms per cubic meter, as noted in the footnote to appendix IV.

(3) *Waiver of trial burn for metals.* When seeking to be permitted under the Tier I (or adjusted Tier I) metals feed rate screening limits provided by § 266.106 (b) and (e) of this chapter that control metals emissions without requiring a trial burn, the owner or operator must submit:

(i) Documentation of the feed rate of hazardous waste, other fuels, and industrial furnace feed stocks;

(ii) Documentation of the concentration of each metal controlled by § 266.106 (b) or (e) of this chapter in the hazardous waste, other fuels, and industrial furnace feedstocks, and calculations of the total feed rate of each metal;

(iii) Documentation of how the applicant will ensure that the Tier I feed rate screening limits provided by § 266.106 (b) or (e) of this chapter will not be exceeded during the averaging period provided by that paragraph;

(iv) Documentation to support the determination of the terrain-adjusted effective stack height, good engineering practice stack height, terrain type, and land use as provided by § 266.106 (b)(3) through (b)(5) of this chapter;

(v) Documentation of compliance with the provisions of § 266.106(b)(6), if applicable, for facilities with multiple stacks;

(vi) Documentation that the facility does not fail the criteria provided by § 266.106(b)(7) for eligibility to comply with the screening limits; and

(vii) Proposed sampling and metals analysis plan for the hazardous waste, other fuels, and industrial furnace feed stocks.

(4) *Waiver of trial burn for particulate matter.* When seeking to be permitted under the low risk waste provisions of § 266.109(b) which waives the particulate standard (and trial burn to

demonstrate conformance with the particulate standard), applicants must submit documentation supporting conformance with paragraphs (a)(2)(ii) and (a)(3) of this section.

(5) *Waiver of trial burn for HCl and Cl_2.* When seeking to be permitted under the Tier I (or adjusted Tier I) feed rate screening limits for total chloride and chlorine provided by § 266.107 (b)(1) and (e) of this chapter that control emissions of hydrogen chloride (HCl) and chlorine gas (Cl_2) without requiring a trial burn, the owner or operator must submit:

(i) Documentation of the feed rate of hazardous waste, other fuels, and industrial furnace feed stocks;

(ii) Documentation of the levels of total chloride and chlorine in the hazardous waste, other fuels, and industrial furnace feedstocks, and calculations of the total feed rate of total chloride and chlorine;

(iii) Documentation of how the applicant will ensure that the Tier I (or adjusted Tier I) feed rate screening limits provided by § 266.107 (b)(1) or (e) of this chapter will not be exceeded during the averaging period provided by that paragraph;

(vi) Documentation to support the determination of the terrain-adjusted effective stack height, good engineering practice stack height, terrain type, and land use as provided by § 266.107(b)(3) of this chapter;

(v) Documentation of compliance with the provisions of § 266.107(b)(4), if applicable, for facilities with multiple stacks;

(vi) Documentation that the facility does not fail the criteria provided by § 266.107(b)(3) for eligibility to comply with the screening limits; and

(vii) Proposed sampling and analysis plan for total chloride and chlorine for the hazardous waste, other fuels, and industrial furnace feestocks.

(6) *Data in lieu of trail burn.* The owner or operator may seek an exemption from the trial burn requirements to demonstrate conformance with §§ 266.104 through 266.107 of this chapter and § 270.66 by providing the information required by § 270.66 from previous compliance testing of the device in conformance with § 266.103 of this chapter, or from compliance testing or trial or operational burns of similar boilers or industrial furnaces burning similar hazardous wastes under similar conditions. If data from a similar device is used to support a trial burn waiver, the design and operating information required by § 270.66 must be provided for both the similar device and the device to which the data is to be applied, and a comparison of the design and operating information must be provided. The Director shall approve a permit application without a trial burn if he finds that the hazardous wastes are sufficiently similar, the devices are sufficiently similar, the operating conditions are sufficiently similar, and the data from from other compliance tests, trial burns, or operational burns are adequate to specify (under § 266.102 of this chapter) operating conditions that will ensure conformance with § 266.102(c) of this chapter. In addition, the following information shall be submitted:

(i) For a waiver from any trial burn:

(A) A description and analysis of the hazardous waste to be burned compared with the hazardous waste for which data from compliance testing, or operational or trial burns are provided to support the contention that a trial burn is not needed;

(B) The design and operating conditions of the boiler or industrial furnace to be used, compared with that for which comparative burn data are available; and

(C) Such supplemental information as the Director finds necessary to achieve the purposes of this paragraph.

(ii) For a waiver of the DRE trial burn, the basis for selection of POHCs used in the other trial or operational burns which demonstrate compliance with the DRE performance standard in § 266.104(a) of this chapter. This analysis should specify the constituents in appendix VIII, part 261 of this chapter, that the applicant has identified in the hazardous waste for which a permit is sought, and any differences from the POHCs in the hazardous waste for which burn data are provided.

(b) *Alternative HC limit for industrial furnaces with organic matter in raw materials.* Owners and operators of industrial furnaces requesting an alternative HC limit under § 266.104(f) of this chapter shall submit the following information at a minimum:

(1) Documentation that the furnace is designed and operated to minimze HC emissions from fuels and raw materials;

(2) Documentation of the proposed baseline flue gas HC (and CO) concentration, including data on HC (and CO) levels during tests when the facility produced normal products under normal operating conditions from normal raw materials while burning normal fuels and when not burning hazardous waste;

(3) Test burn protocol to confirm the baseline HC (and CO) level including information on the type and flow rate of all feedstreams, point of introduction of all feedstreams, total organic carbon content (or other appropriate measure of organic content) of all nonfuel feedstreams, and operating conditions that affect combustion of fuel(s) and destruction of hydrocarbon emissions from nonfuel sources;

(4) Trial burn plan to:

(i) Demonstrate that flue gas HC (and CO) concentrations when burning hazardous waste do not exceed the baseline HC (and CO) level; and

(ii) Identify the types and concentrations of organic compounds listed in appendix VIII, part 261 of this chapter, that are emitted when burning hazardous waste in conformance with procedures prescribed by the Director;

(5) Implementation plan to monitor over time changes in the operation of the facility that could reduce the baseline HC level and procedures to periodically confirm the baseline HC level; and

(6) Such other information as the Director finds necessary to achieve the purposes of this paragraph.

(c) *Alternative metals implementation approach.* When seeking to be permitted under an alternative metals implementation approach under § 266.106(f) of this chapter, the owner or operator must submit documentation specifying how the approach ensures compliance with the metals emissions standards of § 266.106(c) or (d) and how the approach can be effectively implemented and monitored. Further, the owner or operator shall provide such other information that the Director finds necessary to achieve the purposes of this paragraph.

(d) *Automatic waste feed cutoff system.* Owners and operators shall submit information describing the automatic waste feed cutoff system, including any pre-alarm systems that may be used.

(e) *Direct transfer.* Owners and operators that use direct transfer operations to feed hazardous waste from transport vehicles (containers, as defined in § 266.111 of this chapter) directly to the boiler or industrial furnace shall submit information supporting conformance with the standards for direct transfer provided by § 266.111 of this chapter.

(f) *Residues.* Owners and operators that claim that their residues are excluded from regulation under the provisions of § 266.112 of this chapter must submit information adequate to demonstrate conformance with those provisions.

(Approved by the Office of Management and Budget under control number 2060-0073)

3. In § 270.42, paragraph (g) is revised to read as follows:

§ 270.42 Permit modification at the request of the permittee.

* * * * *

(g) *Newly regulated wastes and units.* (1) The permittee is authorized to continue to manage wates listed or identified as hazardous under part 261 of this chapter, or to continue to manage hazardous waste in units newly regulated as hazardous waste management units, if:

(i) The unit was in existence as a hazardous waste facility with respect to the newly listed or characterized waste or newly regulated waste management unit on the effetive date of the final rule listing or identifying the waste, or regulating the unit;

(ii) The permittee submits a Class 1 modification request on or before the date on which the waste or unit becomes subject to the new requirements;

(iii) The permittee is in compliance with the applicable standards of 40 CFR parts 265 and 266 of this chapter;

(iv) In the case of Classes 2 and 3 modifications, the permittee also submits a complete modification request within 180 days of the effective date of the rule listing or identifying the waste, or subjecting the unit to RCRA Subtitle C management standards;

(v) In the case of land disposal units, the permittee certifies that each such unit is in compliance with all applicable requirements of part 265 of this chapter for groundwater monitoring and financial responsibility on the date 12 months after the effective date of the rule identifying or listing the waste as hazardous, or regulating the unit as a hazardous waste management unit. If the owner or operator fails to certify compliance with all these requirements, he or she will lose authority to operate under this section.

(2) New wastes or units added to a facility's permit under this subsection do not constitute expansions for the purpose of the 25 percent capacity expansion limit for Class 2 modifications.

* * * * *

4. In § 270.42, Appendix I is amended by revising the heading of L and items 1, 4, 5a, 6, 7b, and 8 to read as follows:

Appendix I to Section 270.42—Classification of Permit Modifications

Modifications	Class
* * * * * * *	
L. Incinerators, Boilers, and Industrial Furnaces:	
1. Changes to increase by more than 25% any of the following limits authorized in the permit: A thermal feed rate limit, a feedstream feed rate limit, a chlorine/chloride feed rate limit, a metal feed rate limit, or an ash 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 feedstream feed rate limit, a chlorine/chloride feed rate limit, a metal feed rate limit, or an ash 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, boiler, or industrial furnace 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/Cl_2, metals, or particulate from the combustion gases, or by changing other features of the incinerator, boiler, or industrial furnace 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, boiler, or industrial furnace 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 or maximum combustion gas temperature, minimum combustion gas residence time, oxygen concentration in the secondary combustion chamber, flue gas carbon monoxide and hydrocarbon concentration, maximum temperature at the inlet to the particulate matter emission control system, or operating parameters for the air pollution control system. 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
* * * * * * *	
6. Burning different wastes:	
a. If the waste contains a POHC that is more difficult to burn than authorized by the permit or if burning 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 burn than authorized by the permit and if burning of the waste does not require compliance with different regulatory performance standards than specified in the permit	2
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:	
* * * * * * *	
b. Authorization of up to an additional 720 hours of waste burning during the shakedown period for determining operational readiness after construction, with the prior approval of the Director	[1]1
* * * * * * *	
8. Substitution of an alternative type of nonhazardous waste fuel that is not specified in the permit	1

[1] Class 1 modifications requiring prior Agency approval.

5. Part 270 is amended by adding § 270.66 to read as follows:

§ 270.66 Permits for boilers and industrial furnaces burning hazardous waste.

(a) *General.* Owners and operators of new boilers and industrial furnaces (those not operating under the interim status standards of § 266.103 of this chapter) are subject to paragraphs (b) through (f) of this section. Boilers and industrial furnaces operating under the interim status standards of § 266.103 of this chapter are subject to paragraph (g) of this section.

(b) *Permit operating periods for new boilers and industrial furnaces.* A permit for a new boiler or industrial furnace shall specify appropriate conditions for the following operating periods:

(1) *Pretrial burn period.* For the period beginning with initial introduction of hazardous waste and ending with initiation of the trial burn, and only for the minimum time required to bring the boiler or industrial furnace to a point of operation readiness to conduct a trial burn, not to exceed 720 hours operating time when burning hazardous waste, the Director must establish in the Pretrial Burn Period of the permit conditions, including but not limited to, allowable hazardous waste feed rates and operating conditions. The Director may extend the duration of this operational period once, for up to 720 additional hours, at the request of the applicant when good cause is shown. The permit

may be modified to reflect the extension according to § 270.42.

(i) Applicants must submit a statement, with part B of the permit application, that suggests the conditions necessary to operate in compliance with the standards of §§ 266.104 through 266.107 of this chapter during this period. This statement should include, at a minimum, restrictions on the applicable operating requirements identified in § 266.102(e) of this chapter.

(ii) The Director will review this statement and any other relevant information submitted with part B of the permit application and specify requirements for this period sufficient to meet the performance standards of §§ 266.104 through 266.107 of this chapter based on his/her engineering judgment.

(2) *Trial burn period.* For the duration of the trial burn, the Director must establish conditions in the permit for the purposes of determining feasibility of compliance with the performance standards of §§ 266.104 through 266.107 of this chapter and determining adequate operating conditions under § 266.102(e) of this chapter. Applicants must propose a trial burn plan, prepared under paragraph (c) of this section, to be submitted with part B of the permit application.

(3) *Post-trial burn period.* (i) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial burn results by the applicant, and review of the trial burn results and modification of the facility permit by the Director to reflect the trial burn results, the Director will establish the operating requirements most likely to ensure compliance with the performance standards of §§ 266.104 through 266.107 of this chapter based on his engineering judgment.

(ii) Applicants must submit a statement, with part B of the application, that identifies the conditions necessary to operate during this period in compliance with the performance standards of §§ 266.104 through 266.107 of this chapter. This statement should include, at a minimum, restrictions on the operating requirements provided by § 266.102(e) of this chapter.

(iii) The Director will review this statement and any other relevant information submitted with part B of the permit application and specify requirements for this period sufficient to meet the performance standards of §§ 266.104 through 266.107 of this chapter based on his/her engineering judgment.

(4) *Final permit period.* For the final period of operation, the Director will develop operating requirements in conformance with § 266.102(e) of this chapter that reflect conditions in the trial burn plan and are likely to ensure compliance with the performance standards of §§ 266.104 through 107 of this chapter. Based on the trial burn results, the Director shall make any necessary modifications to the operating requirements to ensure compliance with the performance standards. The permit modification shall proceed according to § 270.42.

(c) *Requirements for trial burn plans.* The trial burn plan must include the following information. The Director, in reviewing the trial burn plan, shall evaluate the sufficiency of the information provided and may require the applicant to supplement this information, if necessary, to achieve the purposes of this paragraph:

(1) An analysis of each feed stream, including hazardous waste, other fuels, and industrial furnace feed stocks, as fired, that includes:

(i) Heating value, levels of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver, thallium, total chlorine/chloride, and ash;

(ii) Viscosity or description of the physical form of the feed stream;

(2) An analysis of each hazardous waste, as fired, including:

(i) An identification of any hazardous organic constituents listed in appendix VIII, part 261, of this chapter that are present in the feed stream, except that the applicant need not analyze for constituents listed in appendix VIII that would reasonably not be expected to be found in the hazardous waste. The constituents excluded from analysis must be identified and the basis for this exclusion explained. The analysis must be conducted in accordance with analytical techniques specified in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods (incorporated by reference, see § 270.6), or their equivalent.

(ii) An approximate quantification of the hazardous constituents identified in the hazardous waste, within the precision produced by the analytical methods specified in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods (incorporated by reference, see § 270.6), or other equivalent.

(iii) A description of blending procedures, if applicable, prior to firing the hazardous waste, including a detailed analysis of the hazardous waste prior to blending, an analysis of the material with which the hazardous waste is blended, and blending ratios.

(3) A detailed engineering description of the boiler or industrial furnace, including:

(i) Manufacturer's name and model number of the boiler or industrial furnace;

(ii) Type of boiler or industrial furnace;

(iii) Maximum design capacity in appropriate units;

(iv) Description of the feed system for the hazardous waste, and, as appropriate, other fuels and industrial furnace feedstocks;

(v) Capacity of hazardous waste feed system;

(vi) Description of automatic hazardous waste feed cutoff system(s); and

(vii) Description of any pollution control system; and

(viii) Description of stack gas monitoring and any pollution control monitoring systems.

(4) 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.

(5) A detailed test schedule for each hazardous waste for which the trial burn is planned, including date(s), duration, quantity of hazardous waste to be burned, and other factors relevant to the Director's decision under paragraph (b)(2) of this section.

(6) A detailed test protocol, including, for each hazardous waste identified, the ranges of hazardous waste feed rate, and, as appropriate, the feed rates of other fuels and industrial furnace feedstocks, and any other relevant parameters that may affect the ability of the boiler or industrial furnace to meet the performance standards in §§ 266.104 through 266.107 of this chapter.

(7) A description of, and planned operating conditions for, any emission control equipment that will be used.

(8) Procedures for rapidly stopping the hazardous waste feed and controlling emissions in the event of an equipment malfunction.

(9) Such other information as the Director reasonably finds necessary to determine whether to approve the trial burn plan in light of the purposes of this paragraph and the criteria in paragraph (b)(2) of this section.

(d) *Trial burn procedures.* (1) A trial burn must be conducted to demonstrate conformance with the standards of §§ 266.104 through 266.107 of this

chapter under an approved trial burn plan.

(2) The Director shall approve a trial burn plan if he/she finds that:

(i) The trial burn is likely to determine whether the boiler or industrial furnace can meet the performance standards of §§ 266.104 through 266.107 of this chapter;

(ii) The trial burn itself will not present an imminent hazard to human health and the environment;

(iii) The trial burn will help the Director to determine operating requirements to be specified under § 266.102(e) of this chapter; and

(iv) The information sought in the trial burn cannot reasonably be developed through other means.

(3) The applicant must submit to the Director a certification that the trial burn has been carried out in accordance with the approved trial burn plan, and must submit the results of all the determinations required in paragraph (c) of this section. This submission shall be made within 90 days of completion of the trial burn, or later if approved by the Director.

(4) All data collected during any trial burn must be submitted to the Director following completion of the trial burn.

(5) All submissions required by this paragraph must be certified on behalf of the applicant by the signature of a person authorized to sign a permit application or a report under § 270.11.

(e) *Special procedures for DRE trial burns.* When a DRE trial burn is required under § 266.104(a) of this chapter, the Director will specify (based on the hazardous waste analysis data and other information in the trial burn plan) as trial Principal Organic Hazardous Constituents (POHCs) those compounds for which destruction and removal efficiencies must be calculated during the trial burn. These trial POHCs will be specified by the Director based on information including his/her estimate of the difficulty of destroying the constituents identified in the hazardous waste analysis, their concentrations or mass in the hazardous waste feed, and, for hazardous waste containing or derived from wastes listed in part 261, subpart D of this chapter, the hazardous waste organic constituent(s) identified in Appendix VII of that part as the basis for listing.

(f) *Determinations based on trial burn.* During each approved trial burn (or as soon after the burn as is practicable), the applicant must make the following determinations:

(1) A quantitative analysis of the levels of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, thallium, silver, and chlorine/chloride, in the feed streams (hazardous waste, other fuels, and industrial furnace feedstocks);

(2) When a DRE trial burn is required under § 266.104(a) of this chapter:

(i) A quantitative analysis of the trial POHCs in the hazardous waste feed;

(ii) A quantitative analysis of the stack gas for the concentration and mass emissions of the trial POHCs; and

(iii) A computation of destruction and removal efficiency (DRE), in accordance with the DRE formula specified in § 266.104(a) of this chapter;

(3) When a trial burn for chlorinated dioxins and furans is required under § 266.104(e) of this chapter, a quantitative analysis of the stack gas for the concentration and mass emission rate of the 2,3,7,8-chlorinated tetra-octa congeners of chlorinated dibenzo-p-dioxins and furans, and a computation showing conformance with the emission standard.

(4) When a trial burn for particulate matter, metals, or HCl/Cl_2 is required under §§ 266.105, 266.106 (c) or (d), or 266.107 (b)(2) or (c) of this chapter, a quantitative analysis of the stack gas for the concentrations and mass emissions of particulate matter, metals, or hydrogen chloride (HCl) and chlorine (Cl_2), and computations showing conformance with the applicable emission performance standards;

(5) When a trial burn for DRE, metals, or HCl/Cl_2 is required under §§ 266.104(a), 266.106 (c) or (d), or 266.107 (b)(2) or (c) of this chapter, a quantitative analysis of the scrubber water (if any), ash residues, other residues, and products for the purpose of estimating the fate of the trial POHCs, metals, and chlorine/chloride;

(6) An identification of sources of fugitive emissions and their means of control;

(7) A continuous measurement of carbon monoxide (CO), oxygen, and where required, hydrocarbons (HC), in the stack gas; and

(8) Such other information as the Director may specify as necessary to ensure that the trial burn will determine compliance with the performance standards in §§ 266.104 through 266.107 of this chapter and to establish the operating conditions required by § 266.102(e) of this chapter as necessary to meet those performance standards.

(g) *Interim status boilers and industrial furnaces.* For the purpose of determining feasibility of compliance with the performance standards of §§ 266.104 through 266.107 of this chapter and of determining adequate operating conditions under § 266.103 of this chapter, applicants owning or operating existing boilers or industrial furnaces operated under the interim status standards of § 266.103 must either prepare and submit a trial burn plan and perform a trial burn in accordance with the requirements of this section or submit other information as specified in § 270.22(a)(6). Applicants who submit a trial burn plan and receive approval before submission of the part B permit application must complete the trial burn and submit the results specified in paragraph (f) of this section with the part B permit application. If completion of this process conflicts with the date set for submission of the part B application, the applicant must contact the Director to establish a later date for submission of the part B application or the trial burn results. If the applicant submits a trial burn plan with part B of the permit application, the trial burn must be conducted and the results submitted within a time period prior to permit issuance to be specified by the Director.

(Approved by the Office of Management and Budget under control number 2050-0073)

6. § 270.72 is amended by adding paragraphs (a)(6) and (b)(7) to read as follows:

§ 270.72 Changes during interim status.

(a) * * *

(6) Addition of newly regulated units for the treatment, storage, or disposal of hazardous waste if the owner or operator submits a revised part A permit application on or before the date on which the unit becomes subject to the new requirements.

(b) * * *

(7) Addition of newly regulated units under paragraph (a)(6) of this section.

7. § 270.73 is amended by revising paragraphs (f) and (g) to read as follows:

§ 270.73 Termination of interim status.

* * * * *

(f) For owners and operators of each incinerator facility which as achieved interim status prior to November 8, 1984, interim status terminates on November 8, 1989, unless the owner or operator of the facility submits a part B application for a RCRA permit for an incinerator facility by November 8, 1988.

(g) For owners or operators of any facility (other than a land disposal or an incinerator facility) which as achieved interim status prior to November 8, 1984, interim status terminates on November 8, 1992, unless the owner or operator of the facility submits a part B application for a RCRA permit for the facility by November 8, 1988.

p 7240 missing

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

VII. In part 271:

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of promulgation 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
December 31, 1990	Burning of Hazardous Waste in Boilers and Industrial Furnaces	[insert FR page numbers].	August 21, 1991.

[FR Doc. 91-2667 Filed 2-20-91; 8:45 am]
BILLING CODE 6560-50-M

SPA 11

RCRA REVISION CHECKLIST 86

Removal of Strontium Sulfide from the
List of Hazardous Wastes; Technical Amendment
56 FR 7567-7568
February 25, 1991
(RCRA Cluster I, Non-HSWA Rule)

Note: 1) Because of an error in the amendatory language in the rule (53 FR 43881, October 31, 1988, Revision Checklist 57) removing strontium sulfide from the list of hazardous wastes, this chemical was not removed from §261.33 or Part 261, Appendix VIII. This technical amendment corrects that error by removing strontium sulfide from the two lists. States which have not adopted the changes addressed by Revision Checklist 57, but intend to remove strontium sulfide from their lists of hazardous waste, are strongly encouraged to adopt these technical amendments at the same time the Revision Checklist 57 provisions are adopted. States already adopting the Revision Checklist 57 changes are encouraged to adopt the Revision Checklist 86 amendments as soon as possible.

2) This is a conditionally optional checklist. States choosing to not remove strontium sulfide from their hazardous waste lists should not adopt the changes addressed by this present checklist. However, those States which choose to remove this waste must adopt the changes addressed by Revision Checklist 86 to assure that strontium sulfide has been properly removed from the State's hazardous waste lists and appendices.

			STATE ANALOG IS:		
FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE					
SUBPART D - LISTS OF HAZARDOUS WASTES					
DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF					
† remove listing as shown below	261.33(e)				

The following waste has been removed from the 261.33(e) list:

"P107...1314-96-1...Strontium sulfide SrS"

RCRA REVISION CHECKLIST 86: Removal of Strontium Sulfide from the List of Hazardous Wastes; Technical Amendment (cont'd) **SPA 11**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
APPENDIX VIII TO PART 261					
HAZARDOUS CONSTITUENTS					
† remove listing as shown below	Appendix VIII				

The following listing has been removed from Appendix VIII:

"Strontium sulfide...Strontium sulfide SrS...1314-96-1...P107"

Waste Code P107, 40 CFR 261.33(e)), the list of hazardous constituents of concern under *40 CFR* part 261 appendix VIII, and the list of hazardous substances with reportable quantities (RQ) under 40 CFR 302.4. The background to this regulatory action is summarized in the preamble and rule (53 FR 43881–43884). Due to an error in the amendatory language in the regulation, this chemical has not been removed from the list summarizing § 261.33(e) and part 261 Appendix VIII in the most recent editions of the Code of Federal Regulations. (See part 261 appendix VIII, footnote 2.) Strontium sulfide has been removed from the list of hazardous substances in § 302.4.

In order to avoid confusion in the regulated community, the Agency is today correcting the Code of Federal Regulations by removing this substance from the two lists. Because this action is a technical correction of the regulatory lists, it needs no prior notice and opportunity for comment (see 5 U.S.C. 553(b)), and the Agency will not respond to any comments based on today's document.

List of Subjects in 40 CFR Part 261

Hazardous wastes, Recycling.

Dated: February 14, 1991.

Don R. Clay,

Assistant Administrator for Solid Waste and Emergency Response.

For the reasons set out in the preamble, part 261 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, 6922, 6938.

§ 261.33 [Amended]

2. Amend the table in § 261.33(e) by removing the listing

P107 . . . 1314–98–1 . . . Strontium sulfide SrS.

Appendix VIII [Amended]

3. Amend appendix VIII of part 261 by removing the listing

Strontium sulfide . . . Strontium sulfide SrS . . . 1314–98–1 . . . P107.

[FR Doc. 91–4365 Filed 2–22–91; 8:45 am]

BILLING CODE 6560–50–M

INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Agency for International Development

48 CFR Chapter 7 and Part 731 and Appendices D and G

[AIDAR Notice 91–2]

Miscellaneous Amendments to Acquisition Regulations

AGENCY: Agency for International Development, IDCA.

ACTION: Final rule.

SUMMARY: The AID Acquisition Regulation (AIDAR) is being amended by revising and updating in its entirety, Appendix D, "Direct-AID Contracts With a U.S. Citizen or U.S. Resident Alien for Personal Services Abroad", and by removing requirements that copies of approvals of salaries in excess of FS–1 be reported to a central point, and subsequently reported by that control point semiannually to the Deputy Administrator.

EFFECTIVE DATE: March 27, 1991.

FOR FURTHER INFORMATION CONTACT: MS/PPE, Mrs. Patricia L. Bullock, (703) 875–1534.

SUPPLEMENTARY INFORMATION: The AID Acquisition Regulation is being amended to specifically include the following in appendix D: (1) Clarification of language pertaining to the U.S. Government's payment of U.S. health insurance contributions for Personal Services Contracts (PSCs); (2) clarification and simplification of the salary setting information; (3) new coverage regarding PSCs' ineligibility for awards; (4) a new requirement for the Contracting Officer's written certification in each PSC file that competition requirements have been met; (5) a new Checklist requirement which indicates that each PSC understands he or she must pay Federal Income Tax; (6) a revised Cover Page with the same tax information discussed in item (5) above; (7) authorization of a 3% annual step increase based on satisfactory performance; and (8) the reformatting of all of the PSC General and Additional General Provisions into one set. This includes updating and revising AIDAR and FAR Clauses. Miscellaneous and editorial changes are also being made to the AIDAR and the appendices.

The remaining changes concern part 731 and appendix G of the AIDAR. As the result of a survey covering approvals of salaries in excess of FS–1, it was determined that prudent judgment was being used and contract files were being properly documented. Based on findings that a good level of compliance and a good oversight trail provided by documentation in the contract file exists, it was determined that the requirement for submission of copies of approvals of salaries in excess of FS–1 to a central point, and preparation of semiannual reports on this subject for the Deputy Administrator should be eliminated. This recommendation was approved by the Deputy Administrator on 1/19/90.

The changes being made by this Notice are not considered "significant" under FAR 1.301 or FAR 1.501, and public comments have not been solicited. This Notice will not have an impact on a substantial number of small entities or require any information collection, as contemplated by the Regulatory Flexibility Act or the Paper Reduction Act respectively. Because of the nature and subject matter of this Notice, use of the proposed rule/public comment approach was not considered necessary. We decided to issue as a final rule; however, we welcome public comment on the material covered by this Notice or any other part of the AIDAR at anytime. Comments or questions may be addressed as specified in the "**FOR FURTHER INFORMATION CONTACT**" section of the preamble.

List of Subjects in 48 CFR Part 731 and Chapter 7 Appendices

Government procurement.

PART 731—CONTRACT COST PRINCIPLES AND PROCEDURES

1. The authority citation for part 731, and appendices D and G to chapter 7 continues to read as follows:

Authority: Sec. 621, Pub. L. 87–195, 75 Stat. 445 (22 U.S.C. 2381), as amended; E.O. 12163, Sept. 29, 1979, 44 FR 56673, 3 CFR 1979 Comp., p. 435.

Subpart 731.2—Contracts With Commercial Organizations

731.205–6 [Amended]

1. Paragraph (b)(2) of section 731.205–6, Compensation for personal services, is amended by removing the last sentence of the paragraph, starting with the words "Copies of all * * *" and ending "* * * of Procurement."

Subpart 731.3—Contracts With Educational Institutions

731.371 [Amended]

2. Paragraph (a)(1) of § 731.371, Compensation for personal services, is amended by removing the last sentence of the paragraph, starting with the words "Copies of all * * *" and ending "* * * of Procurement."

Approved: January 10, 1991.
Edward J. Derwinski,
Secretary of Veterans Affairs.

PART 21—[AMENDED]

38 CFR part 21, Vocational Rehabilitation and Education, is amended as follows:

In § 21.260 paragraphs (a) and (b) are revised to read as follows:

§ 21.260 Subsistence allowance.

(a) *General.* A veteran in a rehabilitation program under chapter 31 will receive a monthly subsistence allowance at rates specified in paragraph (b) of this section, unless he or she has elected to receive payment at the rate of the monthly educational allowance paid under chapter 30 for similar training. See § 21.264 for election of payment at the chapter 30 rate and §§ 21.7136, 21.7137, and 21.7138 to determine the applicable rate.

(Authority: 38 U.S.C. 1506(a), 1506(f), 1662(Pub. L. 98-525)

(b) *Rate of payment.* Subsistence allowance is paid at the following rates effective January 1, 1990.

Type of program	Monthly rate of subsistence allowance			
	No dependent	1 dependent	2 dependents	Add'l amt. for each dep. over 2
Institutional [1]:				
Full-time	$333	$413	$486	$35
¾ time	250	310	364	27
½ time	167	207	244	18
Nonpay on-job training in a Federal agency; training in the home; vocational course in a rehabilitation facility or sheltered workshop; independent instructor: Full time only	333	413	486	35
Nonpay work experience in a Federal agency:				
Full-time	333	413	486	35
¾ time	250	310	364	27
½ time	167	207	244	18
Farm cooperative; apprenticeship, nonpay on-job training or work experience in a state and local agency, or other on-job training [2]: Full time only	291	352	405	26
Combination (institution and OJT) Full time only:				
Institutional greater than ½ time	333	413	486	35
OJT greater than ½ time	291	352	405	26
Non-farm cooperative (Full time only):				
Institutional	333	413	486	35
On-job	291	352	405	26
Improvement of rehabilitation potential: Full time only	333	413	486	35
Independent living; Extended evaluation:				
Full-time	333	413	486	35
¾ time	250	310	364	
½ time	167	207	244	
¼ time	84	103	121	

[1] Measurement of rate of pursuit (21.4270-21.4275).
[2] For on-job training, subsistence allowance may not exceed the difference between the monthly training wage, exclusive of overtime, and the entrance journeyman wage for the veteran's objective.

(Authority: 38 U.S.C. 1506; Pub. L. 101-237)

* * * * *

[FR Doc. 91-4294 Filed 2-22-91; 8:45 am]
BILLING CODE 8320-01-M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 261

[FRL-3907-6]

Hazardous Waste Management System; Removal of Strontium Sulfide From the List of Hazardous Waste

AGENCY: Environmental Protection Agency.

ACTION: Technical amendment.

SUMMARY: The Environmental Protection Agency is today correcting an amendment to regulations under the Resource Conservation and Recovery Act (RCRA) to remove strontium sulfide (CAS No. 1314-96-1) from 40 CFR 261.33, the list of commercial chemical products which are hazardous wastes when discarded or intended to be discarded; and to remove strontium sulfide from Appendix VIII of Part 261, the list of RCRA hazardous constituents. EPA took regulatory action to remove this chemical on October 31, 1988 (53 FR 43881), but the amendatory instruction to the Federal Register was incorrect and, as a result, this chemical was not removed from § 261.33 or part 261 appendix VIII in the Code of Federal Regulations. The Agency seeks to correct this error in today's document.

EFFECTIVE DATE: The regulations became effective on October 31, 1988. This document does not affect the effective date of the waste code removal.

ADDRESSES: The Office of Solid Waste (OSW) RCRA docket is located in Room M2427 at Waterside Mall, 401 M Street SW., Washington, DC 20460, and is open from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. The public must make an appointment to review docket materials by calling (202) 475-9327. Refer to "Docket number F-83-SSPA-FFFFF" when making appointments to review any background documents to the October 31, 1988 rulemaking. The public may copy a maximum of 50 pages of material from any one regulatory docket at no cost; additional copies cost $.020 per page.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline at (800) 424-9346. For technical information contact Ron Josephson, Environmental Engineer, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-4770.

SUPPLEMENTARY INFORMATION: On October 31, 1988, the Environmental Protection Agency promulgated a final rule removing strontium sulfide (CAS No. 1314-96-1) from the list of commercial chemical products which are hazardous wastes when discarde or intended for discard (EPA Hazardo

SPA 11

RCRA REVISION CHECKLIST 87

Organic Air Emission Standards for Process
Vents and Equipment Leaks; Technical Amendment
56 FR 19290
April 26, 1991
(RCRA Cluster I, HSWA Rule)

Note: The technical amendment addressed by this checklist corrects errors made in the Organic Air Emissions Final rule at 55 FR 25454 (June 21, 1990; Revision Checklist 79). States are strongly encouraged to adopt the corrections addressed by Revision Checklist 87 at the same time the Revision Checklist 79 provisions are adopted. States which have already adopted the Checklist 79 provisions are encouraged to adopt the corrections addressed by Revision Checklist 87 as soon as possible.

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 AA - AIR EMISSION STANDARDS FOR PROCESS VENTS					
APPLICABILITY					
change "2641" to "264.1"	264.1030(a)				
change "§§264.1034(d) and 264.1035(e)" to "§264.1034 (d) and (e)"	264.1030(b)				
STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES					
change "paragraphs (1) and (2) of this section" to "paragraphs (f)(1) and (2) of this section"	264.1033(f)(3)				
RECORDKEEPING REQUIREMENTS					
change "Records including the dates of" to "Records, including the dates, of"	264.1035(b)(4)(ii)				

RCRA REVISION CHECKLIST 87: Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment (cont'd) **SPA 11**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS					
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE					
change "a instrument reading" to "an instrument reading"	264.1052(b)(1)				
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					
change "265.193" to "265.200"	265.13(b)(6)				
SUBPART E - MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING					
OPERATING RECORD					
change "265.193" to "265.200"	265.73(b)(3)				
SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS					
APPLICABILITY					
change "§§265.1034(d) and 265.1035(d)" to "§265.1034(d) and (e)"	265.1030(b)				
TEST METHODS AND PROCEDURES					
change "E_h, as determined in paragraph (c)(1)(v) of the section" to "E_h, as determined in paragraph (c)(1)(iv) of this section"	265.1034(c)(1)(vi)				

RCRA REVISION CHECKLIST 87: Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment (cont'd) **SPA 11**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
RECORDKEEPING REQUIREMENTS					
change "Records including the dates of" to "Records, including the dates, of"	265.1035(b)(4)(ii)				
change "Paragraph (3)" to "paragraph (c)(4) of this section"	265.1035(c)(5)				
SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS					
STANDARDS: PUMPS IN LIGHT LIQUID SERVICE					
revise "paragraph (a)(2)" to read "paragraph (e)(2)"	265.1052(e)(3)				
RECORDKEEPING REQUIREMENTS					
change "265.1953" to "265.1053"	265.1064(c)				
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM					
SUBPART B - PERMIT APPLICATION					
SPECIFIC PART B INFORMATION REQUIREMENTS FOR PROCESS VENTS					
change "records including the dates of each compliance test required by §264.103(k)." to "Records, including the dates, of each compliance test required by §264.1033(k)."	270.24(d)(2)				

RCRA REVISION CHECKLIST 87: Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment (cont'd) **SPA 11**

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	MORE STRINGENT	BROADER IN SCOPE
SPECIFIC PART B INFORMATION REQUIREMENTS FOR EQUIPMENT					
change "Records including the dates of" to "Records, including the dates, of"	270.25(e)(2)				

(Parking Offsets in the Portland Central Business district). These rules were adopted by the Environmental Quality Commission on December 14, 1990.

[FR Doc. 91-9783 Filed 4-25-91; 8:45 am]
BILLING CODE 6560-50-M

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40 CFR Parts 264, 265, and 270

[FRL-3923-6]

Hazardous Waste Treatment, Storage, and Disposal Facilities—Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; technical amendment.

SUMMARY: This document corrects typographical errors in the regulatory text of the final standards that would limit organic air emissions as a class at hazardous waste treatment, storage, and disposal facilities (TSDF) that are subject to regulation under subtitle C of the Resource Conservation and Recovery Act (RCRA). These standards appeared in the **Federal Register** on June 21, 1990 (55 FR 25454).

EFFECTIVE DATE: December 21, 1990.

FOR FURTHER INFORMATION CONTACT: Mr. Rick Colyer at (919) 541-5262, Standards Development Branch, Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION: On June 21, 1990 (55 FR 25454), EPA promulgated regulations limiting organic air emissions from process vents and equipment leaks at hazardous waste TSDF. The regulations contained typographical errors which are discussed briefly below and are corrected by this action. The corrections are editorial and do not alter the requirements of the standards.

Dated: April 12, 1991.

Michael Shapiro,

Acting Assistant Administrator for Air and Radiation.

For the reasons set out in the preamble, title 40, chapter I, parts 264, 265, and 270 of the Code of Federal Regulations are amended as set forth below.

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.

§ 264.1030 [Amended]

2. Section 264.1030(a) is amended by revising "2641" to read "264.1".

3. In § 264.1030, paragraph (b) introductory text is amended by revising "§§ 264.1034(d) and 264.1035(e)" to read "§ 264.1034 (d) and (e)".

§ 264.1033 [Amended]

4. Section 264.1033(f)(3) is amended by revising "paragraphs (1) and (2) of this section" to read "paragraphs (f) (1) and (2) of this section".

§ 264.1035 [Amended]

5. Section 264.1035(b)(4)(ii) is amended by revising "Records including the dates of" to read "Records, including the dates, of".

§ 264.1052 [Amended]

6. Section 264.1052(b)(1) is amended by revising "a instrument reading" to read "an instrument reading".

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

7. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

§ 265.13 [Amended]

8. Section 265.13(b)(6) is amended by revising "265.193" to read "265.200".

§ 265.73 [Amended]

9. Section 265.73(b)(3) is amended by revising "265.193" to read "265.200".

§ 265.1030 [Amended]

10. In § 265.1030 paragraph (b) introductory text is amended by revising "§§ 265.1034(d) and 265.1035(d)" to read § 265.1034 (d) and (e)".

§ 265.1034 [Amended]

11. Section 265.1034(c)(1)(vi) is amended by revising "E_h, as determined in paragraph (c)(1)(v) of the section" to read "E_h, as determined in paragraph (c)(1)(iv) of this section".

§ 265.1035 [Amended]

12. Section 265.1035(b)(4)(ii) is amended by revising "Records including the dates of" to read "Records, including the dates, of".

13. Section 265.1035(c)(5) is amended by revising "Paragraph (3)" to read "paragraph (c)(4) of this section."

§ 265.1052 [Amended]

14. Section 265.1052(e)(3) is amended by revising "paragraph (a)(2)" to read "paragraph (e)(2)".

§ 265.1064 [Amended]

15. Section 265.1064(c) introtuctory text is amended by revising "265.1953" to read "265.1053".

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

16. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

17. Section 270.24 is amended by revising paragraph (d)(2) to read as follows:

§ 270.24 Specific part B information requirements for process vents.

* * * * * *

(d) * * *

(2) Records, including the dates, of each compliance test required by § 264.1033(k).

* * * * *

§ 270.25 [Amended]

18. Section 270.25(e)(2) is amended by revising "Records including the dates of" to read "Records, including the dates, of".

[FR Doc. 91-9634 Filed 4-25-91; 8:45 am]
BILLING CODE 6560-50-M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

42 CFR Part 57

RIN 0905-AD07

Health Professions Student Loan Program

AGENCY: Public Health Service, HHS.

ACTION: Final regulations.

SUMMARY: This rule revises existing regulations governing the Health Professions Student Loan (HPSL) program to conform those regulations with amendments made to sections 740-747 of the Public Health Service (PHS) Act (the Act) by the Health Professions Reauthorization Act of 1988. This rule

SPA 11

RCRA REVISION CHECKLIST 88

Administrative Stay for K069 Listing
56 FR 19951
May 1, 1991
(RCRA Cluster I, non-HSWA)

Note: This May 1, 1991 (56 FR 19951) notice administratively stays the K069 listing so that the listing does not apply to slurries generated from pollution control devices that are intended to capture acid gases and are not dedicated chiefly to control of particulate air emissions. The stay remains in effect until further administrative action is taken. If EPA takes further action affecting this stay, EPA will publish a notice of the action in the Federal Register. A checklist is necessary because the code is affected. As this change narrows the scope of this listing, States are not required to adopt it; thus, this checklist has been designated as optional.

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					
add note regarding administrative stay to K069 Listing as shown below	261.32				

Industry and EPA hazardous waste No	Hazardous Waste	Hazard code
* * * * * * * *		
1 Secondary lead: K069	Emission control dust/sludge from secondary lead smelting. (NOTE: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of action in the Federal Register.)	(T)
* * * * * * * *		

[1] Federal code omits a closing parenthesis at the end of the Note.

following raw agricultural commodity grown in soil fumigated with methyl bromide.

Commodity	Parts per million
Ginger, roots (Pre- and Post-H)	100

3. In § 180.199, by adding new paragraph (c), to read as follows:

§ 180.199 Inorganic bromides resulting from soil treatment with combinations of chloropicrin and methyl bromide, or propargyl bromide; tolerances for residues.

* * * * *

(c) A tolerance with regional registration, as defined in § 180.1(n), is established for residues of inorganic bromides (calculated as Br) in or on the following raw agricultural commodity grown in soil fumigated with combinations of methyl bromide and chloropicrin. No tolerance is established for chloropicrin since it has been established that no residue of this substance remains in the raw agricultural commodity when formulations containing chloropicrin at 2 percent or less are used.

Commodity	Parts per million
Ginger, roots (Pre- and Post-H)	100

[FR Doc. 91-9969 Filed 4-30-91; 8:45 am]
BILLING CODE 6560-50-F

40 CFR PART 261

[FRL-3951-1]

Hazardous Waste Management Systems: Identification and Listing of Hazardous Waste

AGENCY: Environmental Protection Agency.

ACTION: Administrative stay.

SUMMARY: The Environmental Protection Agency is today announcing an administrative stay of a portion of the hazardous waste listing K069 so that the listing does not apply to slurries generated from air pollution control devices that are intended to capture acid gases and are not dedicated chiefly to control of particulate air emissions.

EFFECTIVE DATE: May 1, 1991.

ADDRESSES: The RCRA regulatory docket for this administrative stay is located at the U.S. Environmental Protection Agency, 401 M Street, SW., (room M2427), Washington, DC 20460, and is available for viewing from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. Call (202) 475-9327 for appointments. The reference number for this docket is "F-91-K69S-FFFFF". The public may copy material from any regulatory docket at a cost of $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, toll free at (800) 424-9346, or at (202) 382-3000. For technical information concerning this notice, contact Narendra Chaudhari, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 382-4787.

SUPPLEMENTARY INFORMATION: In the initial hazardous waste regulations implementing section 3001 of RCRA, the Agency listed as hazardous "emission control dust/sludge from secondary lead smelting" (EPA Hazardous Waste No. K069). This listing was intended to apply to the lead-rich particulate captured by secondary lead smelting air pollution control devices utilized for control of particulate matter. See Background Document for Listing of Hazardous Wastes, November 14, 1980, pp. 835-37; 840-42. The literal language of the listing regulation, however, encompasses not only this lead-rich residue, but sludges captured by other types of air emission control equipment, which sludges are unlike the waste EPA intended to list in terms of physical form, volume generated, and toxicity.

One secondary lead smelter, Exide/General Battery Corporation, located in Reading, Pennsylvania, operates air pollution control devices that capture particulate matter and a second control device utilized for acid gas control. This acid gas scrubber generates a slurry containing some lead and other toxic metals, although at levels that do not exhibit any characteristic of hazardous waste as measured by the Toxicity Characteristic Leaching Procedure (TCLP), and previously measured by Extraction Procedure (EP); see docket to today's rule for historical and recent analytical data. To the Agency's knowledge, Exide is the only secondary lead smelter that generates this type of slurry.

However, the language of the K069 listing regulation captures the slurry since it is a type of "sludge", i.e. a residue of a pollution control process (see § 260.10)). The slurry is not the waste the Agency meant to list. It is not generated by an air emission control device used chiefly to control lead emissions and other particulate, it is not amenable to recovery in the secondary lead process, it is not a dust, it is generated in lower volumes than the typical K069 waste, and it contains significantly lower concentrations of lead and other toxic metals than the typical K069 waste. Exide provided data showing that the levels of lead (910 ppm) and cadmium (12.7 ppm) in its sludge are far below the level given in the Agency's Background Document for listing K069 (53,000 to 120,000 ppm lead, and 340 to 900 ppm cadmium).

Leachable concentrations of lead and other toxic metals in the slurry are also significantly less than in the usual K069 waste. Exide provided extensive analytical data collected from 1989 to 1991 clearly demonstrating that leachable levels of toxic metals are low. Specifically, approximately 100 EP measurements of leachable metals taken in 1989 show that cadmium, lead, and chromium are usually far below the toxicity characteristic levels; the mean EP value (at the 95th percentile upper confidence limits) for these metals are less than one tenth (i.e., 10-fold less than) the characteristic levels. The levels of leachment metals for typical K069 wastes given in the Background Document exceeded the characteristic levels by factors of 5 to 230 for cadmium, 50 to 400 for lead, and 1 to 240 for chromium. Exide also provided more recent TCLP measurements of its waste obtained in 1990 and 1991 that show even longer levels of leachable cadmium and lead. Of nineteen TCLP samples, all were less than one tenth of the characteristic levels. See the docket to today's rule for further details of this analysis.

EPA intends in the near future to propose to amend the language of the K069 listing to clarify the scope of the listing to excluded sludges generated by air pollution devices that are not a plant's chief means of controlling lead emissions. In the interim, however, the Agency has determined to grant a limited administrative stay of the K069 listing pursuant to 5 U.S.C. 705,[1] in order that the listing not apply to the slurry waste generated by the Exide acid gas scrubber or to any other similar waste (if such a waste should exist). The Agency is taking this action not only because it appears that the listing was not intended to apply to this waste and that the waste does not exhibit any characteristic of hazardous waste and

[1] Exide has raised this issue in its petition for review challenging land disposal restrictions regulations promulgated on June 1, 1990 (55 FR 22520).

would not be listed if the Agency were approaching the issue *de novo*, but also because Exide is presently incurring significant treatment and disposal costs for this slurry (particularly as a result of recently-promulgated treatment standards issued as part of the Land Disposal Restriction Third regulation, at (55 FR 22568) (June 1, 1990)) which potentially jeopardize the company's continued ability to operate. Given that the listing appears to also apply inappropriately to the waste, and other lead-bearing materials, and that Exide's recovery process specifically aids in meeting the Land Disposal Restriction treatment standards for lead acid batteries, EPA finds that justice requires issuance of a limited administrative stay. See 5 U.S.C. 705. For the same reasons, EPA finds that grant of a stay is necessary to prevent irreparable harm to Exide, will not impede EPA's administration of the subtitle C program (which will continue to apply to all K069 wastes that EPA intended to list), and is in the public interest.

Accordingly, the Agency is issuing this administrative stay of the K069 listing so that it does not apply to the slurry generated by acid gas air pollution control devices at Exide/General Battery Reading, Pennsylvania facility. The listing continues to apply to Exide's (and all other secondary lead smelters') dusts generated by particulate matter air pollution control devices. The administrative stay will remain in effect until 30 days after completing of rulemaking dealing with the scope of the K069 listing. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register.

List of Subjects in 40 CFR Part 261

Hazardous waste, Recycling and Reporting and Recordkeeping Requirements.

Dated: April 18, 1991.

F. Henry Habicht II,

Deputy Administrator.

For the reasons set at in the preamble, title 40, chapter I, part 261 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. Section 261.32 is amended by revising the K069 listing to read as follows:

§ 261.32 Hazardous wastes from specific sources

* * * * *

Industry and EPA hazardous waste no.	Hazardous waste	Hazard code
* * * * *		
Secondary lead:		
K069	Emission control dust/sludge from secondary lead smelting. (NOTE: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register.	(T)
* * * * *		

[FR Doc. 91-9902 Filed 4-30-91; 8:45 am]

BILLING CODE 6560-50-M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Public Land Order 6855

[NM-940-4214-10; NMNM 055653]

Partial Revocation of Public Land Order No. 2051; New Mexico

AGENCY: Bureau of Land Management, Interior.

ACTION: Public land order.

SUMMARY: This order revokes a public land order insofar as it affects 566.30 acres of public land withdrawn for research programs in connection with Federal programs. The land is no longer needed for this purpose, and the revocation is needed to permit disposal of the land through land exchange as directed by Public Law 100-559.

EFFECTIVE DATE: May 1, 1991.

FOR FURTHER INFORMATION CONTACT: Clarence F. Hougland, BLM, New Mexico State Office, P.O. Box 1449, Santa Fe, New Mexico 87504-1449, 505-988-6071.

By virtue of the authority vested in the Secretary of the Interior by Section 204(a) of the Federal Land Policy and Management Act of 1976, 90 Stat. 2751; 43 U.S.C. 1714, and as directed by Public Law 100-559, it is ordered as follows:

1. Public Land Order No. 2051, which withdrew public land and reserved it under the jurisdiction of the Secretary of the Interior for use by the New Mexico College of Agriculture and Mechanic Arts, now New Mexico State University, for research programs in connection with Federal programs, is hereby revoked insofar as it affects the following described land:

New Mexico Principal Meridian

T. 23 S., R. 2 E.,
sec. 22, lots 5 and 6;
sec. 23, lots 1 and 2, and 5 to 16, inclusive.

The area contains 566.30 acres in Dona Ana County.

2. The land described above is hereby opened to the land exchange as authorized and directed by Section 502 of Public Law 100-559.

Dated: April 26, 1991.

Dave O'Neal

Assistant Secretary of the Interior.

[FR Doc. 91-10339 Filed 4-30-91; 8:45 am]

BILLING CODE 4310-FB-M

FEDERAL MARITIME COMMISSION

46 CFR Parts 580, 581 and 583

[Docket No. 91-1]

Bonding of Non-Vessel-Operating Common Carriers

AGENCY: Federal Maritime Commission.

ACTION: Notice of extension of time.

SUMMARY: The Federal Maritime Commission is extending until May 24, 1991, the time by which non-vessel-operating common carriers ("NVOCCs") may file new tariffs to become effective on one day's notice. The granting of this authority does not constitute an exemption from the penalty provisions of the Shipping Act of 1984 for those NVOCCs that may be operating without a tariff on file as required by section 8 of the 1984 Act.

EFFECTIVE DATE: April 24, 1991.

FOR FURTHER INFORMATION CONTACT: Bryant L. VanBrakle, Deputy Director, Bureau of Domestic Regulation, Federal Maritime Commission, 1100 L Street, NW., Washington, DC 20573, (202) 523-5796.

SUPPLEMENTARY INFORMATION: On January 15, 1991, the Commission published in the Federal Register, 56 FR

SPA 11

RCRA REVISION CHECKLIST 89

Revision to the Petroleum Refining Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)
56 FR 21955-21960
May 13, 1991
(RCRA Cluster I, HSWA Rule)

Note: This checklist amends the listings of F037 and F038 which were made at 55 FR 46354 (November 2, 1990; Revision Checklist 81). This rule revises and narrows these listings by 1) excluding non-contact, once-through cooling water from F037 and F038 listings and 2) not including, within the scope of the F038 listing, floats generated in or after aggressive biological treatment units. States wishing to adopt this optional change are strongly encouraged to adopt this change at the same time the Revision Checklist 81 provisions are adopted.

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 NON-SPECIFIC SOURCES					
revise description of F037 and F038	261.31(a)				

HK-84 SPA11

any provision of a lease, license, or permit issued pursuant to the Act, or any provision of any regulation issued under the Act (hereinafter referred to as "violation") probably occurred and that such violation continued beyond actual notice of the violation and the expiration of any reasonable period allowed for corrective action or that the violation may constitute or may have constituted a threat of serious, irreparable, or immediate harm or damage to life (including fish and other aquatic life), property, any mineral deposit, or the marine, coastal, or human environment, the Regional Director may direct the preparation of a case file, and appoint a Minerals Management Service (MMS) employee to serve as a Reviewing Officer. In making this determination, the Regional Director shall have the authority to summon witnesses, administrator oaths, and issue orders to produce evidence. Chairmen of investigative panels appointed by the Regional Director to investigate violations or other matters shall also have authority to summon witnesses, administer oaths, and issue orders to produce evidence while conducting investigations.

* * * * *

(b) The Reviewing Officer shall proceed with provisions of paragraph (c) of this section upon determining that there is sufficient evidence that a violation probably occurred and that:

(1) The violation continued beyond any notice of such failure and the expiration of any reasonable period allowed for corrective action, or

(2) The violation constitutes or constituted a threat of serious, irreparable, or immediate harm or damage to life (including fish and other aquatic life), property, any mineral deposit, or the marine, coastal, or human environment.

(c) The Reviewing Officer shall notify, in writing, the person alleged to have committed the violation (hereinafter referred to as "party") of the following:

(1) The alleged violation, citing the applicable provision of the Act, or the applicable term of a lease, license, or permit issued pursuant to the Act, or the applicable provision of a regulation or order issued under the Act upon which the action is based;

(2) The amount of penalty that appears to be appropriate in the event it is determined that the party is responsible for the alleged violation based upon the material then available for the Reviewing Officer;

(3) The party's right to examine the material in the case file and to have a copy of all written documents provided upon request, except those which would, in a civil proceeding, disclose or lead to the disclosure of a confidential informant; and

(4) The fact that, subject to the provisions in § 250.201 of this part, the party has a right to a hearing before the Reviewing Officer prior to any finding of fact regarding the alleged violation.

* * * * *

4. In § 250.203, redesignate paragraph (b) as paragraph (c), revise paragraph (a), and add a new paragraph (b) to read as follows:

§ 250.203 Reviewing Officer's decision.

(a) The Reviewing Officer's decision shall be in writing and shall include the Reviewing Officer's conclusions and the basis for the conclusions. Any decision shall be based upon substantial evidence in the record. The Reviewing Officer shall dismiss the case and remand it to the Regional Director if the Reviewing Officer finds that:

(1) there is not substantial evidence in the record establishing that the alleged violation occurred,

(2) for a violation under § 250.200(b)(1) of this part, either the required notice of the alleged violation was not provided or that the alleged violation did not continue after the termination of any period provided for the taking of corrective action, or

(3) for a violation under § 250.200(b)(2) of this part, there is not substantial evidence on the record that, at the time of the discovery of the violation or during a time prior to the discovery of the violation, the violation constituted a threat of serious, irreparable, or immediate harm or damage to life (including fish and other aquatic life), property, any mineral deposit, or the marine, coastal, or human environment.

(b) A dismissal under paragraph (a) of this section is without prejudice to the Regional Director's right to refile the case and have it reheard if additional evidence is obtained. A dismissal following a rehearing is final and with prejudice.

* * * * *

5. In § 250.206, revise the heading and paragraph (a)(1) to read as follows:

§ 250.206 Civil penalties.

(a)(1) If the Reviewing Officer determines that a civil penalty is to be assessed, the penalty shall not exceed $20,000 for each day of the continuation of the violation. For violations described in § 250.200(b)(1) of this part, the penalty may be assessed for each day the violation continues after notice and a reasonable period for corrective action. For violations described in § 250.200(b)(2) of this part, the penalty may be assessed for each day the violation continued after it first occurred.

* * * * *

[FR Doc. 91-11314 Filed 5-10-91; 8:45 am]
BILLING CODE 4310-MR-M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 180

Tolerance Processing Fees

CFR Correction

In title 40 of the Code of Federal Regulations, parts 150 to 189, revised as of July 1, 1990, § 180.33 appears twice, at pages 269 to 270 and again at pages 270 to 272. Section 180.33 Fees had been revised at 55 FR 5218, February 14, 1990. This revision starting at page 269 and ending on page 270 is the correct text.

The superseded text was incorrectly retained in the volume. The superseded text of § 180.33 at pages 270 to 272 is removed.

BILLING CODE 1505-01-D

40 CFR Parts 261, 271, and 302

[FRL-FFFF-F; 3922-3]

RIN 2050-AB70

Hazardous Waste Management System: Identification and Listing of Hazardous Waste; CERCLA Hazardous Substance Designation—Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)

AGENCY: Environmental Protection Agency.

ACTION: Interim final rule with request for comments.

SUMMARY: On November 2, 1990 the Environmental Protection Agency (EPA) promulgated regulations under the Resource Conservation and Recover Act (RCRA) to add two wastes to the list of hazardous wastes under 40 CFR 261.31. These wastes, designated as F037 and F038, are generated in the separation of oil/water/solids from petroleum refinery process wastewaters and oily cooling wastewaters.

New information acquired by the Agency since the promulgation of the F037 and F038 listings indicates that inclusion of non-contact, once-through cooling waters in the definition of "oily cooling waters" has included within the scope of the listing separation sludges that are not similar in constituent

concentration or oil/grease content to other sludges generated in the separation of oil/water/solids from petroleum refinery process wastewaters and oily cooling waters. Based on the newly received information, the Agency is today promulgating an interim final rule revising the definition of wastes subject to the F037 and F038 listings to state that sludges from non-contact, once-through cooling waters are not included.

Further, the Agency is amending the definition of petroleum refinery secondary (emulsified) oil/water/solids separation sludge, F038, to clarify that floats generated in aggressive biological treatment units are not included in the listing description of that waste stream.

DATES: This interim final rule is effective May 2, 1991.

Comments on today's action and any additional data must be received on or before June 30, 1991.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F-91-PT1F-FFFFF and is located in the EPA RCRA Docket Room, M2427, 401 M Street, SW., Washington, DC 20460. The docket is open from 9 a.m. to 4 p.m. Monday through Friday, except Federal holidays. To review docket material, the public must make an appointment by calling (202) 475-9327. The public may copy a maximum of 100 pages of material from any one regulatory docket at no cost. Additional copies cost $0.15 per page. The public must send an original and two copies of their comments to the above docket. Place the Docket Number F-91-PT1F-FFFFF on your comments.

FOR FURTHER INFORMATION CONTACT: For general information about this rulemaking, contact the RCRA/Superfund Hotline at (800) 424-9346 or (703) 920-9810. For technical information, contact John Austin, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460 or by telephone at (202) 382-4789. For further information on the CERCLA portions of this rule, contact Gerain Perry, Response Standards and Criteria Branch, Emergency Response Division (OS-210), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460; (202) 382-2198.

SUPPLEMENTARY INFORMATION: CERCLA section 103(a) requires that the person in charge of a vessel or facility from which a hazardous substance has been released in a quantity that equals or exceeds its RQ shall immediately notify the National Response Center of the release. The toll-free telephone number of the National Response Center is (800) 424-8802; in the Washington, DC metropolitan area, the number is (202) 267-2675.

A. Background

On November 2, 1990 (55 *FR* 46354) the Environmental Protection Agency (EPA) promulgated regulations under the Resource Conservation and Recovery Act (RCRA) adding two wastes to the list of hazardous wastes under 40 CFR 261.31. Those wastes, designated as F037 and F038, are generated in the primary and secondary separation of oil/ water/solids from petroleum refinery process wastewater and oily cooling wastewaters.

Development of listings for sludges generated in the primary and secondary treatment of process wastewaters and oily cooling wastewaters in the petroleum refining industry has been a long process, dating back ten years. Prior to promulgation of the final regulation, notices were published regarding primary and secondary treatment sludges on Novermber 2, 1980 (45 *FR* 74893), February 11, 1985 (50 *FR* 5637), and April 13, 1988 (53 *FR* 12182).

In the November 2, 1990 final rule, the preamble discussed the scope of the listing and described those process and oily cooling wastewaters generating the listed waste (55 *FR* 46364). The preamble indicated that "oily cooling waters" for the purposes of the listing included once-through cooling water from C_6 (six carbon) hydrocarbons and heavier operations. However, since publication of the final rule, the Agency has learned that the inclusion of non-contact, once-through cooling water (as opposed to once-through contact cooling water) in the definition of oily cooling waters unintentionally may extend the F037 and F038 listings to wastes that are not similar in constituent concentration to others included in the listing. The American Petroleum Institute (API) provided data, which is included in the docket for today's notice, that supports the conclusion that sludges from non-contact, once-through cooling waters are not similar to other primary and secondary oil/water/solids separation sludges generated at petroleum refineries and should, therefore, be excluded from the listings. Consequently, EPA has determined that sludges from once-through, non-contact cooling water should not be listed and is therefore today amending the listing description.

In addition, the Agency today is revising the definition of wastes subject to the F038 listing for petroleum refinery secondary (emulsified) oil/water/solids separation sludge, to clarify an ambiguity in the listing description. The revised language clarifies that both sludges and floats generated in aggressive biological treatment units, as defined in 40 CFR 261.31(b)(2)(i), and not included in the F038 listing, are excluded from the scope of that listing. It was not EPA's intent to include those floats in the F038 listing, and today's rule adds language to clear up any confusion on this issue.

B. Interim Final Rule

1. Non-Contact Once-Through Cooling Water

Section 3001 of RCRA requires EPA to list particular hazardous wastes that must be subject to the RCRA hazardous waste management system. Regulations listing specified wastes must be based on EPA-developed criteria codified at 40 CFR 261.11. The Hazardous and Solid Waste Amendments of 1984 (HSWA), among other provisions, added a new secton 3001(e)(2) directing EPA to make a determination whether or not to list as hazardous a number of wastes, including refinery wastes. In the previously published notices, the Agency explicitly discussed the inclusion of cooling waters from C_6 and heavier operations in the scope of the listings (see 53 *FR* 12164, April 13, 1988). However, the notice did not indicate that cooling water included non-contact once-through cooling water, which is segregated wastewater used for cooling that does not come in contact with oil. Further, the Agency did not request comment or data on the composition of non-contact, once-through cooling water in any of the notices. Further, the cost of managing such wastes was not analyzed when EPA evaluated the regulatory impact of the listings.

After publication of the final rule, EPA received comments from the regulated community contending that waste produced in oil/water/solids separation of non-contact, once-through cooling water is not similar in constituent concentration to other wastes included in the listing. As noted above, API submitted data supporting their contention that non-contact, once-through cooling water should not have been included in the definition of oily cooling waters.

The Agency's inclusion of once-through cooling water from C_6 (six carbon) hydrocarbons and heavier operations in the definition of oily cooling waters was based on a 1969 API petroleum refinery waste disposal manual that was developed prior to implementation of current Clean Water Act (CWA) requirements. Discussion of

liquid wastes in the manual described "once-through cooling water from surface condensers and coolers handling oil which will *not* vaporize rapidly on exposure to air (C_6 and heavier)" as one type of oily cooling waters. The manual indicated that such oily cooling waters were of concern because they can contain minor oil contamination from sources such as spills or leaks in heat exchange equipment. The manual made a clear distinction between oily cooling waters and oil-free cooling wastewaters, such as once-through cooling water from surface condensers and coolers which normally handle gaseous products (C_6 and lighter).

In response to CWA requirements related to surface water discharges that were promulgated after publication of the manual, API contends that refineries have changed processes and adapted their facilities to separate non-contact, once-through cooling water from other wastewaters. Thus, these wastewaters are segregated from other oily wastewaters. As a result, sludges from treatment of these wastewaters for the most part contain metals (*e.g.*, arsenic, nickel, lead, and chromium) at much lower levels than found in other primary and secondary oil/water/solids separation sludges. Further, the API data indicate that the semivolatile constituents of concern (*e.g.*, benzene, benzo(a)pyrene, and chrysene), when present, are detected at levels at least 100 times less than the average found in other wastes included in the F037 and F038 listings.

Based on the comments received by the Agency after promulgation of the November 2, 1990 final rule, EPA has concluded that wastes from the separation of non-contact, once-through cooling water are significantly different from the sludges the Agency intended to list as F037 and F038 and, thus, should not be included in the scope of these listings. The Agency, however, is not making a final listing determination on these wastes and may, in the future, evaluate sludges generated from non-contact once-through cooling waters. Today, the Agency is promulgating an interim final rule that amends the listing definitions for F037 and F038 to exclude sludge generated from non-contact, once-through cooling waters that are segregated for treatment from other process or oily cooling wastewaters. It should be noted that non-contact, once-through cooling waters that are mixed with the wastewaters that will generate the listed waste or with any other listed hazardous waste become subject to Subtitle C regulations under the mixture rule (40 CFR 261.3(a)(2)(iv)). It also should be noted that these wastewaters, and any sludges generated from them, could still exhibit one or more of the characteristics of hazardous waste, and if so, would be subject to appropriate RCRA Subtitle C controls.

2. Floats Generated in Aggressive Biological Treatment

The Agency also has learned that the F038 listing description published in the final rule on November 2, 1990 could be misinterpreted to include floats generated during or after aggressive biological treatment. Today's rule further revises the F038 listing definition to clarify that the F038 listing for petroleum refinery secondary (emulsified) oil/water/solids separation does not include floats generated in or downstream from aggressive biological treatment units. EPA believes this was clearly implicit in its discussion in the final rule. The Agency spelled out in detail what units were aggressive biological treatment units in the preamble to the final rule (see 55 *FR* 46358, November 2, 1990) and promulgated a detailed definition for such units under 40 CFR 261.31(b)(2)(i). The Agency believes its intent was plain in both the preamble discussion and the regulatory language. However, the Agency agrees that some potential for misinterpretation may exist and, therefore, is clarifying the listing description.

The Agency used the term "[a]ny sludge and/or float" to describe the listed F038 waste in the definition at 40 CFR 261.31 (55 *FR* 46396). This phrase indicated the Agency's intent to regulate all sludges and floats generated in the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters. However, the Agency used the term "sludges" to describe the waste generated in an aggressive biological treatment unit *not* included in the listing. By failing to include "and/or floats" the Agency did not mean to suggest floats generated in aggressive biological treatment units remained within the scope of the listing as well. However, because of the potential for some confusion, the Agency is amending the definition of F038 specifically to exclude floats generated in aggressive biological treatment units from the F038 listing.

EPA today is soliciting comments on its action today. In particular, the Agency is seeking additional data that would support or refute API's contention that non-contact, once-through cooling waters are substantially different from other wastewaters included in the definition of oily cooling waters, and comment on the data the Agency has received to date.

C. 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 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. Consequently, in light of today's revision, Table 1 in 40 CFR 271.1(j) also has been amended. Table 1 identifies Federal program requirements promulgated pursuant to HSWA that are effective regardless of a State's authorization status.

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 listings for primary and secondary oil/water/solids separation sludge and the modification to the State's program is approved by EPA. See discussion in the final rule at 55 *FR* 46381 (November 2, 1990). In nonauthorized States EPA will, of

course, implement the provisions of today's rule.

As previously noted, the primary and secondary oil/water/solids separation sludge listings were promulgated pursuant to a HSWA provision and must be adopted by States that intend to retain final authorization. However, today's rule revises and narrows the scope of the listing for primary and secondary oil/water/solids separation sludge from that of the final regulation as promulgated. Today's interim final rule (1) excludes non-contact, once-through cooling water from the F037 and F038 listings and (2) does not include within the scope of the F038 listing floats generated in or after aggressive biological treatment units. Consequently, such wastes are not hazardous wastes for the purposes of Federal regulation and regulation of these wastes is not required. At the same time, under section 3009 of RCRA, States remain free to impose more stringent requirements than those imposed under Federal regulations. As a result, States, as authorized by State statute, may chose to regulate the wastes from non-contact, once-through cooling wastes or aggressive biological treatment units or may require other more stringent conditions upon management of these wastes.

D. CERCLA Designation and Reportable Quantities

All hazardous wastes listed in 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 at 40 CFR 261.21 through 261.24), are hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, pursuant to CERCLA section 101(14). Therefore, the waste streams that were listed as hazardous waste in the November 2, 1990 rule (55 *FR* 46354) will, on the effective date of the rule, May 2, 1991, automatically become hazardous substances. CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their reportable quantities (RQs).

Under CERCLA section 103(a), the person in charge of a vessel or facility from which a hazardous substance has been released in a quantity that equals or exceeds its RQ shall immediately notify the National Response Center of the release. In addition to the reporting requirements under CERCLA, section 304 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires owners or operators of certain facilities to report the releases of a CERCLA hazardous substance or Extremely Hazardous Substance (EHS) to State and local authorities. EPCRA Section 304 notification must be given immediately after the release of an EHS in the amount of an RQ or more to the community emergency coordinator for each local emergency planning committee (LEPC) for an area likely to be affected by the release, and to the State emergency planning commission of any State likely to be affected by the release.

With the revision of the definitions of waste subject to the F037 and F038 listings, as discussed previously in today's notice, the Agency is revising the F037 and F038 listings in 40 CFR 302.4 and the codified list of CERCLA hazardous substances.

Under Section 102(b) of CERCLA, all hazardous wastes newly designated under RCRA will have a statutory RQ of one pound unless and until the RQ is adjusted by regulation under CERCLA. The November 2, 1990 rule provided that the RQ for the newly added F037 and F038 wastes would be one pound until revised under a CERCLA rulemaking. On March 27, 1991, the Agency published a separate rulemaking under CERCLA (55 *FR* 12826), which proposed to adjust the RQ for these wastes at one pound. The changes in today's rule do not change the proposed RQs.

E. Regulatory Requirements

1. Regulatory Impact Analysis

Under Executive Order 12291, EPA must determine whether a regulation is "major" and therefore subject to the requirements of a Regulatory Impact Analysis. The overall effect of today's rule is to narrow the definition of those wastes subject to the F037 and F038 hazardous waste listings for petroleum refinery primary and secondary oil/water/solids separation sludge. The net effect of this proposal is to extend cost savings to 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 enti

The narrowing of the definitio cooling waters as applied to petroleun refinery primary and secondary oil/water/solids separation sludge (F037 and F038) promulgated today 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 on 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) provision 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

40 CFR Part 261

Hazardous wastes, hazardous constituents, recycling.

40 CFR Part 271

Administrative practice and procedure, Hazardous material transportation, Hazardous was Reporting and recordkeeping requirements, Water pollution control, Water supply, Interim and final State authorizations.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous materials, Hazardous substances, Intergovernmental relations, Natural resources, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

Dated: May 1, 1991.

F. Henry Habicht, II,

Deputy 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 for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6221, 6922, and 6938.

2. The table in § 261.31(a) is amended by revising the entries F037 and F038 to read as follows:

§ 261.31 Hazardous waste from specific sources

(a) • • •

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
•	•	•
F037	Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(T)
•	•	•

PART 271—REQUIREMENT FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

3. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

4. Section 271.1(j) is amended by adding at the end of the following entry to Table 1.

§ 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
[Insert Publication Date]	Petroleum refinery primary and secondary oil/water/solids separation sludge listings.	[Insert *FR* page citation]	May 2, 1991.
•	•	•	•

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

5. The authority citation for Part 302 continues to read as follows:

Authority: 42 U.S.C. 9602, 9603, and 9604; 33 U.S.C. 1321 and 1361.

§ 302.4 [Amended]

6. Section 302.4 is amended by revising the entries F037 and F038 in Table 302.4 to read as follows.

• • • • •

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substance	CASRN	Regulatory synonyms	Statutory RQ	Statutory Code+	Statutory RCRA waste no.	Final RQ Category	Final RQ Pounds (KG)
•	•	•	•	•	•	•	•
F037			1*	4	F037		* *
Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing								
F038			1*	4	F038		* *

TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Final	
			RQ	Code +	RCRA waste no.	Category	Pounds (KG)
Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from once-through non-contact cooling waters segregated for treatment from other process or oil cooling wastes, sludges and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing								

+ Indicates the statutory sources as defined by 4 below.
* 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.
The Agency may adjust the statutory RQ for this hazardous substance in a future rulemaking; until then the statutory RQ applies.

[FR Doc. 91-10898 Filed 5-10-91; 8:45 am]
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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 646

[Docket No 910507-1107]

Snapper-Grouper Fishery of the South Atlantic

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Final rule.

SUMMARY: The Secretary of Commerce changes the quota for wreckfish in the snapper-grouper fishery off the South Atlantic states in accordance with the framework procedure of the Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region (FMP), as amended. This notice establishes an annual quota for wreckfish of up to three million pounds (1,360,791 kilograms), whole weight, as follows: One million pounds (453,597 kilograms), whole weight, during each of the periods April 16, 1991, through July 15, 1991, and July 16, 1991, through October 15, 1991; with an additional one million pounds for the period October 16, 1991, through January 14, 1992, available if analysis of current data indicates that it is the appropriate harvest level for the resource. The intended effect is to protect the wreckfish resource.

EFFECTIVE DATE: May 10, 1991.

FOR FURTHER INFORMATION CONTACT: Peter J. Eldridge, (813) 893-3161.

SUPPLEMENTARY INFORMATION: Snapper-grouper species, including wreckfish, are managed under the FMP, prepared by the South Atlantic Fishery Management Council (Council), and its implementing regulations at 50 CFR part 646, under the authority of the Magnuson Fishery Conservation and Management Act (Magnuson Act).

In accordance with procedures approved in Amendment 3 to the FMP, the Council recommended and NOAA published a proposed rule changing the wreckfish annual quota (56 FR 14496, April 10, 1991). That notice (1) described the framework procedure of the FMP through which the Council recommended the change; (2) specified the change; and (3) described the need and rationale for the change. Those descriptions and specifications are not repeated here. No comments were received on the proposed rule.

The Regional Director, Southeast Region, NMFS, concurs that the Council's recommended wreckfish quota is necessary to protect the resource and finds that it is consistent with the goals and objectives of the FMP. In addition, NOAA finds that it is consistent with the Magnuson Act and other applicable law. Accordingly, the Council's recommended wreckfish quota is implemented for the fishing year that commenced April 16, 1991.

Because this change in quota is for a fishing year that has already commenced, the Assistant Administrator for Fisheries, NOAA, finds for good cause, namely, to provide effective conservation and management of the wreckfish resource, that it is impracticable and contrary to the public interest to delay for 30 days the effective date of this rule under the provisions of section 553(d)(3) of the Administrative Procedure Act.

Other Matters

This action is authorized by 50 CFR 646.25 and complies with E.O. 12291.

List of Subjects in 50 CFR Part 646

Fisheries, Fishing, Reporting and recordkeeping requirements.

Dated: May 7, 1991.

Michael F. Tillman,

Acting Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 646 is amended as follows:

PART 646—SNAPPER-GROUPER FISHERY OF THE SOUTH ATLANTIC

1. The authority citation for part 646 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq.*

2. Section 646.24 is revised to read as follows:

§ 646.24 Wreckfish quota and closure.

(a) Persons fishing for wreckfish are subject to a quota of up to 3 million pounds (1,360,791 kilograms), whole weight, each fishing year, distributed as follows:

(1) A quota of one million pounds (453,597 kilograms) is available on April 16;

SPA 11

RCRA REVISION CHECKLIST 90

Mining Waste Exclusion III
56 FR 27300-27330
June 13, 1991
(RCRA Cluster I, Non-HSWA Rule)

Notes: 1) This is the third revision to the mining waste exclusion, with the two previous revisions addressed by Revision Checklist 65 (54 FR 36592; September 1, 1989) and Revision Checklist 71 (55 FR 2322; January 23, 1990). As such, states which have not yet been authorized for these checklists are encouraged to apply for Revision Checklist 90 at the same time the provisions in Revision Checklists 65 and 71 are applied for. States already authorized for Revision Checklists 65 and 71 requirements are encouraged to adopt the corrections addressed by Revision Checklist 90 as quickly as possible.

2) In the FR notice addressed by this checklist, a series of appendices follows the change made to 40 CFR 261.4(b)(7). These appendices were not included in this checklist because they will not appear in the Code of Federal Regulations and because the subjects of these appendices are the Public Comments on EPA's Report to Congress and the Notice of Data Availability.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTES					
SUBPART A - GENERAL					
EXCLUSIONS					
remove "until EPA completes a report to Congress and a regulatory determination on their ultimate regulatory status"	261.4(b)(7)				

FR90

federal register

Thursday
June 13, 1991

Part II

Environmental Protection Agency

40 CFR Part 261

Special Wastes From Mineral Processing (Mining Waste Exclusion); Final Regulatory Determination and Final Rule

ENVIRONMENTAL PROTECTION AGENCY

[EPA/OSW-FR-91-018; FRL-3956-1]

40 CFR Part 261

RIN 2050-AC41

Final Regulatory Determination for Special Wastes From Mineral Processing (Mining Waste Exclusion)

AGENCY: Environmental Protection Agency.

ACTION: Final regulatory determination and final rule.

SUMMARY: Today's action presents the Agency's final regulatory determination required by section 3001(b)(3)(C) of the Resource Conservation and Recovery Act (RCRA) for 20 special wastes from the processing of ores and minerals. EPA has concluded that regulation under Subtitle C of RCRA is inappropriate for all 20 of the special wastes that were studied. EPA plans to address 18 of the wastes under subtitle D, possibly in the program being developed for mining wastes. For the remaining two wastes (phosphogypsum and process waste water from phosphoric acid production), EPA plans to proceed with the development and promulgation of a program under the Toxic Substances Control Act (TSCA) that will address their management, including possible regulations concerning waste minimization/pollution prevention for these wastes. In addition, EPA plans to use existing authorities under either RCRA Section 7003 or CERCLA section 106 to address any site-specific ground-water contamination problems that are believed to pose substantial and imminent endangerment to human health or the environment. EPA has also decided to postpone consideration of a possible ban on the utilization of one of the special wastes, slag from elemental phosphorus production in construction and/or land reclamation.

The rationale and salient facts used by the Agency to arrive at these decisions are provided below.

EFFECTIVE DATE: July 15, 1991.

FOR FURTHER INFORMATION CONTACT: For further information on the regulatory determination, contact the RCRA/Superfund hotline at (800) 424-9346 (toll free) or (703) 920-9810, or Bob Hall at (703) 308-8412.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Background
A. Statutory Authority
B. History of the Mining Waste Exclusion
C. Overview of the Report to Congress
D. Supplemental Analysis and Notice of Data Availability
II. Factors Considered in Making the Regulatory Determination
III. Regulatory Determination for the 20 Special Wastes from Mineral Processing
IV. Decision to Postpone Consideration of a Possible Ban on Elemental Phosphorus Slag Utilization
V. Regulatory Flexibility Analysis
VI. Agency Initiatives
VII. Regulatory Determination Docket
Appendix A—Analysis of and Response to Public Comments on the Report to Congress
Appendix B—Analysis of and Response to Public Comments on the Notice of Data Availability

I. Background

A. Statutory Authority

Today's notice is issued under the authority of section 3001(b)(3)(C) of RCRA, which requires that after completion of the Report to Congress mandated by section 8002(p) of RCRA, the Administrator must determine whether or not subtitle C regulation of the special study wastes is warranted. Wastes for which the exclusion is retained will continue to be subject to regulation under RCRA Subtitle D as solid wastes.

B. History of the Mining Waste Exclusion

In October, 1980, RCRA was amended by adding section 3001(b)(3)(A)(ii) to exclude "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 a study and a Report to Congress required by section 8002 (f) and (p) and a determination by the EPA Administrator either to promulgate regulations under subtitle C or that such regulations are unwarranted and that the exclusion should continue (as required by section 3001(b)(3)(C)). EPA modified its hazardous waste regulations in November 1980 to reflect this "Mining Waste Exclusion," and issued a preliminary, and quite broad, interpretation of the scope of its coverage. In particular, EPA interpreted the exclusion to include "solid waste from the exploration, mining, milling, smelting and refining of ores and minerals" (45 FR 76618, November 19, 1980).

In 1984, EPA was sued for failing to submit the Report to Congress and make the required regulatory determination by the statutory deadline (*Concerned Citizens of Adamstown* v. *EPA* No. 84-3041, D.D.C., August 21, 1985). In responding to this lawsuit, the Agency explained that it planned to propose a narrower interpretation of the scope of the Mining Waste Exclusion, so that it would encompass fewer wastes, and proposed to the Court two schedules: One for completing the section 8002 studies of extraction and beneficiation wastes and submitting the Report to Congress addressing these wastes, and one for proposing and promulgating a reinterpretation for mineral processing wastes. In so doing, the Agency, in effect, split the wastes that might be eligible for exclusion from regulation into two groups: Mining (mineral extraction and beneficiation) wastes, and mineral processing wastes. The Court agreed to this approach and established a schedule for the two tasks.

On December 31, 1985, EPA published the required Report to Congress on solid wastes from mineral extraction and beneficiation, and on July 3, 1986 (51 FR 24496) published a determination that regulation of such wastes under subtitle C of RCRA was not warranted. Since the determination was made, the Agency has been developing a tailored regulatory approach for these wastes under RCRA subtitle D.

In keeping with its Court-ordered directive to reinterpret the Mining Waste Exclusion for mineral processing wastes, in October, 1985, EPA proposed to narrow the scope of the Exclusion for mineral processing wastes to include only a few specific waste streams (s[illegible] 50 FR 49292, October 2, 1985). However, the Agency did not specify the criteria that it used to identify these wastes, or to distinguish them from other wastes that were not identified as being eligible for the exclusion. In response to this proposal, many companies and industry organizations "nominated" wastes that they believed were eligible for the regulatory exemption. Faced with an inability at that time to articulate criteria that could be used to distinguish exempt from non-exempt wastes and the approaching Court-ordered deadline for final action, EPA withdrew its proposal on October 9, 1986 (51 FR 36233).

In July, 1988, the court in *Environmental Defense Fund* v. *EPA*, 852 F.2d 1316 (D. C. Cir. 1988), *cert. denied*, 109 S. Ct. 1120 (1989) held that EPA's withdrawal of its 1985 proposal was arbitrary and capricious, and ordered EPA to reinterpret the scope of the Exclusion for mineral processing wastes. In particular, EPA was directed by the court to restrict the scope of the Exclusion as it applied to mineral processing wastes to include only "large volume, low hazard" wastes. In a series of rulemaking notices, EPA has, dur[illegible] the past three years, established th[illegible]

boundaries of the Mining Waste Exclusion for mineral processing wastes, has articulated the criteria that were used to define "mineral processing," and has evaluated whether individual wastes are large volume and low hazard and, thus, eligible for the temporary exclusion provided by RCRA section 3001(b)(3)(A)(ii). This rulemaking process was completed with the publication of final rules on September 1, 1989 (54 FR 36592) and January 23, 1990 (55 FR 2322). With the completion of these notices, the Agency established that the temporary exemption from subtitle C requirements established by the Exclusion for mineral processing wastes and, therefore, the scope of the Report to Congress, was limited to 20 specific mineral processing wastes.

EPA then prepared and submitted a detailed and comprehensive Report to Congress addressing the 20 special mineral processing wastes, in compliance with the Court-ordered deadline. In addition to the explicit consideration of the eight study factors listed at section 8002(p) of RCRA, the Agency included in the Report a proposed regulatory status for each of the 20 special wastes. Thus, the Report serves both as an information source and as a tentative indication of the Agency's final determination. Accordingly, and in compliance with statutory directive, the Report, the data and analyses that underlie it, and the comments received on it have served as the primary basis for the regulatory decisions that are articulated in today's notice.

EPA did not complete the regulatory determination within the six month statutory deadline. As a result, the Environmental Defense Fund filed a new RCRA citizen's suit, which was settled by consent decree. *EDF* v. *EPA*, No. 91-0429 (D.D.C. Mar. 4, 1991). Under the terms of the consent decree, EPA must issue the regulatory determination no later than May 20, 1991. Today's decision is issued in compliance with that decree.

C. Overview of the Report to Congress

1. Scope of the Report

The scope of the Report to Congress was limited to 20 mineral processing wastes, representing 12 mineral commodity sectors. These wastes are generated by 91 facilities located in 29 states. The 20 wastes covered by the Report to Congress, organized by sector, follow:

Sector	Waste(s)
Alumina	Red and brown muds from bauxite refining.
Chromium (Sodium Chromate/ dichromate).	Treated residue from roasting/ leaching of chrome ore.
Coal gasification	Gasifier ash from coal gasification.
	Process wastewater from coal gasification.
Copper	Slag from primary processing.
	Calcium sulfate wastewater treatment plant sludge from primary processing.
	Slag tailings from primary processing.
Elemental Phosphorus.	Slag from primary production.
Ferrous Metals	Iron blast furnace APC dust/ sludge.
	Iron blast furnace slag.
	Basic oxygen furnace and open hearth furnace APC dust/sludge.
	Basic oxygen furnace and open hearth furnace slag.
Hydrofluoric acid	Fluorogypsum.
	Process wastewater.
Lead	Slag from primary processing.
Magnesium	Process wastewater from primary magnesium processing by the anhydrous process.
Phosphoric acid	Phosphogypsum.
	Process wastewater.
Titanium tetrachloride.	Chloride process waste solids.
Zinc	Slag from primary processing.

2. Study Factors

The RTC addressed the following eight study factors required by section 8002(p) of RCRA:

1. The sources and volumes of such materials generated per year;

2. Present disposal and utilization practices;

3. Potential danger to human health and the environment from the disposal and reuse of such materials;

4. Documented cases in which danger to human health or the environment has been proved;

5. Alternatives to current disposal methods;

6. The costs of such alternatives;

7. The impacts of these alternatives on the use of phosphate rock, uranium ore, and other natural resources; and

8. The current and potential utilization of such materials.

In addition, the statute suggests that the Administrator may review studies and other actions of other federal and state agencies, and invite participation by other concerned parties, including industry and other federal and state agencies, with a view toward avoiding duplication of effort.

The Agency's approach in preparing this Report was to combine certain study factors, for purposes of analysis and exposition, into seven sections. The first section provides a brief overview of the industry, including the types of production processes used and the number and location of operating facilities that generate one or more of the mineral processing special wastes. The second section summarizes information on waste characteristics, generation, and current management practices (study factors 1 and 2), while the third section provides a discussion of potential for and documented cases of danger to human health or the environment (study factors 3 and 4). The fourth section (as suggested generally by section 8002(p) of RCRA), summarizes applicable federal and state regulatory controls. The fifth section discusses alternative waste management practices and potential utilization of the wastes (study factors 5 and 8), while the sixth section discusses costs and impacts of alternative practices (study factors 6 and 7). The seventh and final section summarizes and analyzes the findings of EPA's evaluation of the above study factors.

3. Preliminary Findings in the Report to Congress

The Report to Congress presented EPA's preliminary findings regarding the 20 special wastes from mineral processing, based on two separate approaches: (1) The application of the RCRA section 8002(p) study factors and (2) the application of the RCRA section 8002(p) study factors and additional considerations. A summary of the Agency's findings, prior to receipt and analysis of public comments, regarding the appropriate regulatory status of the 20 mineral processing special wastes covered in the RTC is provided below.

REPORT TO CONGRESS TENTATIVE RECOMMENDATIONS [1]

Waste stream	Approach 1 (using 8002(p) study factors)		Approach 2 (using 8002(p) study factors and additional considerations)
	Full subtitle C	Subtitle C-minus	
Red and Brown Muds from Bauxite Refining	D	D	D
Treated Residue from Roasting/Leaching of Chrome Ore	D	D	D
Gasifier Ash from Coal Gasification	D	D	D
Process Wastewater from Coal Gasification	D	D	D
Slag from Primary Copper Processing	D	D	D
Slag Tailings from Primary Copper Processing	D	D	D
Slag from Elemental Phosphorus Production	D	D	D
Iron Blast Furnace Slag	D	D	D
Basic Oxygen Furnace and Open Hearth Furnace Slag from Carbon Steel Prod.	D	D	D
Fluorogypsum from Hydrofluoric (HF) Acid Production	D	D	D
Process Wastewater from Magnesium Processing	D	D	D
Slag from Primary Zinc Processing	D	D	D
Phosphogypsum from Phosphoric Acid Production	D	D	D
Process Wastewater from Phosphoric Acid Production	D	D	D
Air Pollution Control Dust/Sludge from Iron Blast Furnaces	D	D	D
Air Pollution Control Dust/Sludge from Basic Oxygen Furnaces and Open Hearth Furnaces from Carbon Steel Production	D	D	D
Slag from Primary Lead Processing	D	C	D
Calcium Sulfate Wastewater Treatment Plant Sludge from Primary Copper Processing	D	C	D
Process Wastewater from HF Acid Production	C	C	D
Chloride Process Waste Solids from Titanium Tetrachloride Production	D	C	D

[1] Source: USEPA. 1990. Report to Congress on Special Wastes from Mineral Processing, Vol. I, pp. 11-17.

a. Approach 1: Application of the RCRA Section 8002(p) Study Factors

1. Wastes EPA Tentatively Recommended to Remain Under RCRA Subtitle D

Using the study factors listed in RCRA section 8002(p), EPA examined: (1) The potential for and documented danger to human health and the environment; (2) the need for additional regulations; and (3) the costs and impacts of subtitle C regulation for the 20 special wastes. EPA's analysis did not merely evaluate whether the wastes should be treated as hazardous in light of the criteria under subtitle C for other wastes, but took into account Congress' desire to examine "special wastes" in a different light. EPA's analysis suggested that regulation under subtitle C of RCRA would be inappropriate for the following 16 mineral processing wastes:

- Red and brown muds from bauxite refining;
- Treated residue from roasting/leaching of chrome ore;
- Gasifier ash from coal gasification;
- Process wastewater from coal gasification;
- Slag from primary copper processing;
- Slag tailings from primary copper processing;
- Slag from elemental phosphorus production;
- Iron blast furnace slag;
- Basic oxygen furnace and open hearth furnace slag from carbon steel production;
- Air pollution control dust/sludge from iron blast furnaces;
- Air pollution control dust/sludge from basic oxygen furnaces and open hearth furnaces from carbon steel production;
- Fluorogypsum from hydrofluoric acid production;
- Process wastewater from primary magnesium processing by the anhydrous process;
- Process wastewater from phosphoric acid production;
- Phosphogypsum from phosphoric acid production; and
- Slag from primary zinc processing.

Three of these sixteen wastes (treated residue from roasting/leaching of chrome ore; process wastewater from coal gasification; and slag tailings from primary copper processing) were found not to pose an actual or potential danger to human health and the environment. The thirteen remaining wastes were identified as having some actual or potential hazard associated with current management practices or plausible mismanagement scenarios, and so were further evaluated.

EPA found that the potential risk associated with slag from primary zinc processing, process wastewater from primary magnesium processing by the anhydrous process, air pollution control (APC) dust/sludge from iron blast furnaces and from basic oxygen and open hearth furnaces used to make carbon steel, red and brown muds from bauxite refining, elemental phosphorus slag, and gasifier ash from coal gasification, was comparatively low; that is, the Agency found that management of these materials did not present a substantial hazard to human health or the environment. In particular, no documented damages attributable to these wastes were identified. In addition, State regulations are in effect for the one primary magnesium facility and revised/strengthened regulations have been proposed for the primary zinc processing facility. EPA also found that several facilities recycle rather than dispose of ferrous metal production APC dust. Therefore, the Agency found that subtitle C regulation was not appropriate. In the case of elemental phosphorus slag, the Agency found that while there appeared to be some significant hazards associated with use of the material in construction applications (that is, off-site utilization), the best means of dealing with this problem was through the use of authorities provided by RCRA section 3001(b)(3)(B)(iii) (which allows for special controls from phosphate rock mining and mineral processing wastes) rather than through imposition of the subtitle C hazardous waste management standards.

EPA identified four wastes that did not exhibit a hazardous characteristic (with the exception of one sample of copper slag at one facility) but for which documented cases of adverse environmental impacts that affect surface water were identified at at least one facility:

- Iron blast furnace slag;
- Slag from primary copper processing;
- Basic oxygen furnace and open hearth furnace slag from carbon steel production; and
- Fluorogypsum from hydrofluoric acid production.

For all four wastes, however, these surface water releases (one of which occurred via ground water) have been and/or are being addressed under existing regulatory authorities at the state and/or federal level. Therefore, the Agency concluded that regulation of these four wastes as hazardous would not provide additional protection to human health or the environment justifying the elimination of the special status of these wastes; thus, subtitle C regulation was not considered appropriate.

Phosphogypsum and phosphoric acid process wastewater were also of concern because damage case information indicated that both closed and currently active phosphogypsum stacks (in which both the phosphogypsum and the wastewater are managed) and wastewater cooling ponds have caused ground-water contamination at 15 of the 16 facilities for which monitoring data are available. The available waste composition data indicated that phosphogypsum tested EP toxic at one of the ten facilities with available data, and process wastewater exhibited the characteristic of corrosivity at most facilities and the EP-toxicity characteristic at some facilities. However, EPA also estimated that the total industry-wide, incremental annualized cost of either full subtitle C regulation or the Subtitle C-Minus scenario [1,2] for phosphogypsum and process wastewater, as compared to the Subtitle D-Plus scenario [3] developed for cost estimating purposes, could exceed $500 million and $50 million respectively, and could significantly affect several facilities. The Report estimated that economic impacts associated with subtitle C or C-Minus regulation at these facilities were expected to be significant, and it was unlikely that these facilities could pass along their higher costs. As a result, EPA tentatively concluded that regulation for these wastes was most appropriate under RCRA subtitle D.

[1,2] A subtitle C scenario that utilizes the flexibility provided by RCRA section 3004(x).

[3] A subtitle D program similar to those being developed for extraction and beneficiation wastes.

2. Wastes EPA Tentatively Considered for Regulation Under RCRA Subtitle C or D

EPA found, based on the information available at that time, that the remaining four wastes (calcium sulfate wastewater treatment plant sludge from primary copper processing, slag from primary lead processing, process wastewater from hydrofluoric acid production, and chloride process waste solids from titanium tetrachloride production) have posed or may pose a danger to human health or the environment. Available data indicated that all four of the wastes exhibit one or more of the characteristics of hazardous wastes. In particular, EPA found that all of the wastes except process wastewater from hydrofluoric acid production exhibit the characteristic of EP toxicity at at least one facility; process wastewater from hydrofluoric acid production was found to be corrosive at all facilities where it is generated. In addition, damages associated with these wastes were documented as follows: (1) Current lead slag management practices have resulted in surface water contamination; (2) ground-water contamination that may in part be attributable to calcium sulfate sludge from primary copper processing was found at one of the two facilities that generate the waste; and (3) ground-water contamination that may in part be attributable to chloride process waste solids from titanium tetrachloride production was identified at at least one facility that generates this waste. Furthermore, the Report stated that the Agency was not confident that current practices and regulations are adequate to prevent further danger to health or the environment from these four wastes.

Nevertheless, EPA tentatively concluded that regulation of three of the four wastes as hazardous (calcium sulfate wastewater treatment plant sludge from primary copper processing, slag from primary lead processing, and chloride process waste solids from titanium tetrachloride production), under full subtitle C was not appropriate due to cost considerations. The Agency's basis for this finding was a cost comparison between full subtitle C and the D-Plus scenario (with Subtitle D-Plus including subtitle D requirements similar to those being developed for extraction and beneficiation wastes) that showed that the costs for full subtitle C regulation would be significantly higher and the associated impacts would be more significant at nearly all facilities than the estimated costs of regulation under the Subtitle D-Plus scenario.

For process wastewater from hydrofluoric acid production, EPA found that the estimated compliance costs for regulation under full subtitle C and regulation under the Subtitle D-Plus scenario were comparable and that the likely economic impacts were not expected to be significant. Based on these factors, EPA tentatively concluded that process wastewater from hydrofluoric acid production may warrant regulation under subtitle C.

On the other hand, EPA also estimated the cost of managing these four wastes under a subtitle C scenario that utilizes the flexibility provided by RCRA section 3004(x) (Subtitle C-Minus).[4] The Agency then compared the costs for Subtitle C-Minus regulation (rather than full subtitle C regulation) to the estimated costs that might result from regulation under a subtitle D program similar to those being developed for extraction and beneficiation wastes (Subtitle D-Plus). EPA found that the estimated costs for the Subtitle C-Minus and Subtitle D-Plus scenarios are comparable for nearly all facilities. Assuming a Subtitle C-Minus scenario, EPA tentatively concluded that all four wastes might warrant regulation under subtitle C.

b. Approach 2: Application of the RCRA Section 8002(p) Study Factors and Additional Considerations

Sections 3001(b)(3) and 8002(p) of RCRA and the decision in *Environmental Defense Fund* v. *EPA*, 852 F.2d 1309 (D.C. Cir. 1988) make it clear that the Agency may and should consider the specific factors of section 8002(p) (1)–(6) in making its decision regarding the appropriate regulatory status of special wastes. In addition, the Agency stated in the Report that in making its regulatory determination, it might be appropriate to consider other factors relating to the broader goals and objectives of the Agency and RCRA, such as developing and maintaining strong state mining and mineral processing waste regulatory programs and facilitating implementation of federal programs.

Accordingly, EPA stated in the Report to Congress that in order to facilitate both development and maintenance of strong state programs and implementation of any federal regulations that may be necessary for mineral processing wastes, it might be

[4] The Subtitle C-Minus scenario that was considered in the RTC is hypothetical and was assumed only for the purpose of cost estimation; it does not necessarily represent what EPA would consider an appropriate regulatory program.

appropriate to regulate all 20 of the special wastes under subtitle D of RCRA. In addition, the Report stated that some mining and mineral processing wastes might be excluded from any further federal regulation under RCRA.

In light of these considerations, the results of Approach 2 indicated that it might be appropriate for the waste streams identified under Approach 1 for potential subtitle C (full C or C-Minus) regulation not be subject to the hazardous waste management standards, but instead to be retained within the Mining Waste Exclusion. If such a finding was appropriate, EPA stated that it would need to be conditioned on the premise that major steps be taken to control releases from the facilities generating these waste streams. Some corrective measures are already being taken under a variety of Agency authorities (e.g., RCRA, Superfund, CWA) and more can and would be undertaken. EPA also asserted that the states must act to address the most immediate problems posed by these wastes, as well as any of the other mineral processing special wastes that have been found in the Report to pose significant actual or potential hazard to human health or the environment. To assist in this effort, EPA pledged to provide technical and other resource support to the involved states to improve their programs. If near term actions did not result in adequate control of such wastes, EPA would then take action to reconsider its regulatory determination and could designate certain waste streams as subtitle C hazardous wastes.

4. Public Comment Process

With publication of the Report to Congress, EPA initially established a 60-day public comment period that ended on September 28, 1990. In response to requests from several commenters, however, EPA extended the comment period to October 19, 1990. In addition, a public hearing on the Report was held in Washington, DC on October 17, 1990. EPA received 91 sets of written comments prior to the close of the comment period and eight late comments. All individual comments and a transcript from the public hearing are available for public inspection in the docket (Docket No. F-90-RMPA-FFFFF). The docket also contains a summary of all the comments presented at the hearings or submitted in writing. EPA's responses to those comments are provided in the docket, as well as in appendix A to this regulatory determination.

D. Supplemental Analysis and Notice of Data Availability

Supplemental analyses were conducted on five wastes that were addressed in the Report to Congress, including gasifier ash and process wastewater from coal gasification, basic oxygen furnace and open hearth furnace air pollution control dust/sludge, and phosphogypsum and process wastewater from phosphoric acid production. A Notice of Data Availability (NODA), which announced the availability of this information, was published in the **Federal Register** on January 7, 1991.

A 30-day public comment period was provided, which closed on February 6, 1991. As in the case of the Report to Congress, EPA received requests that it extend the comment period. However, EPA did not extend this comment period because of the need to proceed with the regulatory determination process as expeditiously as possible and because the Agency believed that the comment period provided was adequate. In addition, EPA took steps to ensure that commenters could make the maximum use of the time available. For example, EPA made the supplemental data publicly available as soon as possible, immediately following Agency signature, rather than waiting until the NODA was published in the **Federal Register**. Also, at the request of industry, EPA delayed the start of the public comment period until after the holidays.

Included in the new data was information on phosphoric acid process wastewater and phosphogypsum concerning generation and management of these wastes, the engineering feasibility and cost of alternative waste management practices, waste characteristics, ground water monitoring data, and state regulations. The Agency specifically solicited comments on the engineering feasibility and accuracy of cost estimates for the alternative waste management practices presented as part of the new data.

The Agency received 22 written comments addressing the NODA. All of the comments are available for public inspection in Docket No. F-91-RM2A-FFFFF. Agency responses to the comments are provided in the docket and appendix B to this regulatory determination.

II. Factors Considered in Making the Regulatory Determination

The RCRA statute, as amended, directs EPA to make a regulatory determination for the special study wastes based upon its Report to Congress and comments received from interested parties. The statute contains the following eight study factors:

1. The sources and volumes of s materials generated per year;
2. Present disposal and utilization practices;
3. Potential danger, if any, to human health and the environment from disposal and reuse of such materials;
4. Documented cases in which danger to human health or the environment has been proved;
5. Alternatives to current disposal methods;
6. The costs of such alternatives;
7. The impact of those alternatives on the use of phosphate rock and uranium ore, and other natural resources; and
8. The current and potential utilization of such materials.

In addition, RCRA section 8002(p) suggests that EPA review studies and actions of other federal and state agencies, and invite participation from concerned parties, including industry and other federal and state agencies in an attempt to avoid duplication of effort.

EPA has complied with the Congressional mandate in developing the required Report to Congress and soliciting and incorporating comments received from affected parties. In making today's regulatory determination, the Agency has re upon the analysis of the eight stu factors described as "Approach 1" in the RTC, modified slightly in response to public comments. EPA believes that this approach is most consistent with Congressional intent. To the extent that the Agency were otherwise to conclude that subtitle C regulation was warranted based upon consideration of all of these factors and information, EPA believes, upon further reflection, that it is unnecessary and probably inappropriate to look outside the Report to Congress, public comments, and supplemental technical information, as outlined for Approach 2 in the RTC, to justify a different determination.

In addition, as discussed in more detail in appendix A to this preamble, EPA believes that the so-called "additional factors" upon which Approach 2 was based are, in large part, already embodied within the contours of the inquiry that Congress intended for EPA to make in the Report and regulatory determination. The Report identifies (1) the development and maintenance of strong state mining and mineral processing regulatory programs, and (2) the facilitation of an integrated federal mining regulatory program as the key considerations under Appro Section 8002(p)(5) instructs EPA consider "alternatives to current

disposal methods" as a factor in developing the Report and regulatory determination. Certainly, consideration of alternative state regulatory schemes, in addition to federal schemes, is contemplated by this section. Also, facilitation of a potential integrated federal mining program was actually considered by EPA in its cost estimates (reflected in the "Subtitle D-Plus scenario").

Nonetheless, EPA does not believe that it should rely on "possible" improved state programs to determine that subtitle C is not warranted unless EPA is confident that such programs are being developed and can address the problems associated with mineral processing wastes that may pose a significant risk. Thus, EPA believes that section 8002(p) requires that EPA not consider these factors in a way that would supplant any decision the Agency makes under the decision making methodology outlined in Approach 1.

In any event, EPA notes that the issue is effectively moot. As discussed below, EPA has determined, on the basis of Approach 1, that subtitle C is not appropriate for any of the 20 wastes analyzed. Thus, even if EPA were to employ Approach 2 as outlined in the Report, it would not change any of the decisions made today.

In "Approach 1," the Agency evaluated the RCRA section 8002(p) study factors by first assessing the need for additional regulatory controls (or absence thereof), then evaluating the options for appropriate requirements that could be applied to each individual waste stream for which additional controls might be in order, and, finally, estimating the associated costs and impacts. In applying the decision criteria, EPA believes that the factors that are most important in establishing the regulatory status of the special wastes should be given major emphasis. Therefore, potential risks posed and documented damages caused by the wastes, the need for additional regulations, and the costs and impacts that would be associated with more stringent regulatory controls are the focus of the three steps in the analytical process. The reason for this is that in the absence of a realistic showing of a potential risk and/or documented damages from current management (or in appropriate cases, plausible mismanagement), EPA believes that Congress would not intend to eliminate the special status of these wastes by imposing hazardous waste regulation under RCRA Subtitle C; if greater regulatory controls may be appropriate because of significant potential or documented danger, the costs and impacts of regulatory controls are the critical factors in determining whether a given alternative would conform to Congress' expressed goals for these wastes (adequate protection of human health and the environment and continued operation of the affected industries).

The overall decision making process as described in the RTC was left basically intact for the purpose of this regulatory determination. However, a number of specific changes have been made to the individual decision criteria in response to public comments; these changes are detailed below, and address the specific questions considered in this step-wise process, as well as how the answers to these questions interact when deciding whether to go from one step to the next.

The modified step-wise process that the Agency applied to the available information is outlined below.

Step 1. Does management of this waste pose human health/environmental problems? Might current practices cause problems in the future?

Critical to the Agency's decision making process is whether the special waste either has caused or may cause human health or environmental damage. To resolve these issues, EPA has posed the following key questions:

1. Has the waste, as currently managed, caused documented human health impacts or environmental damage?

2. Does EPA's analysis indicate that the waste may pose a significant risk to human health or the environment at any of the sites that generate it (or in off-site use), under either current management practices or plausible mismanagement scenarios?

3. Does the waste exhibit any of the characteristics of hazardous waste?

In the RTC, EPA concluded that further evaluation was necessary if the answer to any of these three questions was yes. However, numerous commenters argued that several of the damage cases included in the RTC do not represent today's conditions, for a variety of reasons, that the risk assessment conducted for the RTC tends to overstate risk, and that the leachate concentrations measured using the EP leach test overestimate actual leachate concentrations. Although EPA disagrees with many of the specific points made by commenters in support of these arguments, as discussed in appendix A to this preamble, the Agency believes that a more flexible decision making approach is warranted in response to the general concerns expressed. Concluding that further evaluation is necessary if the answer to just one of the above questions is yes, without taking into account the overall certainty and conservativeness of that answer relative to the answers to the other questions, could unnecessarily lead the Agency into Step 2 of the decision making process.

Therefore, for this regulatory determination, EPA answered each of these questions and then considered the combined answers as a whole in deciding whether further evaluation was necessary. A fundamental concept in this approach was that no one question is more significant in reaching a decision regarding potential hazard than the others, as the answer to one question could offset, somewhat, the answer to another. That is, rather than following a very rigid approach of proceeding to Step 2 if the answer to just one question was yes, the Agency considered how the answers traded off, taking into account each answer's supporting weight of evidence and certainty.

For example, the scenario for a given waste could be that (1) there was not a documented damage case that could be attributed to the waste with reasonable certainty (i.e., the answer to question 1 was no); (2) the reasonably conservative risk analysis provided a sound basis for concluding that the potential for human health and environmental problems was low under current management practices or plausible mismanagement scenarios (i.e., the answer to question 2 was no); and (3) the waste exhibited the toxicity characteristic using the EP leach test (i.e., the answer to question 3 was yes), but only rarely and never for samples analyzed using the Synthetic Precipitation Leaching Procedure (SPLP). Under this scenario, EPA would have reached an overall low hazard conclusion because the balance of the information supporting the answers to questions 1 and 2 effectively outweighs, in the Agency's judgment, the answer to question 3.

By following this approach, the Agency considered all of the relevant information in making its decision on the potential for each waste to pose human health and environmental problems. If this analysis led the Agency to conclude that there is a reasonable potential for problems, then EPA concluded that further evaluation was necessary. If the conclusion was that the potential for problems is low, then the Agency determined that regulation of the waste under RCRA subtitle C is not appropriate. EPA believes that this "balancing" approach to the analysis in

Step 1 allows EPA to determine with more precision the actual hazards posed by those wastes, consistent with the intent of the Bevill Amendment. 852 F.2d at 1314. EPA also notes that this analysis does not precisely match the approach EPA uses to list or identify non-special wastes as hazardous, but is more conservative in the direction of not imposing regulation unless the potential risk justifies elimination of special status.

Step 2. Is more stringent regulation necessary and desirable?

If the waste has caused or may potentially cause human health or environmental impacts as determined in Step 1, then EPA concluded that an examination of alternative regulatory controls was appropriate. Given the context and purpose of the study, the Agency focused on an evaluation of the likelihood that such impacts might continue or arise in the absence of more stringent regulation, and whether subtitle C would be an efficient mechanism for controlling these impacts. Specifically, the Agency posed three questions:

1. Are current practices adequate to limit contaminant release and associated risk?

2. Are current federal and state regulatory controls adequate to address the management of the waste?

3. Will Subtitle C effectively address problems associated with the waste without imposing significant unnecessary controls that are inconsistent with the special status of the waste?

Due to changes made in response to public comments, these questions differ from the questions presented for Step 2 in the RTC, in two ways. First, the Agency eliminated a question concerning the likelihood of new facilities opening in the future and generating and managing a special waste in a different environmental setting than those examined in the RTC. The Agency acknowledges that this is a relevant issue and considered it in the Report to Congress for each industry and waste that was studied. However, EPA agrees with public commenters that an analysis of this issue relies largely on conjecture about the potential conditions that might exist at a new facility, if one were to open. Therefore, the Agency believes that the potential for problems at hypothetical new facilities is less important than the other factors considered in the decision making process, and did not consider the question explicitly in developing the regulatory determination.

Second, several commenters argued that subtitle C regulation, even with Section 3004(x) flexibility, would impose numerous prescriptive standards that would not necessarily be needed to control the problems at a given facility or across a commodity sector. While EPA disagrees with many of the specific points made by these commenters in support of their arguments, as presented in the appendices to this preamble, the Agency agrees that the suitability of subtitle C controls relative to the magnitude and extent of the problem(s) defined in Step 1 is an important issue in the decision making process and the approach is also consistent with EPA's previous approach to making regulatory determinations under the Bevill Amendment, which focused on whether subtitle C, even with the use of Section 3004(x), might be too "cumbersome and uncertain" to accomplish the goals of effective regulation of the risks from special wastes, or put another way, whether subtitle C is the right "template" for regulating the special wastes at issue. 852 F.2d at 1313, 1315. Therefore, the Agency added the third question listed above for the purpose of developing today's regulatory determination.

EPA considered the answers developed for these questions together with the answers to the questions addressed in Step 1 to reach an overall conclusion on the need for further evaluation. If current practices or existing regulatory controls were found to be adequate, or Subtitle C would not be an effective regulatory alternative, and if the potential for actual future impacts was considered low (e.g., existing facilities in remote locations, low likelihood of actual risk, adequate federal or state regulatory controls already exist), then the Agency concluded that the waste should not be regulated under Subtitle C. Otherwise, further examination of regulatory alternatives was considered necessary.

Step 3. What would be the operational and economic consequences of a decision to regulate a special waste under Subtitle C?

If, based upon the previous two steps, EPA believed that a waste might be a candidate for regulation under subtitle C, then the Agency estimated and evaluated the costs and impacts of two regulatory alternatives that are based upon subtitle C, and one regulatory alternative that reflects one possible approach that might be taken under RCRA subtitle D ("Subtitle D-Plus"). Two evaluations were performed. The first focused on the magnitude, distribution, and significance of the incremental costs of regulation under full Subtitle C as compared to the Subtitle D-Plus scenario for each potentially affected facility. The se focused on incremental costs and impacts associated with regulation under a modified subtitle C ("Subtitle C-Minus") scenario, that incorporates waste management standards based upon site-specific risk potential, as compared to Subtitle D-Plus. The key questions in the Agency's decision making process for both comparisons were as follows:

1. Are predicted economic impacts associated with the full subtitle C (or Subtitle C-Minus in the case of the second comparison) scenario significant for any of the affected facilities?

2. Are these impacts substantially greater than those that would be experienced under the Subtitle D-Plus scenario?

3. What is the likely extent to which compliance costs could be passed through to product markets or input costs could be reduced, i.e., to what extent could regulatory cost burdens be shared?

4. In the event that costs are significant, could a large proportion of domestic capacity or product consumption be affected?

5. What effects would hazardous waste regulation have upon the vi of the beneficial use or recycling o special waste?

In EPA's judgment, an ability to pass through costs or an absence of significant impacts suggested that subtitle C regulation (or Subtitle C-Minus in the case of the second comparison) might be appropriate for wastes that pose significant risk. In cases in which the subtitle C (or Subtitle C-Minus) scenario would impose widespread and significant impacts on facilities, result in reductions in domestic capacity or supply, and/or deter the safe and beneficial use of the waste, EPA concluded that regulation under some other regulatory authority, including Subtitle D or TSCA, might be more appropriate.

III. Regulatory Determination for the 20 Special Wastes From Mineral Processing

The following discussion presents EPA's conclusions regarding the appropriate regulatory status of each of the special wastes from mineral processing, based on information obtained by analyzing the statutory study factors in the manner outlined above. The information summarized here incorporates information received during the public comment period additional refinement of the data

presented in EPA's July 1990 Report to Congress and January 1991 NODA.

EPA has decided that regulation under subtitle C is inappropriate for all 20 of the mineral processing wastes. For nine of the wastes, no comments were received that objected to EPA's tentative determination in the Report to Congress that regulation under subtitle C for these wastes is unwarranted. These nine wastes include:

(1) Red and brown muds from bauxite refining;

(2) Treated residue from roasting/leaching of chrome ore;

(3) Gasifier ash from coal gasification;

(4) Process wastewater from coal gasification;

(5) Fluorogypsum from hydrofluoric acid production;

(6) Iron blast furnace slag;

(7) Basic oxygen furnace and open hearth furnace slag from carbon steel production;

(8) Slag tailings from primary copper processing; and

(9) Process wastewater from primary magnesium processing by the anhydrous process.

For the remaining eleven wastes, EPA received at least one comment arguing that subtitle C regulations should be promulgated. EPA's determination rationale for each of these wastes follows.

Slag From Primary Copper Processing. An examination of available information regarding copper slag leads to the following findings regarding the three key questions outlined above for Step I in the Agency's decision making process.

First, copper slag rarely, if ever, exhibits a hazardous waste characteristic. Only one sample out of 70 exceeded EP-toxicity regulatory levels, for cadmium and lead. The Agency agrees with commenters that the accuracy of the one sample is questionable, because the cadmium concentrations in the EP leachate extract are inconsistently high compared to concentrations in the total sample analysis.

Second, although one commenter pointed out that the slag contains a number of constituents in concentrations that exceed the conservative risk screening criteria used in the Report to Congress, these concentrations by themselves do not demonstrate that the slag poses a significant hazard. An examination of the slag management practices and environmental conditions at the 10 active primary copper facilities indicates that copper slag currently generated at these facilities poses an overall low risk to human health and the environment. This is largely due to the fact that most of the active facilities are located in areas with low-risk environmental and exposure characteristics (e.g., very low precipitation and net recharge, large depths to ground water, large distances to surface water, and great distances to potentially exposed populations). As pointed out by several commenters, with whom EPA agrees, the Agency's risk modeling for copper slag was very conservative (tending to overestimate risks) and supports a conclusion that the slag poses low risks as currently managed.

Finally, following careful review of the information and public comments on the copper slag damage cases, EPA believes that the damages documented in the RTC for copper slag resulted from unusual circumstances that generally do not represent current management practices. For example, the damages at Commencement Bay (Puget Sound) were caused by the use of copper slag, as well as other wastes, as fill in a wetland or tideflats area. The nearby copper facility that generated the slag is now inactive, and the ten active primary copper processing facilities are generally concentrated in arid areas where it is very unlikely that slag could be disposed of in a wetland. Similarly, at the inactive copper facilities in Midvale, UT and El Paso, TX, environmental contamination has been caused by the co-management of slag from copper, lead, and/or zinc processing since the late 1800's. Based on the available damage case information, survey responses, and public comments, EPA believes that these cases do not reflect the industry norm today. In addition, EPA presently does not have damage case information that suggests that current copper slag management practices are causing problems.

Based on these findings, EPA concludes that current management of copper slag does not appear to pose significant human health or environmental hazards, and current slag management practices appear unlikely to cause problems in the future. As a result, Federal regulation under subtitle C is not appropriate. Given this finding, EPA did not evaluate the questions addressed in Steps 2 and 3 of the decision making methodology.

Slag From Elemental Phosphorus Production. Addressing the questions in Step 1 of the decision making process, the information included in the RTC and provided in public comments leads to the following major findings for elemental phosphorus slag.

First, elemental phosphorus slag does not exhibit any of the four characteristics of hazardous waste. One commenter contends that the slag is intrinsically dangerous because it is radioactive and contains toxic constituents. EPA agrees that the radionuclide content may pose a direct radiation threat when the slag is used off-site. (See further discussion on this issue later in this section and in section IV.) However, the slag contains few chemical constituents that exceed the RTC's conservative risk screening criteria by a significant margin, and none exceed regulatory levels that would qualify the slag for subtitle C controls.

Second, current on-site slag management practices and environmental conditions at the five active elemental phosphorus facilities generally pose a low risk via the ground-water and surface water exposure pathways. Significant risks via these pathways are limited by the low concentrations of potentially harmful constituents in slag leachate and the generally large size of slag particles that limit stormwater erosion potential. In addition, the potential for the slag piles to cause significant impacts to surface water is precluded by the relatively great distance (more than 500 meters) to the nearest water body at two facilities, the use of stormwater run-off controls at the slag piles at two facilities, and the large flow and assimilative capacity (30 cubic meters per second or 1,058 cubic feet per second) of the creek closest to the fifth facility. As the RTC and one commenter point out, one of the sites is located within a mile of a wetland, one site overlies an area of karst terrain, and one facility is located in a National Forest. While these facts are pertinent, the Agency believes, based on all the evidence, that existing management practices for elemental phosphorus slag should not significantly threaten these environments through the ground-water and surface water pathways, given the small potential for releases to these media.

Moreover, although one commenter points out that ground-water contamination has been observed at three of the five active facilities, available information on the documented damages at elemental phosphorus facilities indicates that the ground-water contamination is due to other wastes and waste management practices (e.g., historic unlined ponds used to store process wastewater). This supports the above finding that on-site management of the slag does not pose a significant ground-water risk.

On-site management at three facilities, however, may pose a

moderate risk via the air exposure pathway due to the chromium, cadmium, and uranium-238 concentrations in the slag. Although the vitrified nature and generally large size of particles tends to limit wind erosion, there is some evidence that dust from slag piles may be blown into the air and potentially lead to exposures. As noted in the RTC and reiterated by one commenter, three of the facilities are located in fairly densely populated areas and three are located in agricultural areas where airborne deposition and subsequent food chain exposures are possible.

Based on these findings, EPA concludes that current on-site management practices for elemental phosphorus slag do not appear to pose a significant ground-water or surface water risk and are not likely to cause significant problems through these pathways in the future. However, there is some potential for airborne releases and resulting impacts; because of the Agency's desire to fully evaluate all potential risks, the Agency proceeded to Step 2 of its decision making process to evaluate whether more stringent regulation is necessary and desirable.

In this step, EPA made three basic findings:

- The relatively low to moderate risk from the on-site management of elemental phosphorus slag is expected to continue in the future in the absence of subtitle C regulation given current waste management practices and environmental conditions at the five active facilities. The slag characteristics and existing management practices at the five active facilities are unlikely to change significantly.
- None of the states where elemental phosphorus slag is generated specifically apply fugitive dust control requirements to slag piles. However, adequate authority and mechanisms already exist under the Clean Air Act to control this dust. For example, the National Ambient Air Quality Standards include a standard for the airborne concentration of particulate matter, and the dust could be controlled under the National Emission Standards for Hazardous Air Pollutants, if necessary.
- Regulation under subtitle C would impose significant and specific requirements (e.g., liners, caps, ground-water monitoring) that are directed at controlling releases/risks that do not appear to exist or are otherwise controlled and, thus, are not appropriate given the special status of the waste.[6]

Based on these combined findings from Steps 1 and 2, EPA concludes that regulation of elemental phosphorus slag under subtitle C is not appropriate under the circumstances. (Accordingly, EPA did not proceed to Step 3 of its decision making process.) EPA plans to further examine the potential impacts of fugitive dust emissions from elemental phosphorus slag piles and will determine whether controls for these releases are needed, and if so, whether they can be developed under the Clean Air Act.

The Agency is uncertain about the potential gamma radiation exposures and risks associated with off-site use of elemental phosphorus slag in construction and land reclamation. As discussed in more detail in section IV of this preamble, the Agency has postponed any decisions about the significance of this risk and the need for additional control of off-site uses pending more extensive review. In response to comments, EPA acknowledges that the RTC is in error in its statement that radon emissions from elemental phosphorus slag pose significant risks, as other EPA studies clearly show that the slag is not a significant source of radon emissions. However, the fact that radon gas emissions from elemental phosphorus slag are inconsequential does not eliminate concern about the potential for direct exposure to gamma radiation emitted from the slag.

Slag From Primary Zinc Processing. Regarding the questions raised in Step 1 of the Agency's decision making process, a careful review of the RTC information and public comments on zinc slag leads to the following three conclusions.

Based on available data, zinc slag frequently exhibits EP-toxicity, as 25 of 37 samples contained lead in concentrations that exceed the EP-toxicity regulatory level by a factor of between 5 and 13. Using the SPLP test, however, lead concentrations never exceeded the EP toxicity regulatory level, although the SPLP test has been shown on occasion to underestimate the amount of leachable lead in a sample.

At the same time, based on a review of existing waste management practices and predictive modeling results, EPA believes that zinc slag, as currently managed at the sole active facility in Monaca, PA, poses an overall low risk to human health and the environment. For example, the Agency predicts that metals leached from zinc slag at the Monaca facility would be largely bound to subsurface soil and would not reach the deep useable aquifer within 200 years. Even if a shallower aquifer exists at the site as the RTC and one commenter suggest, any shallow ground water that may become contaminated with slag leachate is likely to discharge, without being withdrawn for human use, into the adjacent Ohio River via the steep bluff adjoining the site. The Ohio River is very large at this point, and EPA modeling predicts that it can readily assimilate any chronic loading of contaminants that may occur, and any such release would be controlled through permitting under the Clean Water Act.

A portion of the zinc slag is also sold for use at off-site locations as road gravel or construction aggregate, and another portion is stockpiled until it can be sold for off-site use as a source of iron. Given the high concentrations of lead measured in EP leach tests of zinc slag, EPA recognizes that possible off-site use locations may be more conducive to releases and risks than the existing processing facility in Monaca, PA, although the Agency has no evidence that such risks are occurring or would occur. In fact, the Agency did not discover any damages attributable to such slags used off-site.

Third, EPA did not discover any damage cases attributed to zinc sl the Monaca facility. Damage case studies at inactive sites did demonstrate the potential for surface water contamination via stormwater run-off from zinc slag piles, however. While these cases demonstrate the potential for problems if zinc slag is not properly controlled, they do not by themselves indicate that more stringent controls are needed for slag at the one active facility. In fact, the lack of documented damage associated with the active facility supports the conclusion that zinc slag as currently managed at that facility poses a low risk. One commenter argued that the lack of damage case data from the active facility may be a reflection of the inadequacy of the facility's environmental monitoring system, and not the absence of actual damage. However, the Agency believes that slag at the Monaca facility does not pose a threat, principally because the slag composition at the Monaca facility is not considered comparable to that of the inactive facilities, i.e., it arises from feedstocks having a different chemical composition. It should also be noted that with respect to the commenter's specific point, the facility has been in operation for over 50 years and there are no available monitoring data that sh[illegible]y

[6] To be regulated under subtitle C the waste would have to be listed as a hazardous waste because it does not exhibit any of the four characteristics that would otherwise classify it as a hazardous waste.

evidence of damages resulting from the management of zinc slag.

The Agency considered these findings, by themselves, to be insufficient to support a final regulatory determination. Although on-site risks and damages at the sole active facility are low, the elevated EP leachate concentrations (as well as difficulties in interpreting the low SPLP leachate concentrations) and the prospect of zinc slag being managed at off-site locations that may present a problem prompted the Agency to proceed to Step 2 of its decision making process to determine whether more stringent regulation is necessary and desirable. In answer to the questions addressed in Step 2, the Agency found that:

- The waste management practices and environmental conditions that currently limit the potential for significant threats to human health and the environment at the Monaca facility are expected to continue in the future in the absence of subtitle C regulation. Similarly, management practices at off-site locations would not be expected to change significantly. The characteristics of the slag are also unlikely to change in the future.
- EPA's recently promulgated stormwater regulations (55 FR 47990, November 16, 1990) under the Clean Water Act will minimize the potential for adverse impacts of stormwater run-off from zinc slag piles in the future.
- The only potential problem associated with these slags that EPA has identified is with their off-site use or disposal. However, the Agency has no evidence that such use or disposal is resulting in environmental damage. Control under subtitle C would impose significant and specific requirements (e.g., liners, closure and post-closure care) that are directed at controlling releases/risks that do not appear to exist or are otherwise controlled and, thus, are not appropriate given the special status of the waste.

Finally, the Agency notes that the State of Pennsylvania has proposed regulations that would impose more stringent environmental controls on the on-site management and off-site use of zinc slag, although the exact nature and extent of these controls cannot be predicted with certainty. The proposed rule would require generators to certify that they have attempted to reuse and/or recycle the slag before disposal and would require permits to contain provisions for liners, leachate collection systems, monitoring wells, and disposal of leachate.

Based on these combined findings from Steps 1 and 2, EPA concluded that regulation of zinc slag under subtitle C is inappropriate under the circumstances. (As a result, the Agency did not proceed to evaluate the questions addressed in Step 3 of its decision making process.)

Air Pollution Control (APC) Dust/Sludge From Iron Blast Furnaces. Addressing the questions in Step 1 of the decision making process, the information provided in the RTC and in public comments on the RTC leads to the following findings for this waste.

First, EPA found that lead concentrations measured in iron blast furnace APC dust/sludge leachate using the EP leach test only occasionally exceeded the EP-toxicity regulatory level (4 out of 70 samples from 3 out of 16 facilities with data). In addition, the waste is recycled (completely at one facility and partially at another) at two of the three facilities where the waste was found to be EP-toxic. Although lead concentrations determined by SPLP analyses never exceeded the EP toxicity regulatory level, the Agency has difficulty interpreting these measurements because the SPLP test has been shown on occasion to underestimate the amount of leachable lead in a sample.

At the same time, based on an examination of the site specific conditions at 15 of the 26 facilities that generate this waste, current management practices and environmental conditions are highly variable, with the potential for contaminant releases existing at some sites. For example, there is potential for ground-water contamination at five facilities that manage at least some of the dust/sludge in surface impoundments, although the low EP leachate concentrations at these facilities (none exceeded the EP-toxicity regulatory levels) would appear to suggest that any such contamination would not likely be significant. The dust/sludge also consists of small particles that are amenable to release and transport via stormwater and wind erosion when the waste is managed in exposed piles. Due to site-specific management practices and environmental conditions, there appears to be some potential for migration into surface water at four facilities and a potential for airborne releases and exposures at seven facilities.

One commenter argued that risks posed by this waste could be substantially higher than reported, because, as the commenter pointed out, the RTC did not consider the site-specific conditions at all active facilities, inactive facilities that could be reactivated in the future, and potential new facilities. While the commenter raises a good point, the Agency notes that the sample of facilities examined in the RTC represents more than half (15) of the 26 active facilities and seven of the ten states where active facilities are located. Furthermore, the conditions examined in the RTC represent a wide diversity of management practices and environmental conditions. Specifically, all known management practices for the dust/sludge were represented by the 15 sample facilities, including disposal methods (landfills and ponds) and temporary storage methods (storage pads and transfer areas), such as might be present at facilities that recycle the waste or send it off-site for disposal. Some of these units are equipped with engineered controls to prevent releases (e.g., liners and run-off controls), while others are not. In terms of environmental conditions, the facilities examined represent a variety of depths to ground water, net recharge rates, distances to surface water, and proximities to potential receptors. As a consequence, the Agency believes that the facilities examined reasonably represent the conditions that might exist at the other facilities. EPA thus believes that the hazards that were evaluated reflect the diversity and nature of hazards posed by iron blast furnace APC dust/sludge at the other facilities.

Finally, despite the Agency's theoretical conclusions about the potential for iron blast furnace APC dust/sludge to be released into the environment at some facilities, EPA did not find any damage cases attributable to this waste, which EPA believes to be significant when evaluating the actual hazards posed by special wastes. One commenter alleged that there are such documented damage cases, but that EPA did not discover them because it did not review files for inactive sites and other key information sources. However, as stated in the Agency's responses to comments on the RTC's analytical methodology (see appendix A of this preamble), the Agency maintains the view that its damage case investigation effort for these and other wastes was comprehensive and thorough. The Agency closely evaluated the specific information sources referenced by the commenter and, though the information clearly shows environmental problems at ferrous metal production facilities, EPA does not believe that the damages can be attributed to the special wastes studied in the Report to Congress. For example, surface water and ground-water impacts were found related to "slag landfills" at two facilities, but the landfills contained a number of co-disposed wastes, including sludges, fly

ash, waste acid, and coke plant tars, all of which may have contributed to the observed impacts.

In summary, this waste exhibits hazardous waste characteristics only rarely—only three facilities out of 16 with data generate dust/sludge that exhibits the toxicity characteristic, and even then the data suggest that the waste exhibits the characteristic only occasionally. Moreover, the waste is recycled (completely at one facility and partially at another) at two of the three facilities where it occasionally exhibits the toxicity characteristic. The Agency recognizes that existing waste characteristics, management practices, and environmental conditions could lead to releases at selected facilities. However, the low EP leachate concentrations at most facilities and the lack of documented cases of damage attributable to the dust/sludge indicate that the potential effects of such releases are not of sufficient magnitude to warrant removal of the special status of these wastes. In addition, EPA's recently promulgated stormwater regulations (55 FR 47990, November 16, 1990) under the Clean Water Act will minimize the potential for adverse impacts of stormwater runoff from the dust/sludge. Based on these findings, EPA concludes that regulation of this waste under subtitle C is inappropriate under the circumstances. (Accordingly, the Agency did not evaluate the questions addressed in Steps 2 and 3 of its decision making process.)

Basic Oxygen Furnace and Open Hearth Furnace Air Pollution Control (APC) Dust/Sludge From Carbon Steel Production. Based on a review of information in the RTC, supplemental analysis, and public comments on steel APC dust/sludge, EPA's responses to the questions in Step 1 of the decision making process are basically the same as those outlined above for iron blast furnace APC dust/sludge. Specifically:

- Steel APC dust/sludge appears to be EP-toxic only rarely. Of seven samples analyzed from five facilities, the concentration of selenium exceeded the EP-toxicity regulatory level in only one sample, and in this one case, only by a factor of 1.5. Selenium concentrations as determined by SPLP analyses did not exceed the EP-toxicity level.
- Based on an examination of the site-specific conditions at 11 facilities that generate the dust/sludge, current management practices and environmental conditions are highly variable, with the potential for contaminant releases existing at certain facilities. Like the iron blast furnace APC dust/sludge, however, there appears to be only a minor potential for ground-water contamination at a few facilities that manage the steel APC dust/sludge in impoundments. The steel APC dust/sludge consists of small particles that would be amenable to release and transport via stormwater and wind erosion if the waste is not properly controlled.
- EPA did not identify a single case of documented damage that can be attributed to steel APC dust/sludge.

Based on these findings, EPA concludes that subtitle C regulation for steel APC dust sludge is inappropriate under the circumstances that exist. (Therefore, the Agency did not employ Steps 2 and 3 of its decision making methodology.) The basic rationale for this conclusion is the same as that for iron blast furnace APC dust/sludge. That is, the dust/sludge rarely if ever exhibits a characteristic of hazardous waste. Although existing management practices and environmental conditions have the potential for environmental releases at certain facilities (although no evidence exists that such contamination has occurred or would occur), the waste's low contaminant concentrations and lack of damage cases indicate that the potential for adverse effects is not of sufficient magnitude to warrant removal of the special status of the waste. Thus, to the extent that additional controls may be justified, and state management controls are deemed to be inadequate, EPA may pursue appropriate controls for steel APC dust/sludge management under the Subtitle D program being developed for mineral extraction and beneficiation wastes.

Calcium Sulfate Wastewater Treatment Plant Sludge From Primary Copper Processing. In the Report to Congress, EPA tentatively recommended subtitle C regulation for this waste under Approach 1B. However, EPA received data in comments indicating that only one facility now generates and disposes of this sludge. In addition, as outlined in section II of this preamble, the Agency modified Step 2 of its decision making methodology in response to public comments to deemphasize consideration of potential threats that could exist at any new facilities that open in the future in favor of the other Step 2 factors, in light of the speculative nature of EPA's predictions regarding industry expansion. The possibility of expansion was an important factor contributing to the RTC's Subtitle C recommendation for this waste. EPA, therefore, has reconsidered the RTC tentative recommendation, focusing only on the remaining active generator (located in Garfield, UT).

Addressing the three questions considered in Step 1 of the decision making process:

- The sludge at the Garfield facility is EP-toxic for arsenic (7 out of 7 samples average 44 times the regulatory level), cadmium (6 of 7 samples average 3 times the regulatory level), and selenium (7 of 7 samples average 5 times the regulatory level). SPLP leach test concentrations, however, were below the subtitle C regulatory levels for all of the samples analyzed.
- One commenter argued that calcium sulfate sludge poses a large risk that should be controlled under subtitle C; however, based on a review of existing management practices and the arid setting of the Garfield facility, EPA believes that the hazards associated with calcium sulfate sludge at this site are low. Predictive modeling that accounts for the low net recharge and high evaporation rate, depth to ground water, and clayey subsurface at the site indicates that the potential for ground-water contamination is very low. Similarly, the potential for significant surface water contamination is negligible given the great distance of the sludge management units to the nearest surface water body (over 2 miles to the Great Salt Lake), and windblown dusting is significantly limited by the surface crust that forms on the dried sludge.
- No cases of documented damage caused by the sludge at the one active facility were discovered by EPA.

Even though the site-specific risk findings and lack of damage cases indicate that management of the sludge does not pose human health or environmental problems, the high intrinsic hazard of the sludge compelled EPA to consider additional factors before reaching a final regulatory determination. Therefore, EPA proceeded to Step 2 of its decision making process to examine whether more stringent regulation is necessary and desirable.

In Step 2, EPA found that current practices at the Garfield facility appear adequate to limit contaminant releases and associated risks in the future in the absence of subtitle C regulation. The sludge is well managed at present and the potential for releases appears to be precluded by the environmental conditions at this site. Specifically, potential releases to ground water are significantly limited by the site's very arid setting (liquids discharged to impoundments along with the sludge are expected to quickly evaporate and little precipitation and recharge is available to carry contaminants to the

subsurface), clayey subsurface, and depth to ground water (8 meters to the water table and 90 meters to the uppermost useable aquifer). Because the nearest surface water near the sludge units, the Great Salt Lake, is over two miles away, significant releases to surface water also should not be a problem. Finally, the potential for significant releases to air is limited because a surface crust forms on the dried sludge, largely preventing the wind from blowing dust into the air, and because the dried sludge is exposed to the wind only temporarily before it is stabilized and buried in an on-site landfill.

EPA also found in Step 2 that existing state regulatory programs provide only limited controls over the management of calcium sulfate sludge. Some commenters argued that the RTC's analysis of state regulations significantly understates the regulatory requirements applicable to copper processing wastes. However, upon further consideration of available information and communication with state officials, EPA concludes that the states have been regulating copper processing wastes, including calcium sulfate sludge, only to a limited extent. However, as discussed below, the Agency does not believe, based on available information, that this limited regulation has resulted in any environmental problems.

Finally, EPA also concluded in Step 2 that Subtitle C regulation of calcium sulfate wastewater treatment plant sludge would impose significant and specific requirements (e.g., liners, caps, ground-water monitoring) that are directed at controlling releases/risks that do not appear to exist or are otherwise controlled and, thus, are not appropriate given the special status of the waste.

Based on these combined findings from Steps 1 and 2, EPA concluded that existing sludge management practices at the one facility in question currently limit the potential for damages. Therefore, considering all of these findings together, EPA concludes that subtitle C regulation of calcium sulfate sludge is inappropriate given the existing circumstances. (Accordingly, EPA did not evaluate the questions addressed in Step 3 of its decision making methodology.) EPA may address the generation and management of this sludge under the subtitle D program under development for the mining industry.

This subtitle D determination differs from the RTC's tentative recommendation for two reasons. First, potential human health and environmental problems at one copper processing facility were dropped from consideration because public comments indicate that the facility no longer generates and disposes of calcium sulfate sludge. Second, the Agency agreed with commenters that concerns expressed in the RTC about potential problems at new facilities that may open in the future are somewhat speculative. Therefore, EPA did not place as much weight on these concerns in making the regulatory determination as it did in the RTC.

Chloride Process Waste Solids from Titanium Tetrachloride Production. In the RTC, EPA tentatively recommended subtitle C regulation for this waste under Approach 1B. However, additional data submitted in public comments and reanalysis of the RTC data indicate that the waste is not EP-toxic for lead as indicated in the RTC [6] and, therefore, is EP-toxic only for chromium. In addition, this waste would currently be exempt from subtitle C regulation by 40 CFR 261.4(b)(6), which exempts wastes that are hazardous only because they exhibit the EP toxicity characteristic for chromium, contain only trivalent chromium, and are managed in non-oxidizing environments. For these reasons, EPA decided to reevaluate the RTC's tentative conclusions.

Considering the three questions in Step 1 of the Agency's decision making process, the Agency has made the following findings. First, the waste is characteristically hazardous only as a result of its chromium content, which is currently exempted from regulation under subtitle C of RCRA by § 261.4(b)(6)(i)(A). In addition, chromium concentrations in the waste solids measured using the SPLP leach test are below the EP-toxicity regulatory levels, as indicated by further analysis of the RTC data and information submitted in comments.

Second, based on an examination of existing conditions at the nine active titanium tetrachloride facilities, EPA found that current management of the waste solids may allow contaminants to migrate in the environment at certain sites, but that the potential for this migration to cause significant impacts is low. For example, there appears to be a potential for leachate from this waste to reach ground-water at half of the sites, but predictive modeling at the "most sensitive" site indicates that contaminant concentrations at the property boundary would be below drinking water standards. Similarly, the Agency's modeling predicts that concentrations of contaminants in surface waters near the sites would be well below human health and environmental protection benchmarks, and that the risks associated with the inhalation of windblown dust from the waste solids piles would be negligible.

One commenter argued that the risks posed by this waste are sufficiently high to warrant regulation under subtitle C. In particular, the commenter argued that chemical concentrations (e.g., of chromium, lead, radium, and arsenic) in the waste solids could be much higher than the few samples examined in the RTC, that the wastes threaten fragile ecosystems near several of the facilities, and that drinking water threats could exist if private wells were installed closer to existing facilities. While EPA agrees there is always a possibility that the waste could contain higher chemical concentrations than those reported, the Agency used 17 samples from 7 facilities and believes the resulting characterization of the waste is adequate. The Agency also recognizes that several sites are located near "fragile" ecosystems: Six of the nine active facilities are located within 1,600 meters (1 mile) of a wetland, one is located within 2,600 meters of an endangered species habitat, and three are located within 1,600 meters of a National Park, Wildlife Refuge, or Recreation Area. However, the Agency's conservative modeling predicts that it is very unlikely that contaminants released from the waste solids management units could migrate to these areas in harmful concentrations. Finally, EPA's ground-water modeling for the "worst-case" facility predicts that contaminant concentrations at the property boundary are below health-based and ground-water protection criteria. Therefore, it does not appear that releases to ground water would pose a serious threat to the environments surrounding each plant.

Third, EPA found no documented cases of damage attributable to titanium tetrachloride waste solids. No evidence of damages was uncovered in the RTC's comprehensive review of all nine active and two inactive titanium facilities, and no new damage case information was submitted in public comments.

Based on these findings, EPA concludes that regulation of titanium tetrachloride waste solids under RCRA Subtitle C is inappropriate under the

[6] The sole sample found to contain lead above the EP-toxic level was determined to be for the waste acids and entrained solids discharged to an on-site impoundment, not the titanium waste solids (the special waste) that settle to the bottom of the impoundment. EPA has determined, therefore, that this sample is not appropriate for use in characterizing the waste solids.

circumstances. (Accordingly, the Agency did not evaluate Steps 2 and 3 of the decision making methodology.) Current on-site management practices do not appear to pose a significant risk. In addition, management practices are likely to be improving because the waste is currently comanaged with waste acids from titanium tetrachloride production, a waste that recently became subject to subtitle C controls. EPA plans to follow closely the changes in management practices that are expected to result from the change in regulatory status of the waste acids, changes that in some cases may result in management of the waste solids in units subject to subtitle C requirements. At those facilities where the waste is not managed in units regulated under subtitle C, EPA believes that releases that may occur can be adequately addressed under subtitle D given the special status of these wastes. In addition, in the final Toxicity Characteristic rulemaking, EPA indicated that it would re-evaluate the trivalent chromium exemption in § 261.4(b)(6) (55 FR 11812, March 29, 1990). If EPA finds that this exemption is not protective of human health and the environment and if an examination of titanium tetrachloride waste management shows any continuing or new problems, the Agency will reconsider this subtitle D determination for chloride process waste solids from titanium tetrachloride production.

Today's subtitle D determination is warranted and differs from the RTC's tentative recommendation primarily due to changes in the data base used to characterize the waste, such that the waste only exhibits the toxicity characteristic of hazardous waste for chromium and is exempt from subtitle C regulation. As discussed above, consideration of changes in management practices for waste solids that are expected as a result of the classification of waste acids from titanium tetrachloride production as a hazardous waste supports a subtitle D decision. In addition, if the decisionmaking process had been carried to Step 2, the fact that the Agency modified Step 2 of its decisionmaking methodology (in response to public comments) to deemphasize consideration of potential threats that could exist at any new facilities that open in the future, would also have contributed to the change from the subtitle C tentative recommendation in the RTC to today's subtitle D regulatory determination.

Slag from Primary Lead Processing. In the Report to Congress, EPA tentatively recommended subtitle C regulation for lead slag under decision making Approach 1B. Further Agency analyses in response to public comments, however, provided a clearer picture of the three damage cases presented in the Report and the risks associated with one facility's practice of shipping its slag off-site for disposal. EPA, therefore, reconsidered the RTC's tentative recommendation to account for this additional information.

Addressing Step 1 in the Agency's decision making process, which evaluates whether management of the waste poses human health or environmental problems, EPA made four basic findings. First, lead slag is EP-toxic using results of the EP leach test; EP-toxicity leach tests show that lead exceeded the regulatory level at all five active facilities in a total of 27 out of 101 samples; the maximum lead concentrations exceeded the regulatory level by a factor of 19. Cadmium concentrations exceeded the regulatory level at two facilities, by as much as a factor of seven. Arsenic, mercury, and selenium concentrations also exceeded the regulatory levels at the one facility that is only a refinery (the other facilities are either combined smelters and refineries or, in the case of one facility, only a smelter). No samples analyzed using the SPLP test contained contaminants in concentrations above the EP-toxicity regulatory levels; however, the SPLP test has been shown on occasion to underestimate the concentration of leachable lead in a sample.

Second, current practices for managing lead slag at the five active lead processing facilities appear to limit the potential for significant impacts caused by the slag. The potential for lead slag to cause significant surface water contamination at all but one facility is limited by the use of control systems that retain and treat stormwater run-off from slag piles prior to discharge, or by an expected small contaminant loading that is well within the assimilative capacity of nearby water bodies and is subject to control under the Clean Water Act. Risk modeling indicates that stormwater erosion of a lead slag pile at one facility could result in surface water contamination. However, due to releases to ground water from unlined wastewater ponds at this facility, the site is presently being cleaned up under the Superfund program, and any potential surface water impacts associated with erosion from the slag pile will be addressed as part of the site's overall Superfund response. EPA's recently promulgated stormwater regulations (55 FR 47990, November 16, 1990) under the Clean Water Act will also minimize the potential for adverse impacts of stormwater runoff from lead slag.

The Agency's modeling indicates that it is possible for some contaminants to leach from lead slag piles at two of the active facilities and migrate into underlying ground water. However, increased on-site concentrations of constituents in ground water are expected to be well within applicable drinking water standards. Air pathway modeling also indicates that it is very unlikely for lead slag piles to cause harmful concentrations of contaminants in the air at the nearest residences. One commenter contends that lead slag should be regulated under subtitle C because windblown dust from slag piles could pose a significant risk by resulting in an accumulation of contaminated dust in residential areas where people could be exposed directly. However, a Remedial Investigation/Feasibility Study at the facility in East Helena, MT has shown that slag management is a very minor contributor to windblown particulate matter and accumulated dust in the site environs.[7] As much as 95 percent of the lead particulate matter measured in air near the East Helena facility was found to come from ore processing areas and other sources, not the slag piles.

Third, there is a greater potential human health and environmental risk at two off-site municipal landfills where lead slag from one facility is disposed, although the Agency has no evidence that such management does present a substantial hazard. Although the total quantity of slag that is shipped to these off-site landfills represents only 3 percent of the total quantity of slag that is generated, the slag that is shipped off-site is the highly concentrated refinery slag that is consistently EP-toxic for mercury, lead, cadmium, arsenic, and/or selenium.

Fourth, historical slag management practices have clearly caused groundwater contamination at one site, but steps have since been taken to help prevent this contamination from occurring in the future. The RTC reported damage cases at two other lead facilities, but close examination of the RTC data and information submitted in public comments has eliminated one of the damage cases and called the other one into question. Specifically, EPA's ongoing Superfund evaluation at the lead facility in East Helena, MT has

[7] Comprehensive Remedial Investigation/Feasibility Study—ASARCO Incorporated, Helena, Montana, March 30, 1990.

demonstrated that ground-water contamination at that site has been caused by two on-site wastewater impoundments. Contribution to the problem from the lead slag pile is thought to be limited, though further study is planned. At the other site, located in Boss, MO, observed ground-water contamination is not clearly attributable to slag, as it too may have been caused by nearby wastewater impoundments. The Agency's risk modeling predicts that ground-water contamination from the slag pile at this site is unlikely.

Based on these findings, EPA concludes that the potential for lead slag to cause significant impacts is limited by the current management practices and conditions at the five active facilities, but there is some potential for adverse impacts that may be caused by the off-site disposal of relatively small quantities of lead slag from one facility. Therefore, EPA proceeded to Step 2 of its decision making process to evaluate whether more stringent regulation is necessary and desirable. In this step of the process, EPA found that:

- Current practices at the off-site landfills that are receiving lead slag for disposal may not be adequate to limit contaminant release and associated risk. As mentioned above, these are municipal landfills that may or may not be adequately equipped to contain contaminant migration from lead slag.
- In Nebraska, where all of the present off-site disposal of slag takes place, the slag could continue to be managed at off-site locations in the future with minimal state regulation. The other states where primary lead processing occurs have varying degrees of regulatory control. The State of Missouri, for example, where three facilities are located, has recently developed strengthened permitting, closure, maintenance, and financial assurance requirements for facilities that manage mineral processing wastes. In addition, stormwater run-off from lead slag piles into nearby surface waters is subject to control under the Clean Water Act in all three states where the slag is currently managed.
- Because subtitle C regulation would subject the slag to strict hazardous waste management standards, it would prevent the disposal of slag in municipal landfills. However, a subtitle C determination for this waste would also impose significant and specific requirements for on-site management (e.g., liners, closure and postclosure care, ground-water monitoring) that are directed at controlling releases/risks that do not appear to exist or are otherwise controlled at the five active lead processing facilities and, thus, are not appropriate given the special status of the waste. In particular, the Agency does not believe that it is appropriate to subject the entire industry to stringent subtitle C controls when any potential problems appear to be associated primarily with only 3 percent of the lead slag that is currently produced.

Based on the combined findings from Steps 1 and 2, EPA concludes that regulation of the waste under subtitle C is inappropriate under the circumstances. (Accordingly, EPA did not proceed to evaluate the questions addressed in Step 3 of its decision making process.) The Agency, therefore, will work to ensure that both on-site and off-site slag management practices are adequately protective under subtitle D and under the Clean Water Act. In particular, EPA will investigate further the offsite disposal practices used by the Omaha facility to determine the extent to which slag is currently co-disposed with municipal waste. If the management of this waste does prove to be problematic, EPA may, for example, classify co-disposal of the slag with municipal wastes as open dumping under RCRA section 4004. Open dumping is a prohibited practice under criteria promulgated under section 4004.

This determination differs from the RTC's tentative recommendation primarily because the Agency closely reexamined the three lead slag damage cases discussed in the Report to Congress in response to public comments. As outlined above, this examination determined that controls have already been established at one site to address the problem, that another case appears to be mainly if not entirely due to wastes other than lead slag, and that attribution of the third case to slag management practices is questionable. Therefore, an important factor in tentatively recommending Subtitle C regulation in the RTC has been removed.

Process Wastewater From the Production of Hydrofluoric Acid. EPA tentatively recommended subtitle C regulation for hydrofluoric (HF) acid process wastewater under Approach 1A and 1B in the Report to Congress. Additional data submitted in public comments and follow-up with the State of Louisiana, however, confirm that the documented damages cited in the Report are attributable to phosphoric acid wastewaters, and not HF process wastewater as reported in the RTC. EPA also found that two of the three active HF acid production facilities neutralize their wastewater. Accordingly, EPA has reconsidered the RTC's tentative recommendation.

Reconsidering the three questions addressed in Step 1 of the Agency's decision making process, the Agency reaches three basic findings. First, all nine samples of process wastewater analyzed (from two of three active facilities) exhibited the hazardous waste characteristic of corrosivity. However, no constituent concentrations exceeded EP-toxicity regulatory levels (all eight inorganic constituents with EP toxicity regulatory levels were measured in concentrations that were no more than 0.6 times the regulatory levels).

Second, as the RTC and one commenter who argued for subtitle C regulation pointed out, there is a relatively high potential for process wastewater to migrate into shallow ground water at the three active facilities. However, EPA does not believe that this migration will pose significant health risks, either because the shallow ground water is not likely to be used at close downgradient distances or because the waste management units are equipped with controls (e.g., a monitoring well network and slurry walls) to detect and help contain ground-water contamination.

One commenter identified a number of factors that would, according to the commenter, tend to make risks higher than presented in the RTC (e.g., the presence of shallow ground water, the current lack of liners beneath existing impoundments, the potential for changes in population and land use patterns leading to higher risks in the future, the wastewater's corrosivity, and the close proximity of each existing facility to wetlands). All of these factors were considered in the RTC and contribute to EPA's concern that shallow ground water near existing units may be affected. However, EPA does not agree that the RTC understates the potential impacts associated with this contamination, because the concentrations of contaminants in the wastewater are generally low. No constituents in the wastewater were measured in concentrations above the subtitle C regulatory levels, and few exceeded the highly conservative risk screening criteria used in the RTC by more than a factor of 10. Therefore, although the ground-water may become contaminated above levels of concern in the immediate vicinity of waste management units, contaminants are not expected to migrate downgradient to potential human or ecological exposure points.

Third, new data provided in comments appear to indicate that shallow ground water at one of the active facilities has been contaminated

with sulfate, total dissolved solids (TDS), and fluoride.[8] Concentrations of sulfate and TDS in a few wells surrounding wastewater management units exceed upgradient concentrations and secondary drinking water standards (designed to prevent an unpleasant taste). Fluoride concentrations in the ground water exceed background concentrations but do not exceed the health-based drinking water criterion. Contamination above the sulfate and TDS standards appears to have migrated at least 50 meters downgradient from the units. No significant effect on pH has been observed, however, even though the very low pH of the wastewater would appear to pose the greatest threat. In addition, no data are available on the concentrations of metals and other constituents with subtitle C regulatory levels, but any contamination by these constituents is expected to be minor because concentrations in the wastewater are low, as discussed above. No other cases of documented damage attributable to HF acid process wastewater are known to exist.

Based on these findings, EPA concluded that additional waste management controls for HF acid process wastewater might be appropriate, and proceeded to Step 2 of its decision making process. In this step of the process, the Agency found that:

- Current practices at two of the three active facilities are probably adequate to limit contaminant release and associated risk. One of the two manages the wastewater in a surface impoundment bounded by a slurry wall and conducts ground-water monitoring, while the other neutralizes the wastewater prior to using it for gypsum transport.
- It does not appear that existing state controls adequately address the management of this waste at all facilities. Of the three states where active facilities are located (LA, TX, and KY), Louisiana appears to be most comprehensive in its regulation of hydrofluoric acid process wastewater. The other two states impose less stringent requirements, though Kentucky recently proposed new solid waste regulations that may address process wastewater more directly.
- Though the corrosivity of the wastewater is a potential concern, it does not appear to pose a significant problem at the three active facilities based on available ground-water monitoring data. In addition, the concentrations of RCRA Appendix VIII constituents in the waste are low enough that they are not expected to result in exceedances of applicable standards in ground water. Regulation under subtitle C would also impose significant and specific requirements (e.g., liners, financial responsibility) that are not appropriate given the special status of the waste.

Based upon the combined findings of Steps 1 and 2, EPA concludes that regulation of process wastewater from hydrofluoric acid production under subtitle C is inappropriate. Although the waste exhibits the hazardous waste characteristic of corrosivity, the low pH of the wastewater does not appear to pose significant human health or environmental hazards at the three active facilities. Moreover, the only constituents which were found in the wastewater at significant levels (e.g., sulfates, fluoride) are not listed in appendix VIII of part 261. Thus, aside from corrosivity, subtitle C would not identify or list this waste as hazardous under subtitle C. Consequently, to the extent that state programs are determined to be inadequate, the Agency plans to pursue methods within the developing subtitle D mining wastes program to control risks posed by this waste. (Accordingly, EPA did not proceed to evaluate the questions addressed in Step 3 of its decision making process.)

This determination differs from the RTC's tentative recommendation primarily because the Agency closely reexamined the reported damage case in response to public comments. As outlined above, this examination demonstrated that the damages described in the RTC are actually attributable to a different waste, rather than to HF acid process wastewater. Therefore, the primary reason for tentatively recommending subtitle C regulation in the RTC has been removed.

Phosphogypsum and Process Wastewater from Phosphoric Acid Production. The Report to Congress considered two special wastes from phosphoric acid production: Phosphogypsum and process wastewater. EPA believes that it is appropriate to address these two wastes together in this regulatory determination. Although the wastes do not necessarily have to be co-managed, all of the active phosphoric acid facilities presently manage the gypsum and wastewater together in one system, consisting of a phosphogypsum stack and associated impoundments.[9] Therefore, it is not possible to make a determination for one waste without, in practice, affecting the status of the other waste at all of the operating facilities. In addition, though the two wastes have distinct physical and chemical properties, it is very difficult to attribute environmental problems in the vicinity of the waste management units to one waste or the other. Moreover, given the existing co-management of the wastes, it is also appropriate to evaluate the two wastes together from the standpoint of alternative management practices and cost/economic impacts.

In the Report to Congress, EPA tentatively recommended Subtitle D-Plus regulation for both phosphogypsum and process wastewater. Since publishing the RTC, EPA has conducted a supplemental analysis of management technologies and state regulations for the two wastes, and received and evaluated public comments on the RTC and supplemental analysis. In addition, in response to public comments, EPA has more closely evaluated existing ground-water monitoring data for the active phosphoric acid facilities and analyzed the potential costs associated with the corrective action provisions in RCRA sections 3004(u) and 3008(h). EPA therefore reconsidered the RTC's tentative recommendation to account for this additional information.

Addressing Step 1 in the Agency's decision making process, which evaluates whether management of the wastes poses human health or environmental problems, EPA made three findings.

First, both the gypsum and process wastewater exhibit a characteristic of hazardous waste, but the gypsum appears to do so only rarely. Out of 11 facilities with data on the composition of phosphogypsum, only the gypsum at the facility in Rock Springs, WY exhibits the characteristic of EP-toxicity. Two out of two samples of phosphogypsum from this facility contained concentrations of chromium that exceed the toxicity characteristic regulatory level, by a factor of six, on average. This appears to be a characteristic restricted to gypsum derived from the processing of certain phosphate rock mined in Utah and processed at the Rock Springs facility. Available data indicate that the concentrations of chromium and other EP constituents in gypsum at facilities in Louisiana and Florida, which process rock from Florida, and facilities in Idaho and North Carolina, which process locally derived rock, are usually one to

[8] This information does not constitute a documented damage case.

[9] The gypsum is slurried to the stack using process wastewater and large quantities of the wastewater are held in the interstitial pore[illegible] within a phosphogypsum stack.

two orders of magnitude below the regulatory levels.

In contrast, the process wastewater routinely exhibits the hazardous waste characteristic of corrosivity (i.e., it has a pH of less than 2). Out of 15 facilities with data, all process wastewater samples examined at six facilities had a pH less than 2 and most samples examined at six other facilities had a pH below 2. All of the pH values available for the other three plants with data are greater than or equal to 2. Process wastewater at three out of six facilities with data also exhibits the toxicity characteristic. A total of 19 of 19 wastewater samples from the three facilities contained cadmium concentrations that exceed the regulatory level (by a factor of four on average), and two out of two samples from one of the facilities also contained chromium concentrations that exceed the regulatory level (by a factor of two, on average).

Second, existing practices for managing phosphogypsum and process wastewater appear to pose substantial risks of environmental contamination and impacts through the ground-water and surface water pathways. Considering the hydraulic head created by gypsum stacks and process wastewater impoundments and the net recharge, depth to ground water, and subsurface permeability at the 20 active facilities, EPA believes that there is a moderate to high potential for ground-water contamination across the industry. This potential for ground-water contamination is limited significantly at the one Wyoming facility, which has equipped its waste management units with synthetic liners and a seepage collection ditch, but the units at most other facilities are either unlined or only lined with the clay and silt that naturally exist in the area. EPA's concern about potential ground-water contamination at the 11 facilities in Central Florida is compounded by the presence of underlying karst in the deep Floridan Aquifer; karst is prone to form caverns or solution cavities that can serve as contaminant migration pathways. Available data indicate that the background ground-water quality is suitable for drinking [10] and that there is either a private or public well, where potential human exposures could occur, within 1,600 meters (1 mile) downgradient of the waste management units at 14 of the 20 active facilities. In addition, 15 of the active facilities are located within 1,600 meters of a wetland and 16 facilities have waste management units within 500 meters (less than a third of a mile) of a surface water body where contamination could pose ecological threats. Phosphogypsum does not appear to pose a significant air pathway risk. Radon emissions to the air from gypsum stacks are controlled under the Clean Air Act at a level designed to ensure "acceptable" risk within an "ample margin of safety" (see 54 FR 51654, December 15, 1989). Windblown dust releases from gypsum stacks also appear to be effectively precluded by the crust that forms on the dried gypsum solids.

Third, a close examination of available monitoring data reveals that there are numerous cases of documented ground-water contamination across the industry. For example, out of 16 facilities with data, the phosphogypsum stacks and/or process wastewater ponds at 13 facilities appear to have caused groundwater contamination that exceeds background levels and primary (i.e., health-based) drinking water standards. Contamination by constituents with toxicity characteristic regulatory levels is seldom evident more than 500 meters from the waste management units, but other contaminants with health-based limits (gross alpha radiation, radium, and sodium) have migrated in potentially harmful concentrations over greater distances. Based on a review of the monitoring data and plant configurations, EPA believes that contamination above primary drinking water standards has migrated or is likely to migrate beyond the facility property boundary (unless corrective measures are implemented) at 12 of 15 facilities with data.

Based on these findings, EPA concluded that management of phosphogypsum and process wastewater poses potential health and environmental problems. Therefore, EPA proceeded to Step 2 of its decision making process to examine whether more stringent regulation is necessary or desirable. In this step, EPA found that:

- Current phosphogypsum and process wastewater management practices are often not adequate to limit contaminant release and associated risk. As discussed above, current management practices generally consist of disposal or storage in large unlined piles and ponds, typically in areas that are conducive to ground-water contamination.
- Current state and federal regulations generally do not appear adequate to control current and likely future ground-water contamination. Although Florida is in the process of developing strengthened regulations, the State presently permits the special waste units to contaminate ground water, usually as far as, but sometimes beyond, the facility property boundary. Given the intrinsic hazards of the wastes, the widespread potential for contaminant release and migration, and the potential for human and ecological exposures in the vicinity of active facilities, EPA believes a more stringent regulatory approach is needed.
- EPA believes that regulation under subtitle C would impose significant and specific requirements that are directed at controlling the types of releases/risks that have been documented for phosphoric acid production wastes across the industry.

Based on the combined findings from Steps 1 and 2, EPA concluded that existing management practices create the potential for environmental problems and that more stringent regulation is both necessary and desirable. EPA therefore seriously considered subtitle C regulation for the phosphoric acid wastes and proceeded to Step 3 of its decision-making process to evaluate the operational and economic consequences of a subtitle C determination.

In Step 3 of the decision-making process, EPA examined the costs and impacts of the three regulatory scenarios examined in the RTC and the Supplemental Analysis, and used the insights gained thereby in deciding whether the economic impacts of subtitle C (or C-Minus) regulation might cause extensive and significant economic dislocations within the phosphoric acid production industry. Cost impacts were reevaluated subsequent to release of the RTC and were based upon an integrated management strategy for controlling risks posed by the two special wastes in combination. This departure from the Agency's initial approach was required by new knowledge gained through additional plant visits and analysis; these findings are summarized in the Supplemental Analysis and discussed further in comment response documents.

Extensive comments received on the Supplemental Analysis have cast doubt upon the engineering feasibility of some of the waste management alternatives

[10] Background data for the surficial aquifers indicate that shallow ground water at the sites is generally drinkable, but low yields at the Florida sites limit uses primarily to irrigation and livestock watering. Lower aquifers, where present, are generally of equal or better quality, and appear to be either current or potential public drinking water supplies.

presented in that document. Consequently, the Agency has based its cost analysis in support of today's regulatory determination on the use of lined phosphogypsum stacks and cooling ponds (Engineering Alternative 3 in the Supplemental Analysis). The technology required to implement this alternative has been amply demonstrated (i.e., is feasible), though the costs involved are higher than those of some of the other alternatives evaluated in the Supplemental Analysis. Because EPA is not confident at present that full subtitle C compliance is technically feasible for existing phosphoric acid plants, principally because of the predicted operational effects of the large-scale lime neutralization required for compliance (the only Engineering Alternatives that would comply with promulgated Subtitle C Land Disposal Restrictions (LDRs) for corrosive wastes rely on lime treatment), the cost and impact analyses conducted for today's notice focus exclusively on the Subtitle C-Minus and D-Plus scenarios.

EPA has estimated that the total industry-wide cost of compliance with the Subtitle C-Minus scenario (assuming implementation of Engineering Alternative 3) would be approximately $465 million annually, with an additional $15 million to $60 million required annually for corrective action, depending upon the analytical assumptions employed. Estimated annualized compliance costs for the Subtitle D-Plus scenario are approximately one-third lower, at about $330 million for the industry in total; corrective action costs under this scenario could range from $13 million to $48 million annually. These costs represent from 10.0 to 21.6 percent of the value of shipments (VOS) under Subtitle C-Minus, and from 8.2 to 15.2 percent of the VOS under Subtitle D-Plus (excluding corrective action costs), depending upon the facility involved. Costs of this magnitude exceed typical operating margins in the affected industry, could not be passed through, and hence, could not be sustained over an extended period.

As required by Section 8002(p)(7), EPA has also conducted an analysis of the impacts associated with the costs of regulatory compliance. Based upon the results of this analysis, the Agency has concluded that the costs and impacts of regulatory compliance under the Subtitle C-Minus and D-Plus scenarios would be highly significant for most phosphoric acid facilities, with C-Minus costs being particularly difficult to withstand. These costs would create economic hardship for and threaten the continued economic viability of many of the facilities in the industry. Consequently, the Agency has decided that while the management of phosphoric acid production wastes requires additional controls, hazardous waste controls under RCRA are too inflexible and costly for the industry to implement and remain economically viable. Even a less rigorous approach under the auspices of RCRA Subtitle D could impose costs and impacts that the domestic industry would find difficult to withstand. Therefore, the Agency has serious reservations regarding the economic feasibility of a traditional waste management program designed within the contours of the RCRA statute.

Given these facts and the need for action to address the risks posed by phosphoric acid production processes and associated wastes, EPA believes that a different approach is required. The Agency has therefore developed a two-pronged approach to address these wastes. First, the Agency will rely upon existing authorities under RCRA Section 7003 and CERCLA Section 106 to respond effectively to emergency situations that arise. In addition, EPA will accelerate the collection of facility-specific information, consider the risks posed by these facilities, and take appropriate action to contain or stabilize wastes at facilities that present a risk to human health and the environment. In this manner, EPA believes that it can respond appropriately to any problems that arise while developing a program that is both adequately protective of human health and the environment and economically feasible and achievable for affected industry.

Second, EPA believes that a regulatory program specifically designed to address the complex issues associated with phosphoric acid industry special wastes can be developed under authorities afforded by the Toxic Substances Control Act (TSCA). Like RCRA, TSCA provides a mechanism to address threats posed to human health and the environment and, unlike RCRA Subtitle C, does not contain prescriptive requirements. TSCA provides the additional and significant advantage of being broader in scope, and explicitly allows EPA to address various parts of the production and waste generation process itself. Therefore, EPA plans to proceed with examination of this problem under TSCA to consider how to develop a program that will address phosphoric acid production practices and processes to reduce the risks posed by phosphogypsum and process wastewater.

The TSCA regulatory investigation already underway will focus on developing risk management strategies to reduce or eliminate risks posed by phosphoric acid production wastes. EPA is evaluating the chemicals and the processes involved in phosphoric acid production and the resulting wastes to determine how TSCA authorities can best be used to reduce the toxicity and/or volume of these wastes. The Agency will analyze the efficacy and feasibility of some of the alternatives to current practices that were described in the Supplemental Analysis, with an emphasis on developing sound methods (in both a technical and economic sense) of reducing the toxicity and/or the volume of the special wastes. EPA will assess pollution prevention opportunities based on a phosphoric acid life-cycle analysis, the Supplemental Analysis, and other information obtained during the TSCA investigation. The investigation will also address the risk reduction potential and associated costs for identified regulatory options, such as restrictions on manufacturing, processing, or disposal. Depending on the results of this assessment, site specific risk reduction strategies may be considered as most appropriate. As specific wastes or toxicity reduction techniques are identified, EPA will work with the industry to implement the most promising alternatives as quickly as possible. EPA believes that by developing a tailored program under TSCA, the Agency will be able to more fully explore, promote, and enforce several promising pollution prevention and/or source reduction ideas (e.g., more efficient raw product filtration, fluosilicic acid recovery) than would be possible under a RCRA program.

In addition, EPA plans to further explore and evaluate containment strategies of various kinds, so that whatever wastes are generated will not result in contaminant releases to the environment. If information obtained or findings developed during the TSCA investigation are such that RCRA could better handle this matter, the Agency will revisit today's regulatory determination, and determine whether subtitle C regulation of the phosphoric acid special wastes remains inappropriate.

IV. Decision To Postpone Consideration of a Possible Ban on Elemental Phosphorus Slag Utilization

In the RTC, EPA found that the radionuclide content and potentia

radiation risk is a concern for slag from elemental phosphorus production. The primary basis for this finding was EPA's Idaho Radionuclide Study,[11] which estimated that average life-time cancer risks range from $4x10^{-4}$ to $1x10^{-5}$ in Soda Springs and Pocatello, Idaho as a result of the use of elemental phosphorus slag in a wide range of off-site construction applications. Based on these findings, EPA stated in the RTC that it planned to use the authority of RCRA section 3001(b)(3)(B)(iii) to ban the use of the slag in construction and/or land reclamation when the Agency issued its regulatory determination for mineral processing wastes. EPA solicited comments on the appropriate regulatory language that should be used and how such a ban should be implemented.

In response, five commenters questioned the validity of the Idaho Radionuclide Study. The commenters argued that the study was not conducted according to required procedures, has not been sufficiently peer-reviewed, contradicts epidemiological studies that show that cancer risks in Idaho are low, and suffers from several technical flaws. For example, according to the commenters, the data collection methodology was inadequate to support valid risk estimation, the study relies on a zero threshold low-dose risk model that is not supported by experimental evidence, and the study relies on aerial radiation measurements that exaggerate actual radiation levels. The commenters argued, therefore, that the Idaho study cannot be used as a basis for a decision to ban off-site uses of the slag.

Since the release of the RTC, the Idaho Radionuclide Study and supporting data have been distributed for review by industry, EPA's Science Advisory Board (SAB), and the Agency for Toxic Substances and Disease Registry. A public hearing on the study was also held in Soda Springs, ID on August 21, 1990. Because of the concerns raised, EPA has postponed its final determination on the validity of the study's conclusions until the Agency decides how to incorporate SAB's findings and after the Agency's review of information provided at the public hearing is completed. In addition, the Agency is postponing its consideration of a possible ban on elemental phosphorus slag utilization until it completes its review of the technical basis for such an action. EPA will propose a supplemental notice at the appropriate time.

[11] EPA, 1990. Idaho Radionuclide Study, Office of Research and Development, Las Vegas Facility, Las Vegas, NV. EPA/520/6-90/008. April 1990.

V. 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.

EPA conducted a detailed analysis of the facilities and companies that generate the 20 special wastes from mineral processing during the preparation of the Report to Congress. The Agency established at that time that no companies that meet the definition of "small business" generate any of the special mineral processing wastes. Also, EPA has not received any information in public comment on the Report that would contradict this finding, and therefore concludes that today's action will not adversely affect small mineral processing companies. Consequently, an explicit Regulatory Flexibility Analysis is not required.

VI. Agency Initiatives

To follow up on the findings that have resulted in today's regulatory determination, EPA plans to continue several initiatives that directly relate to some of the mineral processing wastes addressed in this regulatory determination. These initiatives include the following four activities:

(1) Evaluation of the radiation exposures and risks associated with the off-site use of elemental phosphorus slag;

(2) Review of hazards posed by wastes containing diffuse naturally occurring radioactive material (NORM);

(3) development of a management program under RCRA Subtitle D for mineral extraction and beneficiation wastes; and

(4) Development of a program under TSCA addressing the phosphoric acid industry.

As discussed in section IV of this preamble, in April 1990, EPA released the Idaho Radionuclide Study, which provided an assessment of the direct radiation exposures and risks associated with the use of elemental phosphorus slag in construction in Soda Springs and Pocatello, Idaho. A public hearing on the study was held in Soda Springs, ID on August 21, 1990. EPA has also requested its Science Advisory Board (SAB) and other scientific organizations to review the study's underlying data, methodology, and conclusions. The SAB is scheduled to issue its findings this year. When available, EPA will review these findings together with other scientific and public inputs to define needs for further study. Final conclusions from this study will be used to help evaluate the need for any added controls on the off-site use of elemental phosphorus slag.

In a separate study, EPA is presently evaluating the characteristics, risks, and regulatory control options under TSCA for diffuse NORM wastes. The scope of this study is much broader than the Idaho Radionuclide Study, and includes phosphate and elemental phosphorus wastes, metal mining and mineral processing wastes (including wastes from bauxite and aluminum, copper, zinc, tin, titanium, and zirconium and hafnium processing), and a variety of other wastes (e.g., coal ash, oil and gas production scale, water treatment sludges, and certain consumer items). The purpose of the study is to determine whether the routine management of these wastes pose a sufficient radiological hazard to warrant additional regulatory controls. EPA plans to complete the study in the summer of 1991, at which time the Agency will begin to evaluate whether any added controls are necessary to limit the radiation hazards, what authorities exist for such controls, and what the form and substance of a NORM waste program might be. As appropriate, EPA will evaluate authorities and opportunities to address NORM wastes under RCRA, the Toxic Substances Control Act, and other programs.

EPA is in the process of developing a RCRA Subtitle D program for mineral extraction and beneficiation wastes. EPA plans to include those mineral processing wastes determined here to warrant regulation under subtitle D under the regulatory "umbrella" for extraction and beneficiation wastes, making it the extraction, beneficiation, and mineral processing wastes program. As the development of this program proceeds, the Agency may find it necessary to control certain mineral processing wastes, such as waste acids, that have little in common with the majority of extraction and beneficiation wastes under a separate regulatory program.

Finally, as discussed in the regulatory determination for the phosphoric acid wastes, EPA plans to proceed with an examination of phosphogypsum and process wastewater management under TSCA. EPA will consider how to

develop a program under TSCA, including pollution prevention opportunities, that will address phosphoric acid production practices and processes to reduce the risks posed by these two wastes.

VII. Regulatory Determination Docket

The EPA RCRA docket is located at: United States Environmental Protection Agency, EPA RCRA Docket, room M2427, 401 M Street, SW., Washington, DC 20460.

The Docket 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. Call the docket clerk at (202) 475–9327 for appointments.

Documents related to this regulatory determination are available for inspection at the docket.

List of Subjects in 40 CFR Part 261

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

Dated: May 20, 1991.

William K. Reilly,

Administrator.

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.

2. Section 261.4 is amended by revising the last sentence of the introductory text of paragraph (b)(7) to read as follows:

§ 261.4 Exclusions.

(b) * * *

(7) * * * For the purpose of § 261.4(b)(7), solid waste from the processing of ores and minerals includes only the following wastes:

* * * * *

Note: The Following Appendices Will Not Appear in the Code of Federal Regulations.

Appendix A—Analysis of and Response to Public Comments on the Report to Congress

EPA received numerous public comments on the Report to Congress, including comments on the overall methodology used to evaluate the eight study factors and comments on the specific analysis and discussion of each of the 20 wastes. All of the comments are available for inspection in Docket No. F–90–RMPA–FFFFF. EPA has carefully considered each of these comments in developing this regulatory determination and includes in this appendix responses to certain major comments that have a particularly significant bearing on the Agency's final determination. All other comments and detailed responses are included in a supporting comment response background document, available for inspection in the RCRA docket.

I. Report to Congress Methodology

The Agency received a number of comments on the Report's scope (i.e., the particular wastes studied) as well as the approach that EPA used to evaluate five of the study factors: (1) Waste characteristics, generation, and current management practices; (2) potential danger to human health and the environment; (3) documented danger to human health and the environment; (4) compliance costs; and (5) economic impacts. Commenters did not raise significant methodological issues concerning the Agency's evaluation of Federal and State waste management controls or waste management alternatives and potential utilization.

A. Scope

Several commenters took exception to the Report's overall scope, with some stating that the scope was too narrow and some stating that the scope was too broad. The commenters that argued that the scope was too narrow said that EPA improperly narrowed the scope of the mining waste exclusion, leaving several mineral processing wastes potentially subject to subtitle C regulation when they should have been studied further in the Report to Congress. For example, one commenter said that certain wastes that exhibit a hazardous waste characteristic, such as coal tar wastes from historic town gas manufacturing, constituted exempt mineral processing wastes and should have been studied in the Report. The commenters that believed the scope was too broad said that EPA wrongly studied materials that are not solid wastes and thus not subject to RCRA regulation, such as some slags.

EPA believes the argument that the scope of the Report was too narrow is not an issue pertaining to the Report to Congress, but rather pertains to the scope of the Agency's final rulemakings interpreting the scope of the exclusion for mineral processing wastes. As EPA explained in the preambles to the rules as well as the Report to Congress, two final rules established the scope of the exemption for mineral processing, and EPA did not solicit further comment on this issue in the RTC. EPA also notes that the coal tar wastes mentioned in the comment are no longer generated (the last plant that manufactured gas for municipal use using coal closed in the 1970's) in high volumes (if they ever were), and the Bevill Amendment applies only to currently generated waste and historical stockpiles of currently generated waste. Moreover, the coal tar wastes remaining from historic town gas manufacturing are substantially different from the coal gas wastes studied in the Report to Congress, as the coal tar wastes have a different chemical makeup and were generated by different processes.

With respect to the argument that the scope of the Report is too broad, EPA acknowledges that some of the materials examined in the Report are not always solid wastes, depending on how they are managed in particular instances. In fact, if they are not defined as solid wastes under EPA's regulations, the Agency agrees that regulation under RCRA is not appropriate. However, the Agency believes that all of the materials examined are managed as a solid waste, as defined by RCRA regulations, at least part of the time at some facilities. Therefore, all of these wastes were appropriate for study in the mineral processing report.

B. Waste Characteristics, Generation, and Current Management Practices

One commenter argued that EPA's consideration of waste characteristics in the RTC did not recognize the variability in composition of a given waste from one facility to the next. According to the commenter, this variability provides support for a determination that subtitle C regulation is unwarranted because regulation under other state and federal authorities provides the flexibility necessary to address the geographic variability in waste characteristics (which subtitle C does not). For example, data for phosphogypsum and process wastewater from phosphate rock processing clearly demonstrate, according to the commenter, the variability of characteristics of these wastes and the relationship between that variability and the geographic origin of the phosphate rock being processed. The commenter went on to contend that the RTC used waste characterization data only to determine whether a waste contains constituents at concentrations of potential concern, ignoring the critical aspect of geographic variability.

EPA disagrees with this comment. Waste characteristics and the variability in chemical concentrations from one facility to the next were critical elements in the risk and cost analyses, as well as in the Agency's final decision making. Specifically, the variability in waste composition

explicitly highlighted in the analysis of each waste's intrinsic hazard, and the facilities that were examined in the cost and economic impact portions of the analysis were selected as a function of whether their wastes exhibit a hazardous waste characteristic. If subtitle C regulation for a given waste warranted serious consideration based on an analysis of the study factors, EPA closely examined on a facility-by-facility basis the frequency and magnitude with which the waste exhibits a hazardous waste characteristic in order to reach a final regulatory determination.

C. Potential Danger to Human Health and the Environment

1. *Leaching Procedures.* Four commenters addressed the appropriateness of different laboratory leach tests used to measure contaminant concentrations in leachate from mineral processing waste samples. Three of the commenters objected to the RTC's use of data generated from the Extraction Procedure (EP) leach test. These commenters stated that EP leachate concentrations overestimate actual leachate concentrations because the EP test mimics an implausible mismanagement scenario in which mineral processing wastes are co-disposed with municipal solid waste in a municipal landfill and exposed to an organic leaching medium. In general, these commenters believed that analytical results from a distilled water leaching procedure or the Synthetic Precipitation Leaching Procedure (SPLP) would provide a more realistic assessment of the leachability of metals from mineral processing wastes under actual field conditions. In contrast, another commenter suggested that use of the EP leach test data is reasonable because, among other reasons, co-disposal with municipal wastes cannot be ruled out for some mineral processing wastes that are disposed off-site, and because at the time the RTC was being prepared, the EP leach test was the required procedure for determining whether a mineral processing waste would be regulated as EP toxic if the Bevill exemption was removed.

The Agency believes that the RTC's use of EP leach test data for mineral processing waste characterization and risk assessment is reasonable for three main reasons. First, use of the EP leachate data is a reasonably conservative approach. While several constituents were found to be present in higher concentrations in EP leachate than SPLP leachate for some samples that were tested using both procedures, results for the two tests are often similar (and for liquid wastes, they are identical since liquids are not leached, but simply compared directly to the appropriate regulatory concentration levels). There are also cases where EP leachate concentrations were found to be less than SPLP leachate concentrations. For example, the results of an EPA study [1] analyzing the validity of the SPLP test showed that the SPLP test has been shown on occasion to underestimate the amount of leachable lead in a sample.[2] Other constituents that are commonly present in higher concentrations in EP leachate than SPLP leachate include iron, zinc, aluminum, cadmium, copper, and nickel. In contrast, arsenic, vanadium, molybdenum, and barium are commonly found in higher concentrations in SPLP leachate than EP leachate. In addition to the fact that EP leachate concentrations appear reasonably conservative relative to the SPLP concentrations, the Agency believes use of the EP leachate data is reasonable because mineral processing wastes may be plausibly mismanaged in a municipal landfill in certain cases. For example, lead slag from one of the primary lead processing plants, and steel (basic oxygen furnace and open hearth furnace) air pollution control dust/sludge from one plant are presently shipped off-site for disposal in a municipal landfill. Given the existing regulatory regime, it is not inconceivable that other mineral processing wastes from other facilities could be disposed in a similar manner in the future.

Second, as noted by one of the commenters, the EP leach test at the time the RTC was being prepared was the legally required procedure for determining whether the mineral processing wastes under study exhibit the hazardous waste characteristic of EP toxicity. The test that has replaced the EP test, the Toxicity Characteristic Leaching Procedure, assumes the same mismanagement scenario and will also be used to determine the toxicity of wastes for regulatory purposes.

Third, the vast majority of available leachate data for mineral processing wastes are from EP leach tests. The amount of data from other laboratory leach tests or from samples of actual leachate collected in the field is insufficient to support a comprehensive evaluation.

The Agency recognizes that there are some uncertainties associated with using EP leachate data to estimate the concentrations of metals in leachate generated from the mineral processing wastes as they are currently managed. As a result, the differences between measured EP and SPLP leachate concentrations were factored into the Agency's decision making for this regulatory determination. Also, EPA acknowledges that the RTC's use of EP leachate data differs from the approach used in the Agency's previous rulemakings on mineral processing wastes (reinterpreting the scope of the Mining Waste Exclusion), but believes the reasons outlined above provide a sound basis for using the EP data in the analysis leading to the regulatory determination. In the previous rulemakings, the Agency used limited SPLP data in order to establish which wastes qualified as "low hazard" and thus were eligible for detailed study in the RTC (i.e., use of the SPLP data was a reasonable approach for selecting the wastes to be studies, because wastes that exhibit hazardous characteristics under the SPLP test are clearly not low hazard). For purposes of actually conducting a risk assessment, however, relying primarily on the EP leachate data is a reasonable, though more conservative approach. The overall conservativeness of EPA's risk assessment is discussed further below.

2. *Overall Conservativeness.* Five commenters stated that the risk assessment methodology in general relies on overly conservative assumptions that grossly overestimate risk and ignore contradictory real-life information. The commenters said the risk screening criteria used to evaluate the intrinsic hazard of each waste stream's composition are ultra-conservative, as they are based on worst-case assumptions regarding an unbroken chain of events that allow contaminant release, migration through the environment, and exposure to receptors.

While the Agency agrees that there are elements of the risk assessment methodology that tend to overestimate actual risks, these overestimates are offset somewhat by other elements of the methodology that tend to underestimate actual risks. The Agency acknowledges that most of the risk screening criteria are conservative, as stated throughout the RTC. However, the Agency used these criteria only for the purpose of analyzing the intrinsic

[1] Performance Testing of Method 1312—QA Support for RCRA Testing. U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas, NV, March 1988. Docket No. F-89-MWRP-F0002.

[2] Given recent data that indicate that lead is a health hazard at significantly lower levels than previously believed (U.S. Department of Health and Human Services, Toxicological Profile for Lead, Agency for Toxic Substances and Disease Registry, June 1988), EPA believes it is especially important that it not rely solely on a procedure that may underestimate lead leachability.

hazard of each waste stream. EPA interpreted an exceedance of the criteria only as an indication that the risks of a given waste should be evaluated in more detail, not by itself as proof that the waste poses a significant risk. If a waste contained constituents in concentrations above the screening criteria, the analysis was supplemented with additional evaluation of conditions at actual facilities, and then further, if this evaluation indicated that there were potential problems, the Agency conducted risk modeling in order to develop final risk conclusions. The RTC then proceeded to evaluate the risk conclusions together with the damage case conclusions before reaching an overall finding on the hazards associated with each waste.

Overall, EPA believes that the risk assessment, while conservative, was reasonable in that EPA factored the uncertainties created by key assumptions in the risk assessment methodology into the regulatory decision making process for each waste stream. The approach that EPA used to evaluate potential human health and environmental problems is outlined in section II of this preamble and applied in section III, which presents the rationale for the final regulatory determination for specific wastes.

3. *Modeling Inadequacies.* One commenter argued that the Agency's risk modeling was inadequate and significantly underestimated risks because it did not adequately consider a number of specific factors. Important factors that the commenter alleged were left out or considered incorrectly include site-specific soil-water distribution coefficients (Kd's), the transport of metals in ground water by colloids, metal-organic complexing during ground-water transport, ground-water flow through karst terrains, storm events, evaporation and subsequent concentration of metals in small surface water bodies, and the transport of contaminated storm-water run-off to surface water bodies.

In general, EPA acknowledges these modeling limitations but believes most of them were unavoidable, forced in part by necessary limitations in the scope/complexity of the risk assessment, as well as by limitations in the state of ground-water modeling as a science. For example, the Agency agrees that Kd values are highly site-specific, but believes that modeling each site using actual Kd's would have required prohibitively extensive field measurements and verification. As a result, the Agency used the next best approach—EPA used its best professional judgment to select representative Kd values for each site and each contaminant, based on a review of data in the literature and an examination of available data on the soil composition at each site. In addition, with the possible exception of a few experimental models, the Agency is unaware of any reliable techniques for modeling the migration of colloids or the flow of ground water through karst. Overall, the Agency believes that its risk modeling approach accounts for the factors noted by the commenter in the best way possible, considering the study's time limitations. When significant factors could not be considered in the quantitative modeling exercise, they were considered in a qualitative manner so as to not compromise the overall completeness of the risk analysis.

4. *Lack of Consideration of Off-Site Use/Disposal and Future Changes.* One commenter argued that the risk assessment was deficient because it did not consider the risks associated with off-site use or disposal of the mineral processing wastes. This same commenter said the risk assessment is also fundamentally flawed because it analyzes risks only in terms of existing conditions at each facility that generates the mineral processing wastes, not accounting for possible future changes in water use patterns or population distributions.

While the Agency acknowledges that it did not rigorously model the risks associated with off-site use/disposal or possible future locations of new facilities, it disagrees that the RTC did not consider these factors.[3] Based on a review of the past disposal practices and potential utilization of each waste, only about half of the mineral processing wastes are candidates for off-site use or disposal, including copper slag, elemental phosphorus slag, all four of the ferrous metal production wastes, fluorogypsum, lead slag, phosphogypsum, and zinc slag. In the case of elemental phosphorus slag, the RTC relied on monitoring and risk modeling conducted by EPA's Office of Radiation Programs to evaluate the potential radiation hazards associated with off-site uses; as discussed in section VI of this preamble, EPA is in the process of re-examining the validity of this off-site modeling for elemental phosphorus slag. For the other wastes, EPA evaluated the observed and potential hazards associated with off-site use or disposal in the context of the wastes' damage case record and intrinsic hazard analysis, and factored the results of this evaluation into the overall hazard findings in each waste-specific chapter of the RTC. For example, before reaching conclusions about the hazards posed by iron blast furnace slag, a waste that has been shipped off-site for disposal and a variety of uses for decades, EPA searched for and evaluated any evidence of environmental damage caused by the off-site management practices. The conservative risk screening criteria used to evaluate each waste's intrinsic toxicity also were developed using hypothetical scenarios that might occur if the wastes were mismanaged (e.g., scenarios in which an inactive waste pile is not closed or maintained and people are allowed to come into direct contact with the waste). Therefore, the Agency believes that both off-site activities and possible future changes have been accounted for in the overall hazard conclusion for each waste stream. EPA also notes, however, that, as a general matter, the use of site-specific risk modeling and evaluation is appropriate for high-volume special wastes which are typically managed on-site.

5. *Treatment of Radionuclides in Report to Congress.* One commenter claimed that EPA's treatment of radionuclides is different with respect to the four wastes tentatively proposed for removal from the Mining Waste Exclusion and the sixteen other wastes. The commenter argued that EPA has determined that some radionuclide risk exists for some of the sixteen wastes but instead of recommending subtitle C regulation, EPA merely expressed that it plans to further investigate the potential for exposure and associated radiation risk. This commenter added that if further investigation is warranted before regulatory action is taken on some wastes, the same principle should apply to all the wastes.

EPA could not evaluate the risks associated with radioactive constituents for all of the wastes studied in the RTC because the necessary data were not available. In addition, there presently are no controls for risks from radioactive materials under RCRA subtitle C, as there is not a hazardous waste characteristic test for radioactivity and no radionuclides or radioactivity levels are listed in appendix VIII to 40 CFR part 261 (Hazardous Constituents). As a result, concerns about residual radioactivity

[3] As discussed elsewhere, EPA did examine potential changes in exposure scenarios at existing facilities. For example, the Agency's risk modeling examined potential groundwater exposure points at locations closer to the facility than known current well locations (e.g., at the facility boundary).

would not be resolved by removal of the Mining Waste Exclusion, because such an action would not result in subtitle C regulation unless the waste exhibits a RCRA hazardous characteristic.

To the extent that data were available on the radionuclide concentration in various wastes, EPA believes that it evaluated the data and made final regulatory determinations for the wastes in a consistent manner. That is, EPA uniformly compared available radionuclide concentration data for the wastes to risk screening criteria and developed conclusions on the intrinsic hazard of the wastes accordingly. The Agency then evaluated potential radiation risk as an element in the overall risk assessment for each waste, and combined the risk assessment conclusions with the other RCRA section 8002(p) study factors in accordance with the decision making methodology outlined in section II of this preamble in order to reach a final regulatory determination. Therefore, radiation risk was but one element in an overall evaluation process, and EPA consistently followed that process to reach appropriate determinations for each waste. To the extent that radioactivity appears to be a concern for a given waste, EPA believes that potential radiation risks should be addressed along with the waste's other potential threats within the regulatory framework determined to be appropriate (subtitle D in all cases). In addition, EPA is examining potential radiation risks associated with these and other materials in studies currently underway.

D. Documented Danger to Human Health and the Environment

One commenter contends that many of the damage cases cited in the RTC are not attributable to Bevill processing wastes. The commenter also stated that other damage cases cited by EPA resulted from historical management practices that have long since been discontinued by the mineral processing industry. A number of commenters made this assertion regarding specific mineral commodity sectors and wastes as well.

The Agency reexamined the RTC data and evaluated the information submitted in comments and eliminated some of the damage cases covered in the RTC for the purpose of this regulatory determination (see the comment-response background document in the docket for details). For example, EPA has eliminated the damage cases for lead slag at the ASARCO facility in East Helena, MT and for hydrofluoric acid process wastewater at the Allied facility in Geismar, LA because available information indicates that the contamination documented in the RTC is attributable to other wastes.

Furthermore, as discussed in the RTC, inclusion in the RTC of documented contaminant releases to the environment due to discontinued waste management practices does not necessarily demonstrate that releases from current management practices will occur. The Agency believes, however, that damage case information on past waste management practices is useful in demonstrating the potential for environmental and human health impacts, for two primary reasons. First, these damage cases provide information on combinations of management practices and site conditions that have resulted in environmental problems, which is useful for anticipating and avoiding future problems. Second, damage cases associated with past practices, like those associated with ongoing practices, are useful in demonstrating the kinds of impacts that can result when hazardous constituents are released from the wastes. If damage case information on past waste management practices was available, EPA evaluated the particular circumstances involved to determine if the case represents conditions that are likely to exist today. If, in EPA's judgment, a historical damage case did not apply to current management practices, it was used to supplement the risk conclusions in the sense that it could demonstrate how problems can occur in mismanagement scenarios, but it was not given the full status of a damage case in making the regulatory determination. However, if a historical damage case was found to represent today's management practices, it was considered equally with any damage cases for current management practices in developing the regulatory determination.

One commenter claimed that the Agency did not meet the standard set by Congress that damage cases should relate to the individual waste stream being studied. The commenter added that although relating damage to a specific stream may be difficult, it is essential if an analysis is to be meaningful.

EPA disagrees with this comment. As mentioned previously, the Agency reexamined the RTC data and evaluated the information submitted in comments and eliminated some of the damage cases covered in the RTC because the damages could not be attributed to a given waste stream being studied. In some of the cases that were retained for the purpose of this regulatory determination attribution to a sole waste stream was not possible, because wastes were co-managed, for example. However, the Agency believes that at least one of the special wastes being studied was contributing to the damages described in cases used for the regulatory determination. This view is based on EPA's review of available data on waste management practices and site conditions as reflected in state or EPA regional regulatory files.

One commenter argued that contrary to the Agency's position, the absence of damage cases is not a reliable indicator of the absence of potential hazard from the wastes studied in the Report. The commenter stated that the lack of damage cases can be attributed to two factors: Deficiencies and flaws in EPA's methodology for identifying damage cases, and inadequacies within state programs for identifying damage cases.

The Agency has reviewed these comments and maintains the view that its damage case investigation effort was comprehensive and thorough. Many sources were utilized to obtain information on facilities, including the National Priorities List (NPL) and other lists; federal, state, and local regulatory agencies; public interest or citizen's groups; and professional and trade associations. In addition, EPA followed up on general and specific examples cited in comments and has not found any additional damage cases. For example, EPA has reviewed the evidence suggested by one commenter linking observed damages to ferrous metal production wastes, and concludes that any such damages are not attributable to any of the four ferrous metal production wastes studied in the Report. The Agency acknowledges that although damages may have occurred at some facilities not identified in the Report, documentation of these damages was not available or non-existent. This is precisely why the RTC's findings about the hazards of each waste stream are based on both an analysis of damage cases and risks in the absence of any known damages. Moreover, EPA believes that the lack of documented damages for a given waste stream does not necessarily signify a lack of hazard from that waste stream, but believes that the attribution of damage cases to a waste stream is the most concrete evidence of such a hazard.

E. Estimation of Compliance Costs

1. *Incorrect Cost Estimates.* Several commenters claimed that EPA had seriously underestimated the total compliance costs associated with subtitle C regulations by failing to consider several pertinent elements,

including: The cumulative financial impact of federal and state regulations (including the recent Bevill rulemakings); hydrogeological investigations that may include the construction of systems of ground-water monitoring wells; location requirements at facilities within a 100-year flood plain; land disposal restriction requirements; neutralization; recycling; remedial work to control releases; and closure activities. One commenter, on the other hand, asserted that EPA overstated the cost associated with compliance by assuming that more facilities exhibit hazardous waste characteristics than are indicated by available data. For example, the commenter stated that the Agency incorrectly assumed that wastewater at every facility would be regulated as hazardous, even though the wastewater may not actually exhibit hazardous waste characteristics at each operating plant.

The Agency generally disagrees with those commenters who argued that EPA underestimated compliance costs associated with subtitle C regulation. As part of its analysis, EPA did, in fact, address many of the cited compliance cost elements. In the Report to Congress, EPA accounted for ground-water monitoring systems, neutralization of wastes, location standards, land disposal restrictions (in some cases), and closure requirements. The cumulative impact of previous rulemakings is not relevant to the issue of whether the special mineral processing wastes studied in the Report to Congress can be managed under RCRA subtitle C without excessive additional costs being incurred by the regulated community. That is, the costs and impacts of regulating non-special mineral processing wastes under subtitle C have no relevance to today's regulatory determination. EPA acknowledges that, at certain facilities, corrective action requirements could result in potentially significant costs for some wastes and, thus, has given further consideration to the associated costs (further discussion of this issue is presented below).

On the other hand, EPA acknowledges that compliance costs may be overstated in certain instances in which wastes were assumed to exhibit a hazardous characteristic when in fact they may not. The Agency used this conservative assumption to overcome data limitations (i.e., a lack of EP-toxicity test data for some facilities) and to demonstrate the estimated magnitude of compliance costs at potentially affected facilities. While actual impacts may be less widely distributed, EPA believes that the approach employed was a reasonable way of demonstrating potential impacts to industry under subtitle C, as contemplated by the Bevill Amendment. In addition, the assumption of hazardousness at all facilities and the associated cost estimates did not affect the regulatory determination in a meaningful way (as discussed further below).

2. *Corrective Action Costs.* Several commenters complained that EPA failed to consider the appropriate costs associated with corrective action. Many of these commenters stated that by ignoring corrective action requirements under RCRA sections 3004(u) and 3008(h), EPA was failing to fulfill its statutory obligation under the Bevill Amendment, which requires EPA to study the costs of regulating Bevill wastes under subtitle C. A few of these commenters recommended that EPA revise its cost estimates to reflect necessary corrective action. One of these commenters also indicated that EPA has the information required to determine at least the range of likely corrective action costs.

In response to these comments, EPA has analyzed corrective action issues in further detail and estimated corrective action costs at certain facilities. EPA focused this analysis on only those wastes for which corrective action costs might influence the final regulatory determination: Phosphogypsum and process wastewater from phosphoric acid production. These are the only wastes for which application of EPA's decision making methodology required EPA to consider potential regulatory compliance costs. If cost had been a factor in the decision for the other 18 wastes, inclusion of corrective action costs would only have added support to the Agency's determination not to regulate these 18 wastes under subtitle C.

EPA's corrective action analysis reflects the probable response to the predominant source and type of contamination that has been observed at phosphoric acid facilities, namely contamination of underlying ground-water aquifers by the routine operation of gypsum stack-cooling pond complexes. The response strategy examined by EPA involves the installation of a ground-water containment system consisting of extraction wells (in some cases supplemented by a slurry wall) around the entire stack-pond complex. In this manner, contaminants entering the subsurface would be removed, thereby preventing them from further contaminating the affected aquifer(s). This strategy assumes that over time, existing contaminants present in the ground-water system would be dilut[illegible] and/or attenuated to below MCLs (d[illegible] in part to the gradual rise in ground-water pH caused by eliminating the continuous introduction of acidic process wastewater to an unlined stack/pond system), thereby obviating the need for active aquifer remediation activities over the entire contaminated area. The Agency has identified the facilities that would likely experience corrective action (under either a modified subtitle C or D situation), and has estimated the costs of implementing the response strategy described here. Details regarding EPA's methodology and the results of the analysis are provided in a Technical Background Document that they may be found in the supporting docket for today's notice. In general, corrective action costs are relatively modest [4], contrary to the unsupported statements of many commenters, and comprise approximately ten percent of total annualized compliance costs at the individual facility level.

3. *Land Disposal Restrictions Costs.* EPA received several comments stating that the Agency did not include specific estimates of costs associated with land disposal restrictions as they would apply to mineral processing waste [illegible] and sectors. One of these commenters argued that in the "third third" rule, EPA designates stabilization as BDAT for treating metal-bearing wastes, yet the Agency does not include stabilization costs in its RTC cost estimates. This commenter further argued that EPA should have considered the additional on- and off-site disposal costs associated with acquiring additional land for disposal on-site and transportation costs to a remote location.

Contrary to these assertions, EPA did evaluate land disposal restrictions costs for some of the wastes addressed in the Report to Congress, including sludges. These materials were assumed to be cement stabilized prior to disposal in subtitle C landfills. Moreover, the resulting increase in the volume of the wastes in question was explicitly factored into EPA's analysis, by calculating the incremental landfill volume required, adjusting the landfill

[4] The annualized compliance costs (ACC) of EPA's corrective action strategy for the twelve potentially affected facilities range from approximately $2.0 million to $8.9 million under the Subtitle C-Mass scenario, and from about $[illegible] million to $5.7 million under the Subtitle D-[illegible] scenario.

design accordingly, and calculating the total cost of the necessary land disposal unit(s) for the wastes in question. In conducting the supplementary analysis of the phosphoric acid sector, the Agency also factored land disposal restriction costs (lime treatment) into the total costs for phosphogypsum disposal.

BDATs were not applied, and costs, therefore, were not calculated, for copper, lead, and zinc slags because of an assumption that slags, when generated, are similar to wastes that have been treated by vitrification (a BDAT). For this reason, stabilization was presumed to be an unnecessary management method for these wastes. (If stabilization is required, costs would increase, but this would not have affected the Agency's regulatory determination.) Transportation costs were not factored in for on-site management because data in EPA's possession and personal observations made during site visits to a substantial number of the facilities considered in the Report demonstrate that many, if not most, potentially affected facilities own land of adequate size contiguous with or close to their existing waste management units to construct new units of sufficient capacity.

4. *Costs Associated With Replacing Waste Management Units.* Some commenters argued that EPA failed to consider the costs associated with replacing subtitle C hazardous waste disposal facilities in the future (i.e., after the first operation is closed in year 15). These commenters suggested that such costs, when discounted to the present, are significant (i.e., on the order of 25 percent of the total compliance costs).

EPA acknowledges this comment to be true. A 15-year life without replacement of equipment or facilities was assumed for simplicity during the analysis. Data provided by facility operators in response to the 1989 SWMPF Survey and the Agency's understanding of relevant mineral commodity markets suggest that an assumed 15-year operating life is not unreasonable for some facilities. In other cases, however, it is unclear whether this is or is not a valid assumption. In those cases, the remaining life of the facilities cannot be predicted with accuracy. EPA acknowledges that in situations in which the facilities would continue to operate and would require new waste management units periodically, annualized compliance costs would increase over those reported in the RTC, even by 25 percent or more. In any event, such an increase does not effect today's regulatory determination.

5. *Accuracy of Cost Estimates.* EPA received several comments regarding the accuracy of its cost estimates. While many commenters argued that EPA provided inaccurate cost estimates for regulating the 20 special wastes, one commenter contends that, although EPA ignores many of the costliest elements of the subtitle C program, the Agency's economic analysis accurately demonstrates the high cost impacts of regulating Bevill wastes under subtitle C.

In its analysis, EPA employed an engineering design model and detailed cost analyses to develop realistic cost estimates of subtitle C regulation. After review of the comments and upon further analysis, EPA continues to stand by its cost estimates (as modified) as adequate and appropriate for their intended use as input to the regulatory determination, even though some cost considerations were excluded from the analysis for most wastes (e.g., corrective action). Furthermore, EPA notes that high costs alone are not determinative of appropriate regulatory status. Rather, the financial impact of such costs is the real measure of economic feasibility. Section F below provides additional comments on economic impacts.

6. *Maximum Flexibility.*

One commenter asserted that EPA should calculate subtitle C-Minus compliance costs on the basis of a realistic level of flexibility under RCRA section 3004(x) rather than on the maximum level of flexibility. Unless the maximum flexibility rules can be guaranteed, contends this commenter, firms may be faced with the unpalatable choice of investing in "maximum flexibility" waste disposal facilities in year one, only to find that they need "full subtitle C" facilities in year three.

As was clearly stated in the RTC, the purpose of EPA's evaluation of three regulatory scenarios was to demonstrate the range of potential compliance costs, not to articulate a new regulatory program (which was beyond the scope of the RTC). The Agency believes that using a hypothetical subtitle C-Minus scenario is appropriate for considering the feasibility of subtitle C regulation of special mineral processing wastes, because of the significant technical challenges that stringent regulation of special wastes (by definition) may pose. Moreover, the Agency believes that the "realistic" level of flexibility that may in fact be appropriate needs to be determined based on a detailed evaluation of site-specific conditions, which was not possible within the context of the RTC because of data limitations.

7. *Relative Costs of subtitle C, C-Minus, and subtitle D-Plus.* Several comments were submitted to EPA regarding the relative costs of the subtitle C, C-Minus, and subtitle D-Plus regulatory scenarios. Many of those who commented, recognizing the different cost implications of each scenario, encouraged a subtitle D determination, while others argued that because the differences in estimated costs among the scenarios for certain wastes are insignificant, a subtitle C determination should be promulgated. One commenter argues that with little cost difference, a subtitle C determination would offer greater environmental protection advantages. Another commenter stated that the differences between subtitle C-Minus and subtitle D-Plus regulation are likely to be especially apparent with respect to corrective action costs (which EPA did not include) because inclusion of the processing wastes under subtitle C-Minus may expose the facilities to the same corrective action requirements (and costs) as those under full subtitle C. This same commenter added that non-hazardous wastes should not be regulated under subtitle C (through application of corrective action) simply because such regulation is projected by EPA to be only slightly more costly than subtitle D regulations.

EPA responds that the cost of alternative management practices is but one of the study factors that EPA is required to consider; therefore, the regulatory determination is not being made on the basis of the comparative cost difference between subtitle C and D programs alone. The Agency does recognize that similar corrective action requirements might be applied under both subtitle C and C-Minus, and has examined the associated costs (as discussed above).

In addition, EPA notes that the regulatory scenarios that were used to estimate potential compliance costs were developed with consideration of the environmental protection that they would afford. Thus, it is not the case that subtitle C regulation necessarily would provide more environmental protection that the other scenarios considered. For example, in some cases, adequately protective design and operating standards for new waste management units under subtitle C-Minus and D-Plus have been defined by EPA to be identical.

F. Estimation of Economic Impacts

1. *Inaccurate Use of Price Data.* One commenter identified a specific concern

with EPA's use of estimated mineral prices in 1995, with no explanation as to how they were derived other than that they were reported by an EPA subcontractor. This commenter claimed that EPA did not verify its data by contracting industry sources.

Contrary to the commenter's claim, the Agency used industry experts retained for this purpose to estimate projected 1995 prices. Industry and affected facility input and review prior to the publishing of the RTC were not possible because of procedural constraints. Affected parties were, however, encouraged to review the RTC estimates during the public comment period. In response to comments received, EPA has in fact made corrections to the prices reported in the RTC for refined lead and merchant grade phosphoric acid, which had resulted from calculation and transcription errors; estimated impacts on the corresponding facilities and sectors have been revised in support of today's regulatory determination. As no alternative long-term price projections were suggested by commenters for the remaining primary mineral commodities, estimated long-term real prices remain as reported in the RTC.

Furthermore, the Agency notes two points that reduce the importance of the use or accuracy of the 1995 projected prices. First, while the prices are important in assessing the overall magnitude of the economic impacts, their accuracy will not greatly affect the difference between or relative impacts of subtitle C versus D regulation; that is, the magnitude of the impacts will be effected to a far greater extent than the relative differences between scenarios. Second, if the prices as used are potentially underestimated (in many cases, estimated 1995 prices are lower than current prices), the impacts in the RTC are overestimated because the estimated value of shipments (price multiplied by production quantity) would be smaller and the cost as a percentage of value of shipments, therefore, larger. This is the case for the majority of the sectors, and is consistent with EPA's objective of performing a conservative and defensible analysis. Only in the titanium tetrachloride sector were prices projected to increase significantly, raising the possibility that EPA's estimated value of shipments was overstated and the impacts on that sector were, therefore, underestimated. However, given the strength of that sector (as evidenced by the planned construction of several new domestic plants), EPA believes that the long-term projection of prices for that sector are reasonable and that impacts are not significantly understated.

2. *Impact on Industry.* Several commenters argued that industries producing primary copper, lead, zinc, and elemental phosphorus would be adversely affected by a subtitle C regulatory determination because the regulations would generate additional and substantial annual fixed costs that would have to be met regardless of market conditions. Several of these commenters argued that these costs are likely to remain fixed even in periods of slack demand, contributing to depressed profits during such periods. A few of these commenters further argued that a decreased profit margin would make the market less desirable to investors, thereby discouraging the overall economic growth of the industry.

EPA recognizes that increased costs that cannot be passed along reduce profits at all times, irrespective of market conditions. The costs of adequate environmental protection are, however, simply a component of the total cost of doing business. In trying to evaluate future trends and market conditions, the Agency did conduct qualitative analyses of sectors for which it believed the industry was subject to potentially significant compliance costs, and included the results of these analyses in the RTC. For example, the impacts discussions for the copper, ferrous metal, lead, phosphoric acid, titanium tetrachloride, and zinc sectors included examinations of both the present and future general competitive position of domestic producers, and the potential for compliance cost pass-through (discussed more fully below). EPA believes that its discussion of future trends and market conditions has adequately addressed the concerns regarding long-term impacts.

3. *Pass-Through Potential.* Several commenters indicated that EPA should not assume that the mineral processing industry can pass on the costs of new regulatory requirements to the product consumer in the form of higher prices. A few of these commenters noted that the world market sets the commodity prices; if American producers raise their prices, consumers will look to international markets, where products could be obtained at lower prices. These commenters agreed that higher pricing on mineral processing products could be devastating to the industry.

EPA understands that higher prices in any market can cause adverse impacts on the affected industry. EPA believes, however, that the commenters' suggestions that all mineral processors in all commodity sectors are "price takers" having no ability to pass on cost increases and therefore having to absorb them internally, is demonstrably untrue.

In general, the pass-through of compliance costs follows the path of least market resistance. Where all facilities in the affected sector face similar compliance costs and produce commodities for which there are few alternative supply sources or substitute materials, there is a high likelihood that moderate compliance costs can be passed forward in the form of higher product prices. On the other hand, where only a small proportion of facilities in a sector are affected, or alternative supplies or substitute materials are abundant, the opposite may be true. Similar possibilities exist in input and labor markets where the regulated sector may be able to negotiate wage or price concessions in order to remain in operation or continue operating at current levels. In all cases, the ability to pass through compliance costs depends on the initial incidence of compliance costs within the affected sector and the concentration and interdependency of buyers and sellers in relevant input and product markets. In the RTC, EPA discussed the market factors that, in combination, determine the extent to which regulatory compliance costs can be passed thr for each affected commodity sector. general, EPA found little substantive information or data in the comments received that suggested that the Agency's preliminary findings with respect to pass-through potential were incorrect.

II. Decision making Methodology for the Regulatory Determination

One commenter argued that EPA's second approach, which recommends that the Agency not regulate any of the wastes studied in the RTC as hazardous because of the potential for improved state mineral processing programs, is not authorized by the statute, is factually insupportable, and unlawful, adding that the authority for EPA's second approach does not arise from the study factors in section 8002(p) of RCRA and that EPA's regulatory determination must be directed by the specific provisions of the Bevill Amendment. This commenter further argued that states cannot regulate mineral processing wastes adequately without a national hazardous waste designation, stating that there are no federal programs for nonhazardous waste in place and no statutory authority to ensure that state nonhazardous w programs adequately regulate mine

processing wastes. This same commenter stated that EPA's assertions in the RTC about the success of individual state mineral processing waste management control efforts are uncertain and impossible to assess at the present, and therefore cannot support the use of EPA's second approach. In addition, this commenter stated that by delaying regulatory action with EPA's second approach, EPA would substantially undermine the two principal objectives of RCRA: Overall protection of human health and the environment and the minimization of generation and land disposal of hazardous waste. Finally, the commenter argued that if the Agency decides to consider factors beyond the eight listed in section 8002(p), then it must consider all objectives and goals of the RCRA statute, not just a select few.

On the other hand, several commenters encouraged EPA to apply Approach 2 to its regulatory determination, stating that the development and maintenance of strong state programs and federal regulations under other statutory authorities is, in fact, mandated by RCRA. These commenters further argued that the flexibility offered by Approach 2 for regulation of the mineral processing industry is essential to its continued strength and growth, which the Bevill Amendment was enacted to ensure. Other commenters argued that the "other factors" discussed for Approach 2 were, in fact, embodied in the study factors and should be considered in Approach 1.

As was stated in section II of this preamble, EPA generally agrees that its regulatory determination should be based on the eight study factors outlined in section 8002(p) of RCRA, as embodied in the Report to Congress, as well as the public comments and additional information received in response to the Report (and developed by EPA to supplement the Report in response to comments). EPA also agrees that, to the extent that the Agency were otherwise to conclude that subtitle C regulation was warranted based upon consideration of all of these factors and information, that it would be improper to look outside the Report to Congress, public comments, and supplemental technical information to justify a different determination. Therefore, EPA has decided not to employ Approach 2 as outlined in the Report to Congress in making today's regulatory determination, and has instead employed an Approach 1 methodology (modified slightly, as discussed in the main text).

EPA also agrees somewhat with commenters who asserted that the so-called "additional factors" upon which Approach 2 was based are, in large part, already embodied within the contours of the inquiry that Congress intended for EPA to make in the Report and regulatory determination. The Report identifies (1) the development and maintenance of strong state mining and mineral processing regulatory programs, and (2) the facilitation of an integrated federal mining regulatory program as the key considerations under Approach 2. Section 8002(p)(5) instructs EPA to consider "alternatives to current disposal methods" as a factor in developing the Report and regulatory determination. Certainly, consideration of alternative state regulatory schemes, in addition to federal schemes, is contemplated by this section. In addition, facilitation of a potential integrated federal mining program was actually considered by EPA in its cost estimates (reflected in the "subtitle D-Plus scenario").

Nonetheless, EPA does not believe that it should rely on possible improved state programs to determine that subtitle C is not warranted unless EPA is confident that such programs are being developed and can address the problems associated with mineral processing wastes that may pose a significant risk. Thus EPA disagrees that section 8002(p) requires EPA to consider these factors in any way that would supplant a decision the Agency makes under the decision making methodology outlined in Approach 1.

In any event, EPA notes that the issue is effectively moot. As discussed in the section III of this preamble, EPA has been able to make its regulatory determination for all 20 wastes on the basis of a slightly modified Approach 1 alone. Subtitle C was found not to be warranted for any of the wastes analyzed. Thus, even if EPA were to employ Approach 2 as originally conceived in the Report, it would not change any of the decisions made today.

III. Wastes for Which Regulation Under RCRA Subtitle D is Generally Supported

Nine of the twenty special mineral processing wastes studied in the Report to Congress were found to pose few if any risks to public health or the environment. EPA tentatively recommended a subtitle D regulatory determination for these wastes in its Report and continues to believe that subtitle C regulation is unwarranted. The Agency received no comments on the Report suggesting a contrary position. The nine wastes include: (1) Red and brown muds from bauxite refining; (2) gasifier ash from coal gasification; (3) process wastewater from coal gasification; (4) slag tailings from primary copper processing; (5) fluorogypsum from hydrofluoric acid production; (6) treated residue from roasting/leaching of chrome ore; (7) process wastewater from primary magnesium processing by the anhydrous process; (8) basic oxygen furnace and open hearth furnace slag from carbon steel production; and (9) iron blast furnace slag. Therefore, the Agency is today finalizing its decision, as proposed in the RTC, for these nine wastes.

IV. Wastes for Which the Regulatory Determination is Contested

EPA received numerous comments regarding the Report's recommended regulatory determination for 11 wastes: (1) Slag from primary copper processing; (2) slag from elemental phosphorus production; (3) air pollution control dust/sludge from iron blast furnaces; (4) air pollution control dust/sludge from basic oxygen furnaces and open hearth furnaces from carbon steel production; (5) phosphogypsum from phosphoric acid production; (6) process wastewater from phosphoric acid production; (7) slag from primary zinc production; (8) calcium sulfate wastewater treatment plant sludge from primary copper processing; (9) process wastewater from hydrofluoric acid production; (10) slag from primary lead production; and (11) chloride process waste solids from titanium tetrachloride production. As discussed in section I.C.3 of this preamble, the Report tentatively recommended, based on decision making Approach 1, that the first seven of these wastes be regulated under subtitle D, while the last four be regulated under either subtitle C or D, depending on the scenario modeled.

The comments focused on the Report's analysis of the section 8002(p) study factors for each of these wastes, as well as the Report's tentative conclusions. EPA received at least one comment arguing that subtitle C regulation of each of the 11 wastes is warranted. The Agency has considered each of the comments it received, sometimes conducting additional analyses in response, and all of the comments and additional information have been taken into account in developing this final regulatory determination. EPA's responses to these comments are in the supporting comment-response background document.

Appendix B—Analysis of and Response to Public Comments on the Notice of Data Availability

I. Engineering Feasibility and Cost of Alternative Management Practices for Phosphogypsum and Process Wastewater From Phosphoric Acid Production

A. Subtitle C-Minus and D-Plus Scenarios as the Basis for the Regulatory Determination

Twenty commenters questioned the appropriateness of using the Subtitle C-Minus and D-Plus scenarios as a basis for the regulatory determination. Specifically, the commenters contend that because these two scenarios are hypothetical and because regulatory requirements for the scenarios have not been established, the two scenarios cannot be used as a basis for a regulatory determination, and costs estimated for these two scenarios cannot be used to make a decision as to whether or not regulation under the existing subtitle C program is warranted. Furthermore, the commenters believed that the Agency assumption (and cost estimates resulting from that assumption) that certain sub-scenarios for management of process wastewater and/or phosphogypsum would be identical under a C-Minus scenario and a D-Plus scenario is illogical. The commenters concluded that EPA must make its decision between the subtitle C and subtitle D programs and not on variations (i.e., C-Minus and D-Plus) of the two programs.

EPA disagrees with these comments. Section 3004(x) of RCRA allows the Administrator to modify certain subtitle C requirements, *at his discretion*, so as to "take into account the special characteristics" of the wastes in question. Such modifications are "hypothetical" and have not been "established" to the extent that to date, none of the special wastes to which section 3004(x) applies have been regulated under RCRA subtitle C. As discussed at length in the RTC, the Subtitle C-Minus scenarios articulated in the RTC and in the Supplemental Analysis represent realistic (though maximal) application of the regulatory flexibility provided by the statute. The Agency has provided cost estimates for implementation of section 3004(x) flexibility because it believes that a tailored subtitle C program is less costly and may be less burdensome to industry so as to address the risks posed by phosphoric acid industry special wastes. The Agency recognizes that the contours of a prospective subtitle D program for mineral processing wastes have yet to be established. Nonetheless, EPA believes that for analytical purposes, it was appropriate to consider one possible approach to such a program, to estimate the costs and impacts that would result from implementation thereof, and to compare these estimates to those of the other regulatory scenarios, in order to develop an understanding of the potential differences between environmentally protective approaches to special wastes management under the provisions of the two potentially applicable portions of the RCRA statute. Finally, the fact that, in the Agency's view, adequately protective tailored approaches to waste management under subtitle C and subtitle D are very similar in terms of requirements and their costs does not in any way invalidate EPA's analysis. Rather, this suggests only that: (1) Current management controls are inadequate in some cases (as discussed at length in the RTC and elsewhere in today's notice, (2) that even under a Subtitle D program, certain site conditions and waste management practices (such as are found at many phosphoric acid plants) would require fairly stringent controls and changes in current practice to adequately protect the environment, and (3) that the flexibility afforded by section 3004(x) can be employed to develop management standards that are achievable while also ensuring protection of human health and the environment.

B. Technical Feasibility of Engineering Alternatives

The Agency received comments on several aspects of the feasibility of the engineering alternatives (discussed in the NODA). Several of the comments are summarized below; the remainder are addressed in the supporting comment response background document.

1. Use of Undemonstrated Technologies. Several commenters objected to EPA's presentation of engineering alternatives that incorporate certain technologies that are considered by the industry to be undemonstrated, unproven, and/or experimental. The commenters contend that waste management scenarios that utilize undemonstrated technologies cannot be used as alternatives to current waste management practices under the definition of section 8002(p) of RCRA. The commenters contend that each of the "Subtitle C compliance scenarios" (Engineering Alternatives 1, 2, and 7) incorporate one or more technologies that are not currently demonstrated in the industry as feasible. These technologies include the following:

- Segregation (hydraulic separation) of waste management units for pro[redacted] wastewater and phosphogypsum (Alternatives 1, 2, and 7);
- Neutralization of phosphogypsum slurry, disposal of limed gypsum on existing stacks, and return of transport water to the production process (Alternatives 1, 2, and 7);
- Recovery of fluosilicic acid from the reaction stage of phosphoric acid production (Alternatives 2 and 7); and
- Use of cooling towers and indirect cooling via heat exchangers to effect a closed-loop cooling system in lieu of a process wastewater cooling pond.

As an example of undemonstrated technology, the commenters stated that even though lime neutralization of process wastewater is used at some plants before NPDES-permitted discharge, neutralization of all process wastewater and subsequent recycle to the production process has not been successfully demonstrated at an existing plant. Because this technology and the other technologies are undemonstrated in the industry in the manner in which they are intended to be used in the engineering alternatives, the commenters argued that the subtitle C engineering alternatives cannot be used as a basis for a regulatory determi[redacted]n to regulate the industry under sub[redacted]C.

EPA largely disagrees with these comments. The commenters' proposed definition of "demonstrated" is extreme and contrary to long-standing Agency policy. While EPA agrees that there must be an expectation that a given technology will perform adequately if it is to serve as the basis for a regulatory decision, the Agency does not agree that current use of the technology in the industry being examined is necessary. In fact, it is very often the case that technologies and techniques that have been developed elsewhere for different purposes are used by the Agency for achievement of new pollution control standards. This type of "technology transfer" is at the very heart of such programs as Clean Water Act Effluent Guidelines development and establishment of Best Demonstrated Available Technology (BDAT) requirements under the RCRA Subtitle C Land Disposal Restrictions.

With regard to the specific technologies that comprise engineering alternatives 1, 2, and 7, EPA believes that most, if not all, of these technologies have been demonstrated in other industrial applications and that their technical feasibility is not i[redacted] question. The fact that they are n[redacted]t

use in the phosphoric acid industry is more reflective of an absence of strong regulatory controls and associated financial incentives than of the feasibility or availability of the technologies themselves. Specifically, EPA has at least anecdotal evidence that closed loop cooling and recovery of FSA from the reactor/flash cooler system have been successfully employed in other industries and in foreign phosphoric acid plants, respectively.

Moreover, EPA wishes to make clear that it believes that the commenters have misinterpreted the Agency's response to the statutory requirement to examine "alternatives to current disposal methods" and "the costs of such alternatives" (RCRA section 8002(p), study factors 5 and 6). As pointed out by the commenters, in the RTC, EPA discussed a number of alternatives to current waste management practices, focusing on techniques that have been applied on a commercial scale to reduce the quantity and/or toxicity of the special wastes considered in the Report. The intent of this discussion was to achieve *partial fulfillment of study factors 5 and 6 (potential utilization) by focusing on proven* means of source reduction and waste minimization as an alternative to on-site waste management. For most of the 20 special wastes considered in the RTC, opportunities for recycling and commercial use are quite limited, for various reasons. In contrast, EPA's approach to responding to the remainder of study factor 5 as well as study factor 6 was to articulate and estimate the costs of on-site waste management under alternative *regulatory* scenarios. The Agency believes that this context was and is the most relevant to the key decisions to be made (Subtitle C vs. Subtitle D regulation) based upon the findings of the RTC and subsequent analysis. Thus, there is no direct linkage between EPA's criterion for discussion of a waste management alternative or opportunity for utilization and the development and analytical implementation of the regulatory scenarios presented in the RTC and the Supplemental Analysis. Accordingly, EPA categorically rejects the commenters' assertion that a given technology, device, and/or practice must currently be in use within the domestic phosphoric acid industry in order for it to be considered "technically feasible." The Agency further rejects the commenters' suggestion that EPA's own methodology as articulated in the RTC compels such an approach, because commenters have misconstrued the Agency's analytical methods and underlying rationale.

The Agency acknowledges that there are significant uncertainties regarding the operational consequences of the lime treatment of phosphogypsum. Once again, however, commenters have based their arguments upon an inaccurate interpretation of EPA's analysis. The treatment of phosphogypsum contemplated in engineering alternatives 1, 2, and 7 assumes that the water being used to slurry the gypsum from the filter to the neutralization mixing basin would be *treated* process wastewater, not the "pond water" that is currently managed at active facilities.

Consequently, the laboratory test results reported by the commenters in support of their argument are, in the Agency's view, of questionable relevance, and by no means demonstrate that treated gypsum would present significant disposal and other operational problems.

Finally, EPA believes that the importance of the issue of segregation of the gypsum management and cooling water areas within a facility's waste management system has been overstated by the commenters. In the Supplemental Analysis, EPA discussed a number of different approaches for separately addressing contaminants contained in phosphogypsum slurry and contaminants condensed into cooling waters. In no case did EPA state (or even suggest) that a complete hydraulic separation between gypsum management units and cooling ponds would be either necessary or appropriate, even under a full subtitle C scenario. Indeed, the Supplemental Analysis recognizes that leachate will continue to be generated for many years from any existing gypsum stack. To the extent that this leachate or gypsum transport water (which would have been rendered non-hazardous under engineering alternatives 1, 2, and 7) might enter the cooling water pond, treatment or product recovery would occur through removal of this water to the treatment system or filter, respectively. In either case, "co-mingling" of separate hazardous wastes would not occur, obviating the need for complete hydraulic separation and any associated undesirable effects on plant water balance.

2. Feasibility of Lime Neutralization. Several commenters expressed doubt over the engineering feasibility of lime neutralization of both process wastewater and phosphogypsum, for several reasons, including the limited availability of lime to meet the demand that would be created and the formation of a silica gel that would interfere with waste management and production process operations.

Several commenters argued that the demand for lime imposed by any of the engineering alternatives that incorporate lime neutralization would place a severe burden on the United States lime production industry. The commenters stated that implementation of Engineering Alternative 1 (lime neutralization of all waste streams) would require the southeastern lime industry to triple its present capacity in the first year of implementation of the alternative to meet the additional demand. In addition to expressing their uncertainty over whether this demand could be met, the commenters also expressed concern over potential environmental impacts that the demand would create, including increased generation of carbon dioxide, increased fuel consumption, and the need for additional limestone strip mines.

In response to this comment, EPA has conducted additional analysis to determine whether implementation of Alternative 1 would impart significant impacts on lime supply, demand, and capacity within the relevant regions of the country. A description of this analysis and the results thereof may be found in the docket.[1] These results suggest several conclusions.

First, EPA agrees that adoption of engineering alternative 1 by the entire domestic industry would significantly increase the demand for lime in the regions of the country in which the active phosphoric acid plants are located, requiring an increase in lime production. In the western states (Idaho and Wyoming), this increase could probably be met through greater utilization of existing lime production capacity. In the south, uniform adoption of engineering alternative 1 would create demand in excess of regional supply, requiring shipments from other parts of the country (e.g., Ohio, Pennsylvania), installation of additional lime capacity, and/or imports of lime (probably from Mexico).

Second, the analysis of incremental lime demand presented by the commenters significantly overstates the impacts of new regulatory requirements, for several reasons. The estimates of lime demand presented by the commenters are substantially higher than EPA's estimates. Because the

[1] ICF Incorporated. 1991. Technical Background Document: Data and Analyses in Support of the Regulatory Determination for Special Wastes from Phosphoric Acid Production. Prepared for the Office of Solid Waste, US EPA.

reasons for this difference have not been adequately explained in the materials submitted to the Agency, EPA continues to believe that its lime consumption estimates for engineering alternative 1 are valid. Moreover, in comparing demand with supply, commenters were quite selective in terms of which states and lime plants were defined as being located within the same region as the phosphoric acid plants. EPA believes that lime produced in Virginia, Kentucky, Illinois, Indiana, Missouri, and Texas is also available (in a logistical and economic sense) to the potentially affected phosphoric acid facilities, particularly those located in Louisiana, Texas, and North Carolina. Therefore, the gap between potential demand and existing supply is substantially narrower than that suggested by the commenters.

Third, the Agency acknowledges that implementation of any alternative that substantially increased the demand for lime would result in increased energy consumption and releases of carbon dioxide, a "greenhouse" gas, to the atmosphere. Because many lime and limestone producers are operating at levels substantially below their capacity, however, EPA is not convinced that opening of additional limestone mines would necessarily be required to any significant degree as a result of implementation of the engineering alternatives, though additional production from existing mines would clearly be needed.

Finally, and most importantly, the comments focus on a worst-case scenario under which every plant would lime treat all of its special wastes. Under a tailored subtitle C (C-Minus) program, this is but one option among many. EPA believes that most facility operators, when provided with the incentive to comply in a least-cost manner, would develop alternatives to lime treating all of their wastes, thus greatly reducing the amount of lime required and the importance of this issue.

Commenters also stated that a colloidal silica gel would be created during the neutralization of process wastewater and phosphogypsum. The commenters argued that this gel is likely to remain in suspension in both the gypsum transport water and the cooling pond process wastewater, which may pose significant problems in the operation of plant equipment when these waters are returned to the production process. In particular, several commenters stated that the gel would potentially "blind" (clog) the phosphogypsum filter when the treated gypsum transport water is returned to the filter and reused as filter washwater, resulting in decreased efficiency, increased downtime, and lost production. Commenters also indicated that they were unaware of any demonstrated technology to remove the gel from the phosphogypsum filters.

EPA is not convinced that the catastrophic operational effects predicted by the commenters would occur on a widespread and continuing basis if lime treatment of the special wastes were to be instituted, particularly if FSA recovery were to be practiced. Commenters have assumed that the engineering alternatives contemplated by EPA would involve continual treatment of process wastewater and phosphogypsum as they are *currently* generated, when in fact the alternatives were developed to address management of new waste streams having different chemical characteristics resulting from treatment and/or product recovery. Therefore, the appropriate question is whether lime treatment of process wastewater that has *not* reached a high equilibrium concentration of chemical contaminants would result in significant gel formation, not whether lime treatment of currently generated "pond water" would create such operational problems.

Nevertheless, EPA does have some concerns about the efficacy of a lime treatment strategy. For example, the Agency recognizes that for a period of time (perhaps one to two years), treatment of existing pond water would occur. To the extent that gel formation took place, operational difficulties might be significant. Because, however, implementation of today's decision does not require that lime treatment be implemented, EPA does not believe that resolution of this issue (which would require additional research) is necessary prior to a determination of the appropriate regulatory status of the special wastes from phosphoric acid production.

3. Feasibility of Separate Management of Phosphogypsum and Process Wastewater. Commenters expressed concern over the technical difficulty inherent in separately managing phosphogypsum and process wastewater so that no hydraulic communication between the two "circuits" is permitted. Because the integrated management of these two wastes is employed at all existing facilities and is, according to the commenters, essential to maintaining a negative water balance (i.e., zero discharge through NPDES outfalls), the commenters believed that the separate management of these two wastes is an undemonstrated technology that cannot be used to support a regulatory determination. One commenter performed a computer modeling study to predict his facility's water balance under Engineering Alternatives 1 and 7 and predicted that separate management of process wastewater and phosphogypsum at the facility would require treatment and discharge of excess process wastewater. Commenters indicated that the potential increase in discharge created by segregated management would be contrary to the objectives of the Clean Water Act effluent guidelines as well as NPDES requirements for the industry. Furthermore, the commenters pointed out that the Agency addressed neither the feasibility nor the cost of implementing separate management of the wastes.

As discussed above, the Agency has never suggested that it would require complete hydraulic separation of the areas dedicated to gypsum disposal and process water cooling. In addition, the computer simulation results submitted by the commenter assume no changes or adjustments in the operation of the plant, an assumption that is contrary to standard industry practice. Plants continually monitor water balance and modify their water management activities as needed to comply with discharge limits and operational requirements. EPA has received no convincing evidence that suggests that a new water balance could not be developed for affected plants, though admittedly, new equipment and piping might be necessary in some situations. Accordingly, EPA believes that the potential impacts on plant water balance and associated regulatory significance of the issue as suggested by the commenters are substantially overstated.

4. Land Required To Implement Subtitle C Compliance Alternatives. Some commenters contend that adequate amounts of land are unavailable to implement the subtitle C compliance alternatives (Alternatives 1, 2, and 7); hence, the commenters stated that implementation of these alternatives under subtitle C is infeasible. The commenters contend that the implementation of these alternatives would require the construction of new waste management and treatment units and expansion of existing waste management units on land that is in addition to acreage already occupied at the facilities. Specifically, the commenters stated that in order to implement Alternative 1 (lime

neutralization of all waste streams), additional land would be required for: (1) Extra filter capacity; (2) lime receiving and slaking facilities; (3) a 50-acre gypsum transport water pond; (4) an additional 50 acres of cooling ponds; (5) a cooling water neutralization basin; (6) a larger stack; and (7) cooling water sludge ponds. Many of the facilities that commented claimed that they did not have enough land available to accommodate all of these units, and many of these facilities reported that they could not purchase adjacent property of sufficient size.

EPA continues to believe that the availability and cost of land needed for regulatory compliance are not critical issues. As discussed in more detail below, the Agency believes that the commenters' estimates of the size of new required waste management units are significantly overstated. Also, additional land required for many of the items listed by the commenters (e.g., extra filter capacity, lime receiving and slaking facilities, neutralization basin) is quite modest in extent, particularly within the context of the vast scale of a domestic phosphoric acid plant (all of which are hundreds or thousands of acres in size). Moreover, to the extent that substantial new acreage is required for additional waste management units, land could be acquired that was not adjacent to the facility, i.e., the units could be sited at some distance from the plant. EPA believes that the incremental costs of managing the phosphoric acid wastes in this manner would be modest because the wastes are already piped (in slurry and liquid form) considerable distances (hundreds of yards) at some plants. Therefore, the Agency believes that "extending the pipeline," even for several miles, is not a significant issue, from either a feasibility or cost standpoint.

C. Costs of Engineering Alternatives

The Agency received comments on several aspects of the estimated costs of the engineering alternatives. Several of these comments are summarized below; the remainder are addressed in the supporting comment response background document.

1. Operating Year. Commenters argued that EPA significantly understated the costs of the engineering alternatives by basing its calculation of annual incremental compliance costs per ton of P_2O_5 output on a 365-day production year. The commenters contend that it is not possible for phosphoric acid facilities to operate 365 days in a year and that, due to necessary maintenance, facilities operate, on average, 330 days per year.

Data submitted by individual facility operators in EPA's 1989 National Survey of Special Wastes from Mineral Processing Facilities demonstrate that most phosphoric acid plants operated for more than 350 days in 1988. Nonetheless, EPA recognizes that individual production lines within a given plant are subject to considerable down time for maintenance and repairs. Because the model plant used to evaluate the engineering alternatives in the Supplemental Analysis was based on a single production line, the Agency has revised its cost estimates to reflect the commenter's suggestion that a 330 day operating year be employed.

2. Capital Cost for Neutralization Sludge Ponds. Commenters argued that EPA seriously understated the capital cost of installing sludge disposal impoundments necessary to manage the calcium fluoride sludge that would be generated by lime neutralization of the cooling water component of process wastewater. The reasons given by the commenters are:

(1) EPA's capital cost was sufficient for only one year of sludge storage;

(2) The capital cost does not include the cost of acreage needed to provide adequate residence time for settling of solids in the treated cooling water; and

(3) Lining of the impoundment was not included and would be required.

EPA generally disagrees with this comment. The Agency recognizes that it did not provide complete information concerning engineering design assumptions in the Supplemental Analysis; this omission occurred because of extreme time constraints. EPA believes that many of the commenters' concerns arise from incorrect (though, in many cases, reasonable) inferences that they have made based upon the limited information that was available to them. First, the sludge settling/disposal impoundments referred to by the commenter were indeed designed to accommodate a 15 year accumulation of process wastewater treatment sludge. For engineering alternative 1, the impoundment was designed to contain 118,271,000 cubic feet of sludge (generation rate of 7.8 million cubic feet or 180 acre-feet per year). Using the same cost engineering model as employed for the RTC, EPA estimated that this impoundment would cover 64 acres (80 acres total, allowing for site preparation activities), and have a depth of 42 feet (14 foot dug out depth, 28 foot berm height).

Furthermore, as clearly stated in the Supplemental Analysis, the Agency believes that the volume of the sludge disposal impoundment (the vast majority of which would be available in the early years of operation) coupled with the large volume of the existing cooling pond, would provide adequate residence time for solids removal (settling) from the treated process wastewater stream. Commenters have provided no evidence or a rationale supporting their contention that EPA's assumptions in this regard might be invalid; EPA concludes, therefore, that its approach as described in the Supplemental Analysis was and is reasonable. Therefore, the Agency believes that the commenters' suggestion that the actual area required for treated process wastewater and sludge management (1,272 acres versus EPA's estimate of 80 acres) is significantly in error.

Finally, EPA does acknowledge that there is a distinct possibility that the sludge settling impoundments required under Alternative 1 would require composite liners, at least for facilities located in the State of Florida. Florida ground-water protection standards (which incorporate federal MCLs) allow individual permit writers, at their discretion, to require the installation of liners under new units to ensure adequate protection of the ground-water resource. Because the concentrations of lime-treated process wastewater contaminants such as sulfate and sodium are likely to be an order of magnitude or more above MCLs (they are *not* removed to any significant extent by lime treatment [2]), EPA has concluded that liners would probably be required as a permit condition for any CaF_2 sludge disposal impoundment(s) that would be built in Florida as part of a regulatory compliance strategy. Therefore, to the extent that such impoundments would actually be constructed in response to new regulations, EPA has underestimated the associated compliance costs in the Supplemental Analysis.

3. Cost of Separate Management of Phosphogypsum and Process Wastewater. The industry commenters stated that EPA failed to consider the capital costs and operating and maintenance costs involved with separately managing the cooling water and phosphogypsum slurry circuits. The commenters further contend that separate management of these waste streams would necessitate a major retrofit of current waste management units at existing production facilities.

[2] As depicted in the Supplemental Analysis, Exhibit 1, p. 12, and as suggested by numerous additional data submitted to the docket.

The commenters estimated that the cost necessary to separate the gypsum and cooling water circuits (capital cost) at EPA's model plant would be at least $10 million.

As discussed above, the Agency has never stated that it would require complete hydraulic separation of the areas dedicated to gypsum disposal and process water cooling. Accordingly, EPA does not believe that a plant retrofit to achieve separation of these areas would be necessary or required.

D. Economic Impacts of Alternative Waste Management Practices

In general, all of the industry commenters considered implementation of the various alternatives under subtitle C to be economically intractable. Based on their analysis of the economic impacts they believe would be imposed by the implementation of engineering alternative 1, the commenters concluded that: (1) Implementation of the alternative would eliminate the industry's export markets; (2) it is possible that foreign producers could penetrate the domestic market; and (3) incremental compliance costs could not be reasonably passed on to suppliers, workers, or consumers. The commenters believed that these conclusions would apply equally to impacts posed by engineering alternatives 2 and 7.

EPA recognizes that implementation of engineering alternatives 1, 2, and 7 under a subtitle C framework would impose cost impacts that might be difficult for members of the domestic industry to withstand. The real issue, however, is the magnitude and distribution of the impacts that might be imposed by tailored subtitle C standards. Under the Subtitle C-Minus scenario presented in both the RTC and the Supplemental Analysis, facilities could achieve compliance by adopting strategies to either contain or reduce/eliminate contaminants in their special wastes. Presumably, they would do so in a manner that minimized costs, given their own operational strategies and site-specific conditions. Therefore, the cost estimates provided in the Supplemental Analysis should be viewed as upper-bound estimates; it is likely that actual costs and associated impacts would be lower (at least on a per ton P_2O_5 basis) than those estimated for the model plant.[3] This fact, coupled with diminished relevance of the cost impacts of full subtitle C regulation, suggests that many of the claims made by commenters are overstated.

II. Other Wastes Addressed in the Notice of Data Availability

EPA received no comments on the additional information regarding gasifier ash and process wastewater from coal gasification. However, the Agency did receive two comments addressing the supplemental analysis of basic oxygen furnace dust/sludge from carbon steel production. The Agency has taken the comments into account in developing this final regulatory determination. EPA's detailed responses to the comments are available for inspection in the docket.

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[3] While this is true, estimated costs under the Subtitle D-Plus scenario are also very high.

SPA 11

RCRA REVISION CHECKLIST 91

Wood Preserving Listings
56 FR 27332-27336
June 13, 1991
(RCRA Cluster I, HSWA/Non-HSWA Rule)

Notes: 1) This Revision Checklist addresses an administrative stay of three wood preserving waste listings (F032, F034, and F035) made at 55 FR 50450 (December 6, 1990; Revision Checklist 82). Certain drip pad management standards, the inclusion of past users of chlorophenolic formulation in the listing description for certain F032 wastes, and the scope of waste water with respect to wastes that do not come into contact with preservative are also being stayed. EPA considers that both the F032 listing and the new Subpart W drip pad standards (when applied to the management of F032 wastes) are based on HSWA authority. This administrative stay defers EPA's implementation and enforcement of the HSWA-based requirements. On the other hand, the listings of F034 and F035, and the Subpart W drip pad standards that govern the management of these wastes, are considered to be based on pre-HSWA authority. For unauthorized States, the effect of this stay will also be to defer the EPA's implementation and enforcement of the F034 and F035 provisions. In authorized States, however, the non-HSWA requirements will not be applicable until the State modifies its program and obtains approval for the revisions from EPA. The F032 stay is an extension of a HSWA compliance date; States cannot adopt extensions beyond the Federal HSWA compliance dates. For the F034 and F035 listings, however, States could adopt reasonable compliance date extensions (e.g., stay schedules) that extend beyond the Federal stay dates announced in this rule.

2) States may elect to adopt wood preserving waste regulations with more stringent effective dates than those announced in this administrative stay. For this reason, Revision Checklist 91 is optional.

FEDERAL REQUIREMENT	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	MORE STRINGENT	BROADER IN SCOPE
PART 261 IDENTIFICATION AND LISTING OF HAZARDOUS WASTE					
SUBPART D - LISTS OF HAZARDOUS WASTES					
†,1 HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES					
revise waste codes "F032", "F034", and "F035" to include a parenthetic note concerning the administrative stay; add footnote concerning administrative stay	261.31(a)				

RCRA REVISION CHECKLIST 91: Wood Preserving Listings (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 W - DRIP PADS					
†,2 DESIGN AND OPERATING REQUIREMENTS					
add a note stating that the 264.572(a)(4) requirements are administratively stayed until further administrative action is taken	264.572(a)(4)				
PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES					
SUBPART W - DRIP PADS					
† DESIGN AND OPERATING REQUIREMENTS					
add a note stating that the 265.443(a)(4) requirements are administratively stayed until further administrative action is taken	265.443(a)(4)				

1 Note the Federal Register addressed by this checklist incorrectly refers to 261.31 rather than 261.31(a) as the place where the list of hazardous wastes from non-specific sources can be found. Revision Checklist 81 redesignates 261.31 as 261.31(a) and adds 261.31(b).

2 "264.572(a)(4)" will be redesignated as 264.573(a)(4) by 56 FR 30192 (July 1, 1991; Revision Checklist 92). Because of this redesignation, the administrative stay for this paragraph was incorrectly omitted in the July 1, 1991 CFR.

FR 91

federal register

Thursday
June 13, 1991

Part III

Environmental Protection Agency

40 CFR Parts 261, 264, and 265
Hazardous Waste Management System;
Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 264, and 265

[FRL-3963-6]

Hazardous Waste Management System: Identification and Listing of Hazardous Waste; Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

AGENCY: Environmental Protection Agency.

ACTION: Administrative stay.

SUMMARY: The Environmental Protection Agency is today announcing an administrative stay of the hazardous waste listings F032, F034, and F035 in process areas at wood preserving plants. The primary effect of the stay is to conditionally extend the effective date of the drip pad management standards to February 6, 1992, for the upgrade of existing drip pads and to May 6, 1992, for the installation of new drip pads. Certain management standards for drip pads, the inclusion of past users of chlorophenolic formulations in the listing description for certain F032 wastes, and the scope of wastewaters with respect to waters that do not come into contact with preservative are also being stayed.

DATES: Effective Date: June 5, 1991. For reporting deadlines, see section VI of this preamble.

ADDRESSES: The official record for this administrative stay is identified as Docket Number F-91-WPWS-FFFFF and is located in the EPA RCRA Docket, room M2427, 401 M Street SW., Washington, DC 20460. The public must make an appointment in order to review docket materials by calling (202) 475-9327. The docket is available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. The public may copy material from any regulatory docket at a cost of $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, toll free at (800) 424-9346, or at (202) 382-3000. For technical information concerning this notice, contact Edward L. Freedman, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 245-3657.

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

I. Background
II. Appropriate Effective Date for Drip Pad Standards
III. Substantive Standards for Drip Pads
IV. Pentachlorophenol Cross-Contamination
V. Scope of the Wastewater Listing
VI. Agency Action
VII. Effects On State Authorization
VIII. Paperwork Reduction Act

I. Background

On December 6, 1990, EPA promulgated regulations listing as hazardous various wastes generated from wood preserving processes that use chlorophenolic, creosote, and/or inorganic (arsenical and chromium) preservatives (55 FR 50450 (Dec. 6, 1990), adding hazardous wastes F032, F034, and F035 to the lists of hazardous wastes in 40 CFR 261.31). In addition, and of particular relevance for the present notice, the Agency promulgated standards for a new type of waste management unit, a drip pad (55 FR 50484-89, adding a new subpart W to parts 264 and 265 of the regulations). Drip pads receive drippage from treated wood immediately after the wood is removed from the treatment vessel. The pads are eligible for 90-day generator accumulation status under § 262.34 provided they are designed and operated in compliance with the subpart W standards (amended § 262.34(a)(2), 55 FR 50483-84). The standards vary somewhat for new and existing drip pads.

Because the rule was promulgated partially pursuant to the 1984 amendments and partially pursuant to preexisting authorities, the requirements take effect at different times in different states. As a HSWA rule, the F032 listing of various residues from wood preserving processes using, or that previously used, chlorophenolic formulations takes effect on June 6, 1991 in authorized and unauthorized States (55 FR 50469-70 and RCRA section 3001(e)). Drip pads used in connection with F032 wastes are likewise subject to the subpart W standards on June 6 in all States (*Id.* at 50470). The F034 and F035 listings and related management standards do not take effect immediately in authorized States since they were not adopted pursuant to HSWA (*Id.*).

II. Appropriate Effective Date for Drip Pad Standards

The first issue discussed in the present notice concerns the appropriate effective date for the drip pad standards. After the rule was promulgated, the American Wood Preservers Institute (AWPI), representing a significant segment of the wood preserving industry, conducted a survey to determine its members' ability to comply with the drip pad standards on June 6. Although results are somewhat fragmentary, it appears that a significant number of facilities subject to the June 6 date are unable to comply at that time. Extrapolation of the survey results in an estimate of 200 wood preserving facilities subject to the June 6 deadline (i.e. those managing F032 wastes, those in unauthorized States, and those in States authorized for the wood preserving rule), of which approximately 140 (70 percent) report that they are unable to comply on June 6.

The principal reasons cited for inability to comply are: (1) Difficulties in obtaining financing; (2) difficulties in obtaining a professional engineer's certification of compliance (see § 265.441(a), 55 FR 50487); and (3) difficulties in coordinating pad installation or upgrading activities with ongoing corrective action at the facility. In addition, there has been some discussion of difficulties in some climates of constructing pads during very cold or rainy seasons.

EPA has examined this information carefully, and conducted its own independent inquiries and site visits. The Agency's conclusion is that, although a significant percentage of facilities can comply with the June 6 effective date, a significant portion are unable to meet that date for legitimate reasons. In this regard, the Agency notes that it has phased in new design requirements for other types of regulated units to accommodate similar difficulties to those now facing certain wood preservers. See § 265.193(a) (phasing in secondary containment requirements for hazardous waste tanks); § 265.90(a) (groundwater monitoring requirements effective 18 months after promulgation date); 47 FR 16555 (April 16, 1982) (phasing in certain financial responsibility requirements). The Agency notes further that the issue of drip pad compliance effective date did not receive a great deal of attention during the rulemaking because the main focus of the industry's rulemaking comments challenged the need for listing these wastes at all, and also because the court-ordered November 15, 1990, promulgation date necessitated an expedited Agency review schedule.

III. Substantive Standards for Drip Pads

AWPI and other affected industry parties also questioned the

appropriateness of requiring new drip pads to be sealed with an impermeable coating and to have liners and leak detection systems as well. In their view, this level of control is either redundant or unnecessary. In addition, they questioned the technical feasibility of finding an impermeable sealer for some arsenical solutions.

IV. Pentachlorophenol Cross-Contamination

A further issue that concerns the wood preserving industry is the scope of the F032 listing (for wastes from processes using pentachlorophenol as a preservative). As promulgated, this listing includes wastes generated by creosote or CCA plants that previously used chlorophenolic formulations. Although the rules provide a procedure whereby an individual facility can demonstrate that cross-contamination is no longer occurring (in which case the wastes from the process would still be hazardous but classified under either the F034 or F035 waste codes), the industry argues that these procedures are potentially unnecessary and impracticable. Furthermore, by including potentially cross-contaminated wastes within the scope of the F032 listing, more facilities become subject to the June 8 deadline, since the F032 listing takes effect on that date in both authorized and unauthorized States since it is a HSWA rule. This increases the number of wood preserving facilities potentially unable to comply with the drip pad standards on that date.

V. Scope of the Wastewater Listings

The wood preserving industry further questioned the scope of the listing of wood preserving wastewaters. Among other points, they contend that certain wastewaters are not hazardous because the wastewaters do not come in contact with process contaminants, and maintain further that processes can be reconfigured to avoid contamination of other water, such as rainwater. Because the listing applies to all wastewaters, however, these efforts would be without point because all the wastewaters would remain hazardous (unless and until delisted).

VI. Agency Action

A. EPA has determined to issue an administrative stay of the applicability of the F032, F034 and F035 listings to the process area receiving drippage of these wastes, i.e., the area potentially covered by the subpart W drip pad standards. As explained below, this stay is available only for wood preserving facilities meeting certain conditions intended to limit the extension to those facilities making bona fide efforts to comply with the rule. For existing drip pads, the stay will remain in effect until February 6, 1992, and for new drip pads, the stay will remain in effect until May 8, 1992.

The Agency has selected these dates for the following reasons. The Agency believes that two months of time beyond the June 8, 1991, effective date is necessary for wood preserving plants to determine and report their definite intentions as to compliance with the rule. The Agency believes that up to three additional months will be required for all facilities intending to come into compliance to fully investigate and obtain the necessary funding required to retrofit existing pads and to construct new pads. The retrofitting of existing drip pads will require less time than the construction of new drip pads. Thus, the Agency has allowed up to three additional months for the retrofitting of existing drip pads and up to six additional months for the construction of new drip pads. These estimates are consistent with information supplied by the wood preserving industry. Based on these estimates, the Agency feels that final compliance dates of February 8, 1992, and May 8, 1992, are reasonable compliance dates for plants with existing drip pads and newly constructed drip pads, respectively.

The effect of the administrative stay is that activities that would otherwise constitute disposal of F032, F034, or F035 wastes into the process area, or onto existing drip pads in process areas, are not covered by the respective wood preservative waste listings during the duration of the stay. The stay is limited to the process area, however. Thus, the listings are not stayed for F032, F034, or F035 wastes, including soil contaminated with these wastes, that are removed from this area. (During the term of the administrative stay, such removal would be considered generation of an F032, F034, or F035 waste. 53 FR 31147–49 (August 17, 1988).)

As noted above, the Agency intends (and AWPI expressly agrees) that this limited stay should apply only to those facilities that intend to comply with the subpart W standards and that are willing to make bona fide efforts to do so during the stay period. It obviously makes no sense to extend the rule's compliance date for facilities simply desiring to continue operations that are environmentally unsound (such as operating without a drip pad or with defective pads) until they are forced to close. Consequently, the Agency is making the stay applicable only to those facilities that comply with the conditions described below. Failure to comply with these conditions means that the listings remain in effect, in which case process area drippage can only occur lawfully for facilities with compliant drip pads, or for facilities in compliance with requirements for land disposal of hazardous waste (or other units meeting applicable technical standards). It should be noted that all portions of the rule that are not stayed remain in effect. For example, the stay does not affect the March 6, 1991, 3010 notification deadline for generators and TSDs handling F034 and F035 in unauthorized states or F032 in all states. Thus, those generators and TSDs that were managing the forementioned wastes, that had not previously notified the Agency of hazardous waste activity, and that did not submit a 3010 notification to the Agency by the deadline are in violation of that requirement.

First, by August 6, 1991, all wood preserving facilities affected by the stay (i.e., those otherwise subject to the June 6 compliance date) must notify either the Agency's applicable Regional Office or an authorized state of their intention to follow one of four courses of action: (1) To upgrade an existing drip pad by February 6, 1992; (2) to install a new drip pad by May 6, 1992; (3) the facility already has installed a drip pad in compliance with subpart W; or (4) the facility will cease operation by August 7. A facility notifying that it intends to cease operation must cease operation by August 7 or its drippage in the process area becomes subject to all applicable subtitle C regulations. The drip pads already installed in compliance with subpart W are not subject to regulation until February 6, 1992, and owners and operators of such pads need not submit any further notification to the Agency other than the August 6 notice. Facilities notifying that they intend to comply by February 6, 1992, or May 6, 1992, must further state that they will use best efforts to minimize drippage that occurs during the duration of the stay.

Second, on November 6, 1991, facilities intending to comply with drip pad standards must submit a second notification providing evidence that they are making good faith efforts to comply and have a reasonable expectation of doing so. To make this showing, the notification must include an estimate of the cost of compliance, and evidence of financing to pay this expense. Evidence could take the form of an agreement with a bank or other lending institution, or an escrow account dedicated to paying for installation of drip pads.

Persons unable to make this demonstration would have to cease operation by November 7, 1991. (The scheme is somewhat similar to the statutory loss of interim status provisions which required certain facilities to certify that the facility was in compliance with financial responsibility and groundwater monitoring requirements by a particular date or to cease operation (RCRA section 3005(e)(2)]). EPA repeats that the rule remains in effect for persons who do not comply with these conditions. EPA or the state, as appropriate, may in its discretion, allow a facility to operate beyond the November 6, 1991, deadline: *provided*, that (1) The respondent demonstrates that it cannot meet the November 6, 1991, deadline because of circumstances entirely beyond its control, despite its best efforts to comply (e.g., its impossibility of performance is due to corrective action being undertaken at the wood preserving facility pursuant to a federal or state order or permit), and (2) such authorization to operate is set forth in an enforceable compliance order.

B. EPA has also decided to issue a stay of the requirement that new drip pads be sealed, coated, or covered with an impermeable material (§ 264.572(a)(4), § 265.443(a)(4)). The Agency is taking this step because we are now convinced that this requirement is unnecessary for pads constructed with a liner and leak detection system provided the pad is maintained in good condition with actions taken to remedy any cracks that may develop. The liner would provide secondary containment, thus fulfilling the Agency's object in developing management standards for drip pads (55 FR at 50453). We consequently are staying this requirement. Thus, on May 6, 1992 (i.e., the date when new pads must comply with the regulatory standards), new pads will not be required to be sealed, coated, or covered with an impermeable material. EPA also intends to initiate rulemaking to determine whether to make this a permanent regulatory change.

EPA intends, however, that this requirement remain in place for existing pads, once those pads are required to comply with the regulatory standards, because few (if any) existing pads are known to have liner and leak detection systems that comply with the subpart W standards. Thus, on February 6, 1992, existing pads must be sealed, coated, or covered with an impermeable surface. Because existing pads need not have liner and leak detection systems (§§ 264.571, 265.441) the requirement of an impermeable surface is necessary to provide secondary containment. (The Agency has determined that commercially available sealants exist that would be appropriate for use at the pH of preservative solutions used by the wood preserving industry.)

C. The Agency is also staying the portion of the rule that included wastes from plants generating F034 or F035 wastes that previously used chlorophenolic formulations as within the scope of the F032 listing. Upon reflection, the Agency realizes that structuring the rule in this way is not serving any useful environmental purpose. Wastes from creosote or inorganic arsenical wood preserving processes that previously used chlorophenolics are already classified as hazardous under the F034 or F035 listings. The regulatory standards for F032, F034, and F035 wastes are identical, so that the F032 listing does not carry with it a stricter regulatory regime (55 FR at 50467). The only immediate regulatory consequence of the F032 listing for these plants is to make more facilities subject to the June 6 compliance date. As explained above in the discussion on compliance dates for drip pads, this consequence has negative features because many facilities that can comply with the drip pad standards with some additional time appear unable to do so by June 6 for legitimate reasons. Since the F032 listing does not result in different substantive regulation for the wastes other than the timing of the effective date, EPA has decided to stay the scope of the F032 listing so that it does not cover wastes from creosote or inorganic arsenical plants that previously used chlorophenolic preservatives as long as any wastes from that plant are regulated as F034 or F035 wastes. EPA also intends to initiate rulemaking to determine whether to permanently amend the F032 listing.

The Agency notes, however, that the issue of chlorophenolic cross-contamination will be relevant when EPA establishes treatment standards for the F032, F034 and F035 wastes under the land disposal restrictions program. The fact that a waste may be classified as F034/F035 rather than F032 does not prevent the Agency from promulgating treatment standards for the chlorophenolic formulation, and the various dioxins and furans that may be present in these wastes as a result of equipment cross-contamination. Thus, the Agency anticipates including standards for these constituents in all of the treatment standards for the listed wood preserving wastes.

D. Finally, EPA has decided to stay the listing of wastewaters so that the listing applies only to wastewaters that have come in contact with process contaminants, i.e., wood preservative solutions, spent preservatives, and the like. It is these process contaminants that make the wastewater hazardous, and the Agency did not intend for the listing to apply to uncontaminated wastewaters (see 56 FR 21955, May 13, 1991). Thus, if wastewaters are kept uncontaminated, they will not be (and should not) be covered by the listing. EPA intends to initiate rulemaking to determine whether to make this a permanent regulatory change.

Any wood preserver claiming that wastewater has not come in contact with process contaminants would have the burden of proving that this is the case. This is because the details of plant operation, and in particular wastewater management, are within the special knowledge of the wood preserving facility. See 50 FR at 643 (January 4, 1985) and cases there cited. The best (and perhaps only) way of showing no contamination would be to segregate uncontaminated waters (for example, non-contact cooling water) from normal process wastes and process areas. Such segregation also serves a useful waste minimization function by reducing the total volume of contaminated wastewater. Thus, the Agency views today's action as creating an incentive for waste minimization. Conversely, however, the Agency notes that if initially uncontaminated wastewater is mixed with contaminated wastewater (as in a centralized wastewater treatment system) or with process contaminants (such as rainwater falling on a process area drip pad), then the entire volume of wastewater is hazardous because of the mixture rule.

E. EPA is issuing this administrative stay pursuant to 5 U.S.C. 705 which provides that an agency may postpone the effective date of action taken by it when justice so requires, pending judicial review.[1] The Agency believes that this standard is satisfied here because it appears to be legitimately infeasible for a significant number of wood preserving facilities to comply with the drip pad standards by June 6.

In addition, the sealant requirement for new drip pads appears unnecessary and could add to the time needed to comply with drip pad standards. Inclusion of potentially cross-contaminated wastes within the F032 listing does not serve any direct

[1] AWPI has filed a petition for review of the December 6 rule.

regulatory purpose (given the uniform regulatory standards for F032, F034, and F035 wastes), and causes more facilities to be subject to the June 6 effective date with which they may be unable to comply. Inclusion of uncontaminated wastewaters within the scope of the listing is not necessary to further any legitimate environmental objective, and so should legitimately be stayed.

At the same time, the administrative stay is structured so as to prevent environmental abuses from uncontrolled drippage during the pendency of the stay, and is further structured to be available only to facilities making bona fide efforts to comply. A significant number of wood preservers thus could be harmed irreparably should the drip pad standards take effect on June 6. The conditions on the administrative stay, plus structuring the duration of the stay to allow time for clean-up of drippage contamination in existing process areas, also assures that the stay will be in the public interest. The Agency consequently finds that issuing this stay is in the interests of justice.[2]

VII. Effects on State Authorization

The effects of the administrative stay depend largely on whether the facility is managing a wood preserving waste identified by a HSWA-based listing (i.e., the F032 wastes), as opposed to the newly listed wastes (F034 and F035) for which the listing determinations were based on pre-HSWA authority.

As explained earlier, EPA considers that both the F032 listing and the new subpart W drip pad standards (when applied to the management of F032 wastes) are based on HSWA authority. As EPA explained in the December 6, 1990 notice (see 55 FR 50469), the HSWA-based F032 listing and related subpart W facility standards take effect simultaneously in all States, regardless of their authorization status. With respect to these HSWA-based requirements, the effect of the administrative stay is to defer in all States EPA's implementation and enforcement of these requirements beyond June 6, 1991, in accordance with the administrative stay schedule. According to the schedule for State program revisions contained in 40 CFR 271.21(e), the December 6, 1990 Wood Preservation Rule is subject to a July 1, 1992 deadline (July 1, 1993 if a statutory change is required) for States to modify their hazardous waste programs and thereafter seek approval from EPA for the program revision. Since the administrative stay would not extend any effective dates beyond May 6, 1992, EPA considers it very unlikely that any State will have received approval from EPA to implement the December 6, 1990 regulation under RCRA authority with earlier or more stringent effective dates than those set out in this stay. Nevertheless, States may modify their hazardous waste programs to adopt the Wood Preservative Rule in the interim. While EPA encourages States to follow the deferred effective dates announced in this stay, States may elect to implement the rule with effective dates earlier than those imposed under this stay, as a matter of State law.

In the case of facilities managing F034 and F035 wastes, the effect of the stay depends on whether the facility is located in an authorized or unauthorized State. The F034 and F035 listing determinations were promulgated pursuant to pre-HSWA authority, and EPA considers the subpart W drip pad standards that govern the management of F034 and F035 wood preserving wastes to also be based on pre-HSWA authority. According to the December 6, 1990 Rule notice, these wastes listings and facility standards would have been effective on June 6, 1991 only in those States that are not authorized for any part of RCRA. EPA implements the RCRA program in unauthorized States, and the effect of this stay will be to defer EPA's implementation and enforcement of the Wood preserving Rule's F034 and F035 provisions in accordance with the administrative stay schedule.

In authorized States, the pre-HSWA basis for the F034 and F035 listings (and related subpart W drip pad standards) means that these requirements cannot be implemented as RCRA requirements until the State has adopted the necessary program modifications and obtained approval for the necessary program modifications and obtained approval for the revisions from EPA. The modification schedule in 40 CFR 271.20(e) requires that States modify their programs by July 1, 1992 (July 1, 1993 if a statutory change is required) to adopt this regulation and thereafter seek approval of the revisions from EPA. Since the stay does not extend any effective dates beyond May 6, 1992, it is unlikely that States will become authorized for the F034 and F035 listings and facility standards before the deferred effective dates in the stay have already passed. However, facilities in both authorized states and unauthorized states should understand that states may adopt and implement wood preserving regulations as a matter of state law, prior to obtaining EPA approval. While EPA strongly encourages States to follow the deferred effective dates announced in this stay, States may elect to adopt wood preserving waste regulations with more stringent (e.g., earlier) effective dates than those announced in this administrative stay.

VIII. Paperwork Reduction Act

The information collection requirements in this rule have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. The OMB approval number is 2050-915. The public reporting burden for the wood preserving rule (as published in the Federal Register on December 6, 1990), inclusive of the reporting requirements in this administrative stay, is estimated to result in a total of 271 hours per facility per year. The burden prior to this administrative stay was estimated to average 272 hours per facility per year.

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 St. SW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503 marked "Attention: Desk Officer for EPA."

Dated: June 5, 1991

F. Henry Habicht,

Acting Administrator.

List of Subjects

40 CFR Part 261

Hazards materials, Waste treatment and disposal, Recycling.

40 CFR Part 264

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal.

[2] Although the Agency does not regard today's action as a rule, were it to be viewed as a rule the Agency believes that there is good cause for issuing it without prior notice and opportunity for comment and for making it immediately effective. This is borne out by the pending compliance date and infeasibility of compliance for a substantial number of facilities, and means of conditioning the stay to assure continued protection of human health and the environment. In addition, EPA has sought and obtained comment on this action not only from the wood preserving industry but from members of the environmental community and the waste treatment industry as well. There also was opportunity to comment on all of these issues during the rulemaking itself, so that further comment may be unnecessary.

40 CFR Part 265

Air pollution control, Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal, Water supply.

For the reasons set out in the preamble, title 40, chapter I is amended as set forth below.

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 261.31 is amended by revising the F032, F034, and F035 listings to read as follows:

§ 261.31 Hazardous wastes from [redacted] specific sources.

• • • • • •

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
•	• • • • • • •	
F032 [1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.).	(T)
F034 [1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.).	(T)
F035 [1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.).	(T)

[1] The F032, F034, and F305 listings are administratively stayed with respect to the process area receiving drippage of these wastes provided persons desiring to continue operating notify EPA by August 6, 1991 of their intent to upgrade or install drip pads, and by November 6, 1991 provide evidence to EPA that they have adequate financing to pay for drip pad upgrades or installation, as provided in the administrative stay. The stay of the listings will remain in effect until February 6, 1992 for existing drip pads and until May 6, 1992 for new drip pads.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

3. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

4. Section 264.572 is amended by revising paragraph (a)(4) to read as follows:

§ 264.572 Design and operating requirements.

(a) • • •

(4) Be impermeable, e.g., concrete pads must be sealed, coated, or covered with an impermeable material such that the entire surface where drippage occurs or may run across is capable of containing such drippage and mixtures of drippage and precipitation, materials, or other wastes while being routed to an associated collection system.

Note: The requirement that new drip pads be impermeable, e.g., that new drip pads be sealed, coated, or covered with an impermeable material is administratively stayed. The stay will remain in effect until further administrative action is taken.

• • • • •

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

5. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

6. Section 265.443 is amended by revising paragraph (a)(4) to read as follows:

§ 265.443 Design and operating requirements.

(a) • • •

(4) Be impermeable, e.g., concrete pads must be sealed, coated, or covered with an impermeable material such that the entire surface where drippage occurs or may run across is capable of containing such drippage and mixtures of drippage and precipitation, materials, or other wastes while being routed to an associated collection system.

Note: The requirement that new drip pads be impermeable, e.g., that new drip pads be sealed, coated, or covered with an impermeable material is administratively stayed. The stay will remain in effect until further administrative action is taken.

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[FR Doc. 91-13954 Filed 6-12-91; 8:45 am]

BILLING CODE 6560-50-M

ATTACHMENT B

Updates to the State Authorization Manual (SAM)

Tables G-1 and G-2

The following pages (numbered 4 through 29)
should replace pages 4 through 27 of
SAM Appendix G

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER
Through June 30, 1991

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		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[2])		
1	1	Biennial Report (See Revision Checklist 30)	48 FR 3977	1/28/83
2	2	Permit Rules; Settlement Agreement	48 FR 39611	9/1/83
3	3	Interim Status Standards; Applicability (See Revision Checklist 10 in Non-HSWA Cluster I)	48 FR 52718	11/22/83
4	4	Chlorinated Aliphatic Hydrocarbon Listing (F024)	49 FR 5308	2/10/84
5	5	National Uniform Manifest (See Revision Checklists 17 D & 32 in HSWA Cluster I)	49 FR 10490	3/20/84
6	†6	Permit Rules; Settlement Agreement	49 FR 17716	4/24/84
7	†7	Warfarin and Zinc Phosphide Listing	49 FR 19922	5/10/84
8	†8	Lime Stabilized Pickle Liquor Sludge	49 FR 23284	6/5/84
		Non-HSWA Cluster I (July 1, 1984 - June 30 1985; Due Date - July 1, 1986[2])		
AI		State Availability of Information	HSWA §3006(f)	11/8/84
9	†9	Household Waste	49 FR 44978	11/13/84
10	10	Interim Status Standards; Applicability	49 FR 46094	11/21/84
11	11	Corrections to Test Methods Manual	49 FR 47390	12/4/84
12	†12	Satellite Accumulation	49 FR 49568	12/20/84
13	13	Definition of Solid Waste	50 FR 614	1/4/85

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster I (cont'd)		
13.1	(13)[3]	[Definition of Solid Waste; Correction (Included on Revision Checklist 13 in Non-HSWA Cluster I)]	50 FR 14216	4/11/85
15	15	Interim Status Standards for Treatment, Storage, and Disposal Facilities	50 FR 16044	4/23/85
		Non-HSWA Cluster II (July 1, 1985 - June 30, 1986; Due Date - July 1, 1987[2])		
13.2	(13)	[Definition of Solid Waste; Correction (Included on Revision Checklist 13 in Non-HSWA Cluster I)]	50 FR 33541	8/20/85
24	24	Financial Responsibility; Settlement Agreement (See Revision Checklist 24 (Amended) in Non-HSWA Cluster VI)	51 FR 16422	5/2/86
26	†26	Listing of Spent Pickle Liquor (K062)	51 FR 19320	5/28/86
		Non-HSWA Cluster III (July 1, 1986 - June 30, 1987; Due Date - July 1, 1988[2])		
MW		Radioactive Mixed Waste (See SPA 2)	51 FR 24504	7/3/86
27	†27[4]	Liability Coverage; Corporate Guarantee (See Revision Checklist 43 in Non-HSWA Cluster IV)	51 FR 25350	7/11/86
28N	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 Revision Checklist 28 in HSWA Cluster I)	51 FR 25422	7/14/86
29	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

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

STATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster III (cont'd)		
28N.1	(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
26.1	(26)	[Listing of Spent Pickle Liquor; Correction (Included on Revision Checklist 26 in Non-HSWA Cluster II)]	51 FR 33612	9/22/86
35	35	Revised Manual SW-846; Amended Incorporation by Reference	52 FR 8072	3/16/87
36	36	Closure/Post-closure Care for Interim Status Surface Impoundments	52 FR 8704	3/19/87
37	37	Definition of Solid Waste; Technical Corrections	52 FR 21306	6/5/87
38	38	Amendments to Part B Information Requirements for Land Disposal Facilities	52 FR 23447	6/22/87
		Non-HSWA Cluster IV (July 1, 1987 - June 30, 1988; Due Date - July 1, 1989[2])		
40	40	List (Phase 1) of Hazardous Constituents for Ground-water Monitoring	52 FR 25942	7/9/87
41	41	Identification and Listing of Hazardous Waste	52 FR 26012	7/10/87
26.2	(26)	(Spent Pickle Liquor from Steel Finishing Operations (See footnote 1, Revision Checklist 26 in Non-HSWA Cluster II)	52 FR 28697	8/3/87
38.1	(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

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster IV (cont'd)		
43	†43[4]	Liability Requirements for Hazardous Waste Facilities; Corporate Guarantee (See Revision Checklist 27 in Non-HSWA Cluster III)	52 FR 44314	11/18/87
45	45	Hazardous Waste Miscellaneous Units (See Revision Checklist 59 in Non-HSWA V for technical corrections)	52 FR 46946	12/10/87
24.1	(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
46	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
		Non-HSWA Cluster V (July 1, 1988 - June 30, 1989; Due Date - July 1, 1990[2])		
49	†49	Identification and Listing of Hazardous Waste; Treatability Studies Sample Exemption	53 FR 27290	7/19/88
51	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

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

SWATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster V (cont'd)		
52N	52	Hazardous Waste Management System; Standards for Hazardous Waste Storage and Treatment Tank Systems (Supersedes certain portions of Revision Checklist 28 in Non-HSWA Cluster III; also see Revision Checklist 52 in HSWA Cluster II)	53 FR 34079	9/2/88
53	53	Identification and Listing of Hazardous Waste; and Designation, Reportable Quantities, and Notification	53 FR 35412	9/13/88
54	†54	Permit Modifications for Hazardous Waste Management Facilities	53 FR 37912	9/28/88
55	55	Statistical Methods for Evaluating Ground-Water Monitoring Data from Hazardous Waste Facilities	53 FR 39720	10/11/88
54.1	(54)	[Permit Modifications for Hazardous Waste Management Facilities (Included on Revision Checklist 54 in Non-HSWA Cluster V)]	53 FR 41649	10/24/88
56	†56	Identification and Listing of Hazardous Waste; Removal of Iron Dextran from the List of Hazardous Wastes	53 FR 43878	10/31/88
57	†57	Identification and Listing of Hazardous Waste; Removal of Strontium Sulfide from the List of Hazardous Wastes	53 FR 43881	10/31/88
58	†58	Standards for Generators of Hazardous Waste; Manifest Renewal	53 FR 45089	11/8/88
59	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	60	Amendment to Requirements for Hazardous Waste Incinerator Permits	54 FR 4286	1/30/89

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster V (cont'd)		
61	†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
		Non-HSWA Cluster VI (July 1, 1989 - June 30, 1990; Due Date - July 1, 1991[2/])		
64	†64[5/]	Delay of Closure Period for Hazardous Waste Management Facilities	54 FR 33376	8/14/89
65	65	Mining Waste Exclusion I	54 FR 36592	9/1/89
67	67	Testing and Monitoring Activities	54 FR 40260	9/29/89
70[6/]	70	Changes to Part 124 Not Accounted for by Present Checklists		
	(70)	Environmental Permit Regulations; RCRA Hazardous Waste; SDWA Underground Injection Control; CWA National Pollutant Discharge Elimination System; CWA Section 404 Dredge or Fill Programs; and CAA Prevention of Significant Deterioration (See Revision Checklist 70 in Non-HSWA Cluster VI)	48 FR 14146	4/1/83
	(70)	Hazardous Waste Management System; Permit Program; Requirements for Authorization of State Programs; Procedures for Decisionmaking; Identification and Listing of Hazardous Waste; Standards for Owners and Operators of Hazardous Waste Storage, Treatment, and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Storage, Treatment, and Disposal Facilities; Correction (See Revision Checklist 70 in Non-HSWA Cluster VI)	48 FR 30113	6/30/83

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		Non-HSWA Cluster VI (cont'd)		
	(70)	Underground Injection Control Program; Hazardous Waste Disposal Injection Restrictions; Amendments to Technical Requirements for Class I Hazardous Waste Injection Wells; and Additional Monitoring Requirements Applicable to All Class I Wells (See Revision Checklist 70 in Non-HSWA Cluster VI)	53 FR 28118	7/26/88
	(70)	Safe Drinking Water Act; National Drinking Water Regulations; Underground Injection Control Regulations; Indian Lands (See Revision Checklist 70 in Non-HSWA Cluster VI)	53 FR 37396	9/26/88
	(70)	National Pollutant Discharge Elimination System Permit Regulations (See Revision Checklist 70 in Non-HSWA Cluster VI)	54 FR 246	1/4/89
24A	24[7] (Amended)	Financial Responsibility; Settlement Agreement; Correction (See Revision Checklist 64 and footnote 4 of this table)	55 FR 25976	6/26/90
71	71	Mining Waste Exclusion II	55 FR 2322	1/23/90
72	†72	Modifications of F019 Listing	55 FR 5340	2/14/90
73	73	Testing and Monitoring Activities; Technical Corrections	55 FR 8948	3/9/90
76	†76	Criteria for Listing Toxic Wastes; Technical Amendment	55 FR 18726	5/4/90
78N	78[8]	Land Disposal Restrictions for Third Third Scheduled Wastes (See Revision Checklist 78 in HSWA Cluster II)	55 FR 22520	6/1/90

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number		Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
			HSWA Cluster I (November 8, 1984 - June 30, 1987; Due Date - July 1, 1989[2])		
SR1			Existing and newly regulated surface impoundments	HSWA §3005(j)(1)&(6)	
SR2		†	*Variance under §3005(j)(2)-(9)* and (13)	HSWA §3005(j)(2)-(9)	
BB		†	Exceptions to the Burning and Blending of Hazardous Waste	HSWA §3004(q)(2)(A) §3004(r)(2)&(3)	
CP		†	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
NOT DELEGABLE[9/]			Direct Action Against Insurers	HSWA §3004(t)	11/8/84
14	14		Dioxin Waste Listing and Management Standards	50 FR 19781/14/85	
			Fuel Labeling (See Revision Checklist 17 K in HSWA Cluster I)	HSWA §3004 (r)(1)	2/7/85
16	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

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number		Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
			HSWA Cluster I (cont'd)		
			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
SI			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
17A			17 A - Small Quantity Generators (Superseded by 51 FR 10146, see Revision Checklist 23 in HSWA Cluster I)		
17B		†	17 B - Delisting		
17C		†	17 C - Household Waste		
17D			17 D - Waste Minimization (See Revision Checklist 32 in HSWA Cluster I)		
17E			17 E - Location Standards for Salt Domes, Salt Beds, Underground Mines and Caves		
17F			17 F - Liquids in Landfills (See Revision Checklist 25 in HSWA Cluster I)		
17G			17 G - Dust Suppression		
17H			17 H - Double Liners		
17I			17 I - Ground-Water Monitoring		
17J			17 J - Cement Kilns		
17K			17 K - Fuel Labeling (Superseded by 51 FR 49164, see Revision Checklist 19 in HSWA Cluster I)		
17L			17 L - Corrective Action		
17M			17 M - Pre-construction Ban		
17N			17 N - Permit Life		
17O			17 O - Omnibus Provision		
17P			17 P - Interim Status		

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number		Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
			HSWA Cluster I (cont'd)		
17Q		†	17 Q - Research and Development Permits		
17R			17 R - Hazardous Waste Exports (Superseded by 51 FR 28644, see Revision Checklist 31 in HSWA Cluster I)		
17S			17 S - Exposure Information		
18	18		Listing of TDI, TDA, DNT	50 FR 42936	10/23/85
19	19		Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces	50 FR 49164	11/29/85
20	20		Listing of Spent Solvents	50 FR 53315	12/31/85
20.1	(20)		[Listing of Spent Solvents; Correction (Included on Revision Checklist 20)]51 FR 27021/21/86		
21	21		Listing of EDB Waste	51 FR 5327	2/13/86
22	22		Listing of Four Spent Solvents	51 FR 6537	2/25/86
23	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	25		Codification Rule; Technical Correction (Paint Filter Test)	51 FR 19176	5/28/86
28H	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 Revision Checklist 28 in Non-HSWA Cluster III)	51 FR 25422	7/14/86
30	30		Biennial Report; Correction	51 FR 28556	8/8/86

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		HSWA Cluster I (cont'd)		
31	31	Exports of Hazardous Waste (See Revision Checklist 48 in HSWA Cluster II)	51 FR 28664	8/8/86
28H.1	(28)	[Standards for Hazardous Waste Storage and Tank Systems; Corrections (See Revision Checklist 28 in HSWA Cluster I)]	51 FR 29430	8/15/86
32	32	Standards for Generators; Waste Minimization Certifications	51 FR 35190	10/1/86
33	33	Listing of EBDC	51 FR 37725	10/24/86
34	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
19.1	(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
34.1	(34)	[Land Disposal Restrictions; Corrections (Included on Revision Checklist 34 in HSWA Cluster I)]	52 FR 21010	6/4/87
17B.1	(17 B)	[Hazardous Waste Management System: Requirements of Rulemaking Petitions (Included on Revision Checklist 17 B in HSWA Cluster I)]	54 FR 27114	6/27/89
		HSWA Cluster II (July 1, 1987 - June 30, 1990; Due Date - July 1, 1991[2])		
39	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

Continued . . .

SPA

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		HSWA Cluster II (cont'd)		
42	42	Exception Reporting for Small Quantity Generators of Hazardous Waste (See Checklist 23 in HSWA Cluster I)	52 FR 35894	9/23/87
39.1	(39)	Test Methods for Hazardous Waste covered by the Land Disposal Restrictions (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
44A		44 A - Permit Application Requirements Regarding Corrective Action		
44B		44 B - Corrective Action Beyond Facility Boundary		
44C		44 C - Corrective Action for Injection Wells		
44D		44 D - Permit Modification		
44E		44 E - Permit as a Shield Provision		
44F		44 F - Permit Conditions to Protect Human Health and the Environment		
44G		44 G - Post-Closure Permits		
47	47	Identification and Listing of Hazardous Waste; Technical Correction (Corrects Revision Checklist 23 in HSWA Cluster I)	53 FR 27162	7/19/88
48	48	Farmer Exemptions; Technical Corrections (Corrects Revision Checklist 31 in HSWA Cluster I)	53 FR 27164	7/19/88
50	50	Land Disposal Restrictions for First Third Scheduled Wastes (See Revision Checklist 62 in HSWA Cluster II)	53 FR 31138	8/17/88

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		HSWA Cluster II (cont'd)		
52H	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 Revision Checklist 52 in Non-HSWA Cluster V)	53 FR 34079	9/2/88
50.1	(50)	[Land Disposal Restrictions (Included on Revision Checklist 50 in HSWA Cluster II)]	54 FR 8264	2/27/89
62	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	63	Land Disposal Restrictions for Second Third Scheduled Wastes	54 FR 26594	6/23/89
66	66	Land Disposal Restrictions; Correction to the First Third Scheduled Wastes	54 FR 36967	9/6/89
68	68	Reportable Quantity Adjustment Methyl Bromide Production Wastes	54 FR 41402	10/6/89
69	69	Reportable Quantity Adjustment	54 FR 50968	12/11/89
66.1	(66)	[Land Disposal Restrictions; Correction (Included on Revision Checklist 66 in HSWA Cluster II)]	55 FR 23935	6/13/90
74	74	Toxicity Characteristic Revisions	55 FR 11798	3/29/90
75	75	Listing of 1,1-Dimethylhydrazine Production Wastes	55 FR 18496	5/2/90
77	77	HSWA Codification Rule; Double Liners; Correction	55 FR 19262	5/9/90
78H	78[8/]	Land Disposal Restrictions for Third Third Scheduled Wastes (See Revision Checklist 78 in Non-HSWA Cluster VI)	55 FR 22520	6/1/90

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		HSWA Cluster II (cont'd)		
79	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
74.1	(74)	[Toxicity Characteristics Revisions; Correction (Included on Revision Checklist 74 in HSWA Cluster II)]	55 FR 26986	6/29/90
		RCRA Cluster I (July 1, 1990 - June 30, 1991; Due Date - July 1 1992[2/])		
80	†80	Toxicity Characteristic; Hydrocarbon Recovery Operations (HSWA)	55 FR 40834	10/5/90
81	81	Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038) (See Revision Checklist 81) (HSWA)	55 FR 46354	11/2/90
82	82	Wood Preserving Listings (HSWA/Non-HSWA)	55 FR 50450	12/6/90
81.1	(81)	[Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings; Correction (Included on Revision Checklist 81, RCRA Cluster I)]	55 FR 51707	12/17/90
83	83	Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendment (HSWA)	56 FR 3864	01/31/91
80.1	(80)	[Toxicity Characteristic; Hydrocarbon Recovery Operations (Included on Revision Checklist 80 in RCRA Cluster I)]	56 FR 3978	02/01/91
84	†84	Toxicity Characteristic; Chlorofluorocarbon Refrigerants (HSWA)	56 FR 5910	02/13/91

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		RCRA Cluster I (cont'd)		
85	85	Burning of Hazardous Waste in Boilers and Industrial Furnaces (HSWA/Non-HSWA)	56 FR 7134	02/21/91
86	86[8/]	Removal of Strontium Sulfide From the List of Hazardous Waste; Technical Amendment (Non-HSWA)	56 FR 7567	02/25/91
80.2	(80)	(Toxicity Characteristic; Hydrocarbon Recovery Operations (See Revision Checklist 80 in RCRA Cluster I))	56 FR 13406	04/02/91
87	87	Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment (See Revision Checklist 79 in HSWA Cluster II) (HSWA)	56 FR 19290	04/26/91
88	†88	Administrative Stay for K069 Listing (Non-HSWA)	56 FR 19951	05/01/91
89	†89	Revision to F037 and F038 Listings (See Revision Checklist 81 in RCRA Cluster I) (HSWA)	56 FR 21955	05/13/91
90	90	Mining Exclusion III (Non-HSWA)	56 FR 27300	06/13/91
91	†91	Administrative Stay for F032, F034, and F035 Listings (HSWA/Non-HSWA)	56 FR 27332	06/13/91

† Optional.

[1]StATS is the State Authorization Tracking System which tracks States' progress in becoming authorized for each checklist. This column was added to help the Regions and States relate data entered in that system with the information included in this table. The "rule code" is the symbol used in StATS to represent a particular rule or non-checklist item, e.g., State Availability of Information or Radioactive Mixed Waste.

[2]States have an additional year if statutory changes are required.

Continued . . .

SPA 11

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1991

StATS Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date

[3]A 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 developing a new checklist for the correction.

[4]While 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.

[5]The 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 6.

[6]Note that, unlike other checklists which address more than one final rule, Revision Checklist 70 is not represented by each of its rules in StATS. Instead, it is represented only once as Revision Checklist 70, rather than five separate rules. The rationale for this representation is that this checklist is very different from the others in the program, because it represents an accumulation of small changes to Part 124, relating to the RCRA program, spanning the six-year period from 1983 to 1989.

[7]Only 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.

[8]Revision 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.

[9]Direct Action against insurers in RCRA §3004(t) is not delegable to the States. EPA realizes that six States are currently "authorized" for this provision. Several States have included this provision in their pending HSWA I revision applications. The Regions should review these provisions and clarify with their States that, by virtue of the statute, the Federal cause of action ensured by RCRA §3004(t) remains in effect in authorized States. This provision is not delegable because authorized provisions of State law must operate in lieu of the Federal counterpart and, in this situation, State law providing for a direct cause of action against insurers may augment the Federal Action, but not supersede it.

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
	State Availability of Information (See Appendix N)	Non-HSWA Cluster I
	Radioactive Mixed Waste (See SPA 2 and Appendix N)	Non-HSWA Cluster III
NOT DELEGABLE[1/]	Direct Action Against Insurers	HSWA Cluster I
	Surface Impoundment Requirements:	HSWA Cluster I
	a. Existing and newly regulated surface impoundments	
	† b. Variance under §3005(j)(2)-(9) and (13)	
	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

Continued . . .

SPA

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
†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
†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	

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991

Revision Checklist Number		Federal Requirement	Cluster
		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	
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[2/]		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[3/]		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

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
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
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[3/]	Liability Requirements for Hazardous Waste Facilities; Corporate Guarantee	Non-HSWA Cluster IV

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
44	HSWA Codification Rule 2 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	HSWA Cluster II
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

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
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
†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

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
†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
†64[4/]	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

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
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[5/]	Land Disposal Restrictions for Third Third Scheduled Wastes	Non-HSWA Cluster VI and HWSA CLuster II
79	Hazardous Waste Treatment, Storage, and Disposal Facilities--Organic Air Emission Standards For Process Vents and Equipment Leaks	HSWA Cluster II
†80	Toxicity Characteristic; Hydrocarbon Recovery Operations	RCRA I, HSWA
81	Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)	RCRA I, HSWA
82	Wood Preserving Listings	RCRA I, HSWA/Non-HSWA
83	Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendment	RCRA I, HSWA
†84	Toxicity Characteristic; Chlorofluoro-carbon Refrigerants	RCRA I, HSWA
85	Burning of Hazardous Waste in Boilers and Industrial Furnaces	RCRA I, HSWA/Non-HSWA
86[6/]	Removal of Strontium Sulfide From the List of Hazardous Waste; Technical Amendment	RCRA I, Non-HSWA

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster
87	Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment	RCRA I, HSWA
†88	Administrative Stay for K069 Listing	RCRA I, Non-HSWA
†89	Revision to F037 and F038 Listings	RCRA I, HSWA
90	Mining Exclusion III	RCRA I, Non-HSWA
91	Administrative Stay for F032, F034, and F035 Listings	RCRA I, HSWA/Non-HSWA

† Optional.

[1]Direct Action against insurers in RCRA §3004(t) is not delegable to the States. EPA realizes that six States are currently "authorized" for this provision. Several States have included this provision in their pending HSWA I revision applications. The Regions should review these provisions and clarify with their States that, by virtue of the statute, the Federal cause of action ensured by RCRA §3004(t) remains in effect in authorized States. This provision is not delegable because authorized provisions of State law must operate in lieu of the Federal counterpart and, in this situation, State law providing for a direct cause of action against insurers may augment the Federal Action, but not supersede it.

[2]Only 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.

[3]While 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.

[4]The 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.

Continued . . .

SPA 11

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1991

Revision Checklist Number	Federal Requirement	Cluster

[5]Revision 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.

[6]The rule addressed by this checklist is a technical amendment to the final rule (53 FR 43881; October 31, 1988; Revision Checklist 57)) that removed strontium sulfide from 40 CFR 261.33, the list of commercial chemical products which are hazardous wastes when discarded or intended to be discarded. States which intend to remove strontium sulfide from their hazardous wastes lists, but have not yet adopted the changes made by Revision Checklist 57 are strongly encouraged to adopt the changes addressed by Revision Checklists 57 and 86 at the same time. Those States that have already adopted the Revision Checklist 57 provisions should adopt the Revision Checklist 86 amendments as soon as possible. States should note that Revision Checklist 86 is a conditionally optional checklist. States choosing not to adopt the removal of strontium sulfide (i.e. Revision Checklist 57) should not adopt the Revision Checklist 86 provisions. However, States which choose to remove strontium sulfide must adopt the provisions addressed by Revision checklist 86 to be sure that the material has been properly removed from the State's lists and appendices.

Model Revision Attorney General's Statement

The following pages (numbered 9 through 52)
should replace pages 9 through 49 of
SAM Appendix E

SPA 11

MODEL REVISION ATTORNEY GENERAL'S STATEMENT FOR FINAL AUTHORIZATION FOR CHANGES TO THE FEDERAL RCRA PROGRAM FROM JANUARY 1983 THROUGH JUNE 1991

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 and 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.

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[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.

(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] and February 25, 1991 [56 FR 7567], Revision Checklists 57 and 86.

(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.] 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.

(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.

(17) Listing of one waste (F039), 40 CFR 261.31 and Part 261 Appendix VII, as amended June 1, 1990 [55 FR 22520] and January 31, 1991 [56 FR 3864], Revision Checklists 78 and 83.

(18) Listing of two wastes (F037 and F038) generated in the separation of oil/water/solids from petroleum refinery process wastewaters and oily cooling wastewaters, 40 CFR 261.31 and Part 261 Appendix VII, as amended November 2, 1990 [55 FR 46354] and December 17, 1990 [55 FR 51707], Revision Checklist 81.

(19) Listing of three wastes (F032, F034 and F035) from wood preserving operations that use chlorophenolic, creosote and/or inorganic (arsenical and chromium) preservatives, 40 CFR 261.31, and 261 Appendices III, VII and VIII, as amended December 6, 1990 [55 FR 50450], Revision Checklist 82.

(20) [OPTIONAL: This is a reduced requirement.] Administrative stay removing, from the K069 listing, slurries generated from air pollution control devices that are intended to capture acid gases and are not dedicated chiefly to control particulate air emissions, 40 CFR 261.32, as amended May 1, 1991 [56 FR 19951], Revision Checklist 88.

(21) [OPTIONAL: This is a reduced requirement.] Redefinition of F037 and F038 listings to exclude 1) sludges from non-contact once-through cooling waters from both listings and 2) floats generated in aggressive biological treatment units from the F038 listing, 40 CFR 261.31 as amended May 13, 1991 [56 FR 21955], Revision Checklist 89.

(22) [OPTIONAL: This is a reduced requirement.] Administrative stay of F032, F034 and F035 listings regarding 1) wastewaters that have not come into contact with process contaminants and 2) plants that have previously used chlorophenolic formulations, 40 CFR 261.31 as amended June 13, 1991 [56 FR 27332], Revision Checklist 91.

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.

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 Checklists 71 and 90.

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) and June 13, 1991 (56 FR 27300).

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 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.

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 the 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

N. State statutes and regulations add eight new testing methods 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

O. [OPTIONAL: This is a reduced requirement.] State statutes and regulations extend until January 25, 1993, the compliance date for the Toxicity Characteristic requirements for produced ground water from free phase hydrocarbon recovery operations at certain petroleum industry sites (refineries, marketing terminals, and bulk plants) as indicated in Revision Checklist 80. The extension for infiltration galleries at such operations ends on October 2, 1991.

Federal Authority: 5 U.S.C. §§553 and 705; RCRA §3001; 40 CFR 261.4(b)(II) as amended October 5, 1990 (55 FR 40834), February 1, 1991 (56 FR 3978) and April 2, 1991 (56 FR 13406).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

P. State statutes and regulations include definitions of oil/water/solids and aggressive biological treatment units and a statement concerning the point of generation for F037 and F038 sludges as indicated on Revision Checklist 81.

Federal Authority: RCRA §3001; 40 CFR 261.31(b), as amended November 2, 1990 (55 FR 46354) and December 17, 1990 (55 FR 51707).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

Q. [OPTIONAL: This is a reduced requirement.] State statutes and regulations exclude from being a solid waste spent wood preserving solutions that have been used and are reclaimed and reused for their original intended purpose as indicated in Revision Checklist 82.

Federal Authority: RCRA §3001; 40 CFR 261.4(a)(9) as amended December 6, 1990 (55 FR 50450).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

R. State statutes and regulations allow deletion of certain hazardous waste codes following equipment cleaning and replacement, provided that the requirements of 261.35 are met, as indicated in Revision Checklist 82.

Federal Authority: RCRA §3001; 40 CFR 261.35 as amended December 6, 1990 (55 FR 50450).

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 which exclude from being hazardous used chlorofluorocarbon (CFC) refrigerants from totally enclosed transfer equipment (including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems) that use chlorofluorocarbons as the heat transfer fluid in the refrigeration cycle, provided the refrigerant is reclaimed for further use as indicated in Revision Checklist 84.

Federal Authority: RCRA §3001; 40 CFR 261.4(b)(12) as amended February 13, 1991 (56 FR 5910)..

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 exclude from being a solid waste coke and coal tar from the iron and steel industry that contains or is produced from decanter tank tar sludge, EPA hazardous waste K087, when used as a fuel as indicated in Revision Checklist 85. The process producing the coke and coal tar from such decanter tank tar sludge in a coke oven is also excluded from regulation.

Federal Authority: RCRA §3001; 40 CFR 261.4(a)(10) as amended February 21, 1991 (56 FR 7134).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

U. State statutes and regulations do not exclude residues, derived from the burning or processing of hazardous waste in a boiler or industrial furnace, from the definition of a hazardous waste under 40 CFR 261.4(b)(4),(7)or(8) unless the device and the owner or operator meet the requirements of 40 CFR 266.112 as indicated in Revision Checklist 85.

Federal Authority: RCRA §3001; 40 CFR 261.4(b)(4), 261.4(b)(7), 261.4(b)(8) and 266.112 as amended February 21, 1991 (56 FR 7134).

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

B. State statutes and regulations include as solid waste secondary material fed to a halogen acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste in 40 CFR 261, Subparts C and D as indicated in Revision Checklist 85.

Federal Authority: RCRA §3001; 40 CFR Parts 261.2(d)(2) as amended February 21, 1991 (56 FR 7134).

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

(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

[2]Note 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.

§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 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.

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), November 29, 1985 (50 FR 49164), 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.

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).

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 FACILITIES[3]

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 §3020 of RCRA applies.

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[3]This 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(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 ignitible wastes) as a dust suppressant as indicated in Revision Checklist 17 G.

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 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

E. 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

F. 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.

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

G. [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

H. 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

I. 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

J. [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

K. 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 Checklists 79 and 87.

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) and April 26, 1991 (56 FR 19290).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

L. State statutes and regulations contain design, operating, inspection and closure requirements for drip pads and associated tanks, sumps and other devices used to assist in the collection of treated wood drippage as indicated in Revision Checklist 82.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 262.34(a)(2), 264.190, 264.570, 264.571, 264.572, 264.573, 264.574, 264.575, 265.190, 265.440, 265.441, 265.442, 265.443, 265.444, and 265.445 as amended December 6, 1990 (55 FR 50450).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

M. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain an administrative stay for the requirement that new drip pads be impermeable as indicated in Revision Checklist 91.

Federal Authority: 5 U.S.C. 705; RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 264.572(a)(4), and 265.443(a)(4) as amended June 13, 1991 (56 FR 27332).

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.

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

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)(1)&(6)(A).

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 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.

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 incorporate updates to 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

W. State statutes and regulations contain Special Part B information requirements for drip pads as indicated in Revision Checklist 82.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(l); 40 CFR 270.22 as amended December 6, 1990 (55 FR 50450).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

X. State statutes and regulations include permitting requirements for boilers and industrial furnaces burning hazardous waste as indicated in Revision Checklist 85.

Federal Authority: RCRA §§1006, 2002, 3001 through 3007; 40 CFR 270.22, 270.42(g), 270.42 Appendix I, 270.66, 270.72(a)(6)&(b)(7) and 270.73(f)&(g) as amended February 21, 1991 (56 FR 7134).

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

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 Freedom of Information Act (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 exemption 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. [OPTIONAL: This is a reduced requirement.] 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

C. State statutes and regulations include control standards for emissions of toxic organic compounds, toxic metals, hydrogen chloride, chlorine gas and particulate matter

from boilers and industrial furnaces burning hazardous waste, and require owners and operators of such facilities to comply with the general facility standards applicable to hazardous waste treatment, storage and disposal facilities, as indicated in Revision Checklist 85. Hazardous waste storage units at regulated burners are subject to 40 CFR 264 requirements.

Federal Authority: RCRA §§1006, 2002, 3001 through 3007, 3010 and 7004; 40 CFR 260.10, 260.11, 264.112, 264.340, 265.112, 265.113, 265.340, 266 Subpart H, and Part 266 Appendices I-VIII as amended February 21, 1991 (56 FR 7134).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

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[4] 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 standards for treatment standards and effective dates for certain First Third "soft hammer" wastes[4] 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 wastes[4], 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 Checklists 78 and 83.

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[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.

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) and January 31, 1991 (56 FR 3864).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

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 Checklists 78 and 83.

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) and January 31, 1991, (56 FR 3864).

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 (cont'd)

Revision checklist number/name		Subsections pertaining to checklist
1.	Biennial Report	VIII A
2.	Permit Rule: Settlement Agreement	XV D
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 E
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
17 J.	Cement Kilns	XII A(1)&(2)
17 K.	Fuel Labeling	XII A(2)

Continued...

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

Revision checklist number/name	Subsections pertaining to checklist
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 F
25. Paint Filter Test - Correction	VI; X A
26. Listing of Spent Pickle Liquor	I A(7)
27. Corporate Guarantee - Liability Coverage	XV G
28. Hazardous Waste Storage and Tank Systems	XV H
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 F
37. Definition of Solid Wastes; Technical Corrections	II A

Continued...

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

Revision checklist number/name	Subsections pertaining to checklist
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 G
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 F; XV I; XVI O
46. Technical Correction - Identification and Listing of Hazardous Waste	I A(8)
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, and Disposal Facilities	Withheld, no entry as yet

Continued...

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

Revision checklist number/name	Subsections pertaining to checklist
52. Standards for Hazardous Waste Storage and Treatment Tank Systems	XV H
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;	XVI R & S
Modifications of Hazardous Waste Management Permits;	XVI U
Procedures for Post-Closure Permitting	XVI T
62. Land Disposal Restrictions Amendments to First Third Scheduled Wastes	XXI C
63. Land Disposal Restrictions for Second Third Scheduled Wastes	XXI D & E
64. Delay of Closure Period for Hazardous Waste Management Facilities	XV J
65. Mining Waste Exclusion I	I J(1)

Continued...

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

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 K
80.	Toxicity Characteristic; Hydrocarbon Recovery Operations	I O
81.	Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)	I A(18); I P
82.	Wood Preserving Listings	I A(19); I Q & R, XV L, XVI W
83.	Land Disposal Restrictions for Third Third Scheduled Wastes; Technical Amendments	I A(17); XXI F & G
84	Toxicity Characteristic; Chlorofluorocarbon Refrigerants	I S
85.	Burning of Hazardous Waste in Boilers and Industrial Furnaces	I T & U; II B; XVI X; XX C
86.	Removal of Strontium Sulfide from the List of Hazardous Waste; Technical Amendment	I A(12)

Continued...

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

Revision checklist number/name	Subsections pertaining to checklist
87. Organic Air Emission Standards for Process Vents and Equipment Leaks; Technical Amendment	XV K
88. Administrative Stay for K069 Listing . . .	I A(20)
89. Revision to F037 and F038 Listings . . .	I A(21)
90. Mining Exclusion III	I J(2)
91. Administrative Stay for F032, F034 and F035 Listings	I A(22); XV M

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. existing units subject to Subtitle C on November 8, 1984, must comply with new unit requirements by November 8, 1988 or stop hazardous waste activity; newly regulated surface impoundments must comply within 4 years after listing or characteristic is promulgated (after November 8, 1984)	XVI I(1)
2. disposal of waste prohibited from land disposal under RCRA §3004(d), (e) or (g)	Not Needed[1/]
3. variance under RCRA §3005(j)(2-9) and (13)	XVI I(2)
Third party direct action against financial responsibility insurer or granter	Not Delegable

1/ These requirements are taken care of when State adopts an analog to 40 CFR 268.4, per the Land Disposal Restriction checklists.

Checklist Linkage Table

The following pages (numbered 3 through 7)
should replace pages 3 through 6 of
SAM Appendix H

SPA 11

Revision Checklist Linkage Table
as of June 30, 1991

	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	13	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	8,37	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]	19	Fuel Labeling
	17 L	---	Corrective Action
	17 M	---	Pre-construction Ban
	17 N	---	Permit Life
	17 O	---	Omnibus Provision

Continued...

Revision Checklist Linkage Table (cont'd) **SPA 11**

	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	85	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	39,50,62,63,66,78,83	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	34,50,62,63,66,78,83	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 11**

	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	34,39,62,63,66,78,83	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	86	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 (270.42 Appendix)
		---	Procedures for Post-closure Permitting
	62	34,39,50,63,66,78,83	Land Disposal Restrictions
	63	34,39,50,62,66,78,83	Land Disposal Restrictions

Continued...

Revision Checklist Linkage Table (cont'd) **SPA 11**

	Revision Checklist Number	Linked Checklists	Topic or Explanation
	64	24	Delay of Closure Period for Hazardous Waste Management Facilities
	65	71,90	Mining Waste Exclusion I
	66	34,39,50,62,63,78,83	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	65,90	Mining Waste Exclusion II
*	72	---	Modification of F019 Listing
	73	11,35,67	Analytical Test Methods
	74	80,84	Revision of Toxicity Characteristics
*	75	---	1,1-Dimethylhydrazine Production Wastes Listing
	76	---	Criteria for Listing Toxic Wastes
	77	17 H	Corrections - Double Liners
*	78	34,39,50,62,66,83	Land Disposal Restrictions
	79	87	Organic Air Emission Standards for Process Vents and Equipment Leaks
	80	74,84	Toxicity Characteristic; Hydrocarbon Recovery Operations
*	81	89	Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)
*	82	91	Wood Preserving Listings
	83	34,39,50,62,63,66,78	Land Disposal Restrictions
	84	74,80	Toxicity Characteristic
	85	19	Burning of Hazardous Waste in Boilers and Industrial Furnaces
	86	57	Strontium Sulfide Listing Removal
	87	79	Organic Air Emission Standards for Process Vents and Equipment Leaks
	88		Administrative Stay for K069 Listing
	89	81	Revision to F037 and F038 Listing
	90	65,71	Mining Waste III

Continued...

Revision Checklist Linkage Table (cont'd) **SPA 11**

Revision Checklist Number	Linked Checklists	Topic or Explanation
91	82	Administrative Stay for Wood Preserving Wastes

*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.

Consolidated Land Disposal Restrictions Checklist

The attached checklist is updated through June 30 1991
and includes the technical amendments made to the Third Third rule
by 56 FR 3864 (January 31, 1991; Revision Checklist 83).

SPA 11

CONSOLIDATED CHECKLIST
for the
Land Disposal Restrictions as of June 30, 1991

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)]; Revision Checklist 78 [55 FR 22520 (June 1, 1990)]; and Revision Checklist 83 [56 FR 3864 (January 31, 1991)]. 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 6 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.

SPA

CONSOLIDATED CHECKLIST: Land Disposal Restrictions (cont'd)

The Agency suggests that States incorporate the nondelegable portions of the LDR regulations 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 Scheduled 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 41 of this checklist.

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 268.41(a)) addressing this issue contains a serious technical error which is discussed in Footnote 36 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)(8), 268.7(a)(9), 268.42(c), 268.42(c)(1)-(4), and Appendices IV and V to Part 268.

SPA 11

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				
SUBPART B - DEFINITIONS						
DEFINITIONS						
insert "and 268"	34	260.10				
REFERENCES						
1,2 Parts 260 through 270	39	260.11(a)				

SPA 11

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)				
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)				
DEFINITION OF HAZARDOUS WASTE						
add parenthetical phrase regarding characteristic waste, no longer exhibiting a characteristic, that still may be subject to 268 requirements	83	261.3(d)(1)				
EXCLUSIONS						
insert "268,"	34	261.4(c)				
remove "267" and 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)				

SPA 11

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
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)				
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 characteristic" before "in this Subpart"; insert "used" after "This number must be"; before "recordkeeping" change "certain" to "all applicable"	34,78,83	261.20(b)				
CHARACTERISTIC OF IGNITABILITY						
remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.21(b)				

SPA 11

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
	CHARACTERISTIC OF CORROSIVITY						
	remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.22(b)				
	CHARACTERISTIC OF REACTIVITY						
	remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.23(b)				
	TOXICITY CHARACTERISTIC						
4	remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.24(b)				
	SUBPART D - LISTS OF HAZARDOUS WASTES						
	GENERAL						
	insert "268,"	34	261.30(c)				
	HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES						
	add the waste "F039" in alphanumeric order to list	78,83	261.31(a)				
	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)				
	APPENDIX VII, PART 261						
	BASIS FOR LISTING HAZARDOUS WASTE						
	add "F039" to list in alphanumeric order	78	Appendix VII				

SPA 11

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 "he must determine" with "the generator must then determine"	78,83	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)				
replace "and" between "section" and "the require-ments" with ";" and add "the require-ments of 40 CFR 268.7(a)(4)"	83	262.34(d)(4)				

SPA 11

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 - FARMERS						
	FARMERS						
6	pesticide disposal by farmers	†39	262.70				
	PART 263 - STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE						
	SUBPART A - GENERAL						
	TRANSFER FACILITY REQUIREMENTS						
	insert ", 268"	34	263.12				
	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)				
	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)				

SPA 11

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
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)				
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)				

SPA 11

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
	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)				
	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				
	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				
	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				

SPA 11

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)				
	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)				

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)				
		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)				

SPA 11

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				
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				
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				

SPA 11

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 265.316(b) requirements if incinerate lab packs	78	265.316(f)				

SPA

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)				

SPA 11

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)				
	wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal, are not prohibited from land disposal if the wastes:	34,39,50 66,78	268.1(c)(3)				
	disposed into a nonhazardous 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	39,48, 50,78	268.1(c)(5)				

SPA 11

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
	preserve waiver availability under 121(d)(4) of CERCLA	50	268.1(d)				
	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)				
13	"hazardous constituent or constituents"	34,78	268.2(b)				
13	"land disposal"	34,39, 78	268.2(c)				
	"nonwastewaters"	78,83	268.2(d)				
14	"polychlorinated biphenyls" or "PCBs"	39,78	268.2(e)				
	"wastewaters"	78	268.2(f)				

SPA 11

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
"F001, F002, F003 F004, F005 solvent-water mixtures"	78,83	268.2(f)(1)				
"K011, K013, K014 wastewaters"	78,83	268.2(f)(2)				
"K103 and K104 wastewaters"	78	268.2(f)(3)				
"inorganic solid debris"; specific inorganic or metal materials:	78,83	268.2(g)				
metal slags	78,83	268.2(g)(1)				
glassified slag	78,83	268.2(g)(2)				
glass	78,83	268.2(g)(3)				
concrete	78,83	268.2(g)(4)				
masonry and refractory bricks	78,83	268.2(g)(5)				
metal cans, containers, drums or tanks	78,83	268.2(g)(6)				
metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment	78,83	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						
15 except as provided in 268.3(b), dilution not substitute for treatment; restriction regarding circumvention of effective dates and avoidance of prohibition of Subpart C or RCRA 3004	34,39, 78	268.3(a)				

SPA 11

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
permissible forms of dilution related to Sections 307 or 402 of the CWA	78	268.3(b)				
† 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; super-natant 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 manage-ment of treatment residues in another impoundment; pro-hibited unless certification under 268.8 and standards of 268.8(a) are met	50	268.4(a)(2)(iii)				

SPA 11

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
	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)				
	exempt under 264.221(d) or (e) or 265.221(c) or (d)	34	268.4(a)(3)(i)				
			268.4(a)(3)(ii)				
7	conditions under which Administrator grants waiver of requirements; meets §3005(j)(2)	34	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 demonstration of no migration 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 hazardous constituents not considered treatment for exemption purposes	39	268.4(b)				

SPA

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: 268.5 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)				
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)				

SPA 11

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
capacity being constructed or provided by applicant must be sufficient to manage entire quantity of waste	34	268.5(a)(4)				
detailed schedule for obtaining required permits or outline of how and when alternate capacity will be available	34	268.5(a)(5)				
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)				

SPA 11

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
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)				
written progress reports at intervals designated by Administrator; what progress reports must include; conditions for revocation of extension by Administrator	34	268.5(g)				
during period established 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 for disposal in landfill or surface impoundment regardless of whether unit is existing, new, replacement or lateral extension	34,50,66	268.5(h)(2)				

SPA 11

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
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, compliance with all legal disposal restrictions once effective date has been reached	34	268.5(i)				

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)				

SPA 11

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 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)				
	demonstration criteria:	50	268.6(b)				
	data must be accurate and reproducible	50	268.6(b)(1)				
	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)				
16	what each petition must include:	50	268.6(c)				
	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)				

SPA 11

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 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)				
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)				

SPA 11

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
	QA/QC plan for all aspects of monitoring program provided to and approved by Administrator	50	268.6(c)(5)(iii)				
16,17	petition submitted to Administrator	34,50	268.6(d)				
18	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)				
	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)				
19	owner/operator responsibilities if hazardous waste migration:	50	268.6(f)				

SPA 11

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
	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 determines if further examination of any migration warranted	50	268.6(f)(3)				
20	signed statement	34,50	268.6(g)				
20	Administrator may request additional information	34,50	268.6(h)				
	waste unit to which petition applies	34,50	268.6(i)				
20	Administrator gives public notice in Federal Register; final decision in Federal Register	34,50	268.6(j)				
20	term of petition	34,50	268.6(k)				
20	requirements prior to Administrator's decision	34,50	268.6(l)				
20	petition granted by Administrator does not relieve responsibilities under RCRA	34,50	268.6(m)				
21	noneligibility of certain liquid PCB wastes for "no migration" petitions under 268.6	39,50	268.6(n)				

SPA 11

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 ANALYSIS AND RECORDKEEPING						
7	generator determines if listed waste is a restricted waste; 268.32 exception; if characteristic is exhibited, test extract using 268, Appendix IX methods or use knowledge of waste to determine if restricted from land disposal	34,39 50,83	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, 78,83	268.7(a)(1)(ii)				
	information the notice must include	34	268.7(a)(1)(iii) 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)				

SPA 11

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
			268.7(a)(2)(i)				
		34	268.7(a)(2)(i)(A)				
		34,39, 78,83	268.7(a)(2)(i)(B)				
	information required in notice to treatment, storage or land disposal facility		268.7(a)(2)(i)(C)				
		34	268.7(a)(2)(i)(D)				
	certification signature/statement	34,39	268.7(a)(2)(ii)				
7	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	34,50, 66	268.7(a)(3)				
		50	268.7(a)(3)(i)				
		50,78,83	268.7(a)(3)(ii)				
			268.7(a)(3)(iii)				
			268.7(a)(3)(iv)				
22	information the notice must include	50	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)				

SPA 11

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	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)				
23	file plan with EPA Regional Administrator or authorized State 30 days prior to treatment; delivery verified	50,78	268.7(a)(4)(ii)				
23	compliance with 268.7(a)(2) notification requirements for wastes shipped off-site	50,78	268.7(a)(4)(iii)				
23	removed	50,78	268.7(a)(4)(iv)				
7,24	maintenance of data supporting knowledge of waste; retention of waste analysis data on-site in files	34,50	268.7(a)(5)				
	conditions under which a generator, managing a restricted waste excluded from the definition of hazardous or solid waste, must place a one-time notice in the facility's file containing specified information	83	268.7(a)(6)				

SPA 11

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	five-year retention period for notices, certifications, demonstrations, etc., produced relative to 268.7; extensions during enforcement actions; requirements apply to solid wastes even when hazard characteristic is removed prior to disposal or when waste excluded from definition of hazardous or solid waste in 261.2-261.6 or exempted from Subtitle C regulation subsequent to the point of generation	50,83	268.7(a)(7)				
†, 9,25	notice for a generator 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	78,83	268.7(a)(8)				
†, 9,25	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	78,83	268.7(a)(9)				

SPA 11

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	notification and certification requirements for small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e)	78,83	268.7(a)(10)				
	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)				
	testing for wastes with treatment standards expressed as concentrations in waste	50	268.7(b)(3)				
26	notice with each shipment by treat-ment facility to land disposal facility	34,50	268.7(b)(4)				
		34,50	268.7(b)(4)(i)				
		34,39, 50,78,83	268.7(b)(4)(ii)				
			268.7(b)(4)(iii)				
26	information the notice must include	34,50	268.7(b)(4)(iv)				
27	certification of each shipment	34,39, 50	268.7(b)(5)				

SPA 11

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
27	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)				
27	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)				
	compliance with generator notice and certification requirements if waste sent offsite	50	268.7(b)(6)				
28	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)				

SPA

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	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)				
29	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)				
29	test of waste or extract; applicable treatment standards to be met; frequency of testing	39,50	268.7(c)(2)				
30	removed	50,78	268.7(c)(3)				
30	removed	66,78	268.7(c)(4)				
	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)				

SPA 11

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
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)				
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)				

SPA

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
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 record-keeping 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)				
	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)				

SPA 11

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
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)				
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)				

SPA

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
SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC						
determination of applicable treatment standards under Sub-part D, Part 268 by initial generator of a solid waste; code designation and exceptions	78,83	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)				
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)				

SPA 11

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
	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)				
			268.9(d)(1)				
		78	268.9(d)(1)(i)				
		78,83	268.9(d)(1)(ii)				
	information needed with each notification	78	268.9(d)(1)(iii)				
	certification signed by authorized representative stating language found in 268.7(b)(5)(i)	78	268.9(d)(2)				
	SUBPART C - PROHIBITIONS ON LAND DISPOSAL						
	WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES						
32	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)				

SPA 11

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
	generated by a CERCLA response action/corrective action 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 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)				
	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)				
33	situations where 268.30(a), (b) and (c) do not apply:	34,50	268.30(d)				

SPA 11

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
33	wastes treated to meet Subpart D of Part 268	34,50	268.30(d)(1)				
33	disposal at facility with successful no-migration petition	34,50	268.30(d)(2)				
33	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)				
	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)				
7	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)				

SPA 11

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
7,34	situations where 268.31(a) and (b) do not apply	34,50	268.31(d)				
7,34	wastes treated to meet Subpart D, Part 268 standards	34,50	268.31(d)(1)				
7,34	disposal at facility with successful no-migration petition	34,50	268.31(d)(2)				
7,34	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)				
	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)				

SPA 11

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
July 8, 1989 for contaminated soil or debris not 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 compliance with 268.5(h)(2)	50	268.32(d)(2)				
land disposal prohibitions effective November 8, 1988:	39,50	268.32(e)				
35 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)				

SPA

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 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, or, where standard not specified, with RCRA 3004(d) or 268.32 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)				
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)				

SPA 11

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 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)				
K071 prohibited from land disposal effective August 8, 1990	50,83	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)				
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)				

SPA

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
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 promul-gated (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)				
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)				

SPA 11

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, 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)				

SPA 11

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 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 C 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)				

SPA 11

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 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) as listed in 268.35(a)	78,83	268.35(a)				
effective November 8, 1990, prohibition from land disposal of certain wastes specified in 261.32	78	268.35(b)				

SPA 11

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), and 261.33(f); certain characteristic wastes; inorganic debris defined in 268.2(a)(7); and RCRA hazardous wastes containing naturally occurring radioactive materials	78,83	268.35(c)				
effective May 8, 1992, prohibition from land disposal of 268.10, 268.11, 268.12 mixed radio-active/hazardous wastes; and soil or debris contaminated with such wastes and mixed with radio-active/hazardous waste are prohibited from land disposal	78,83	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, vitrification, acid leaching followed by chemical precipi-tation or thermal recovery of metals, and which are contaminated soil or debris	78,83	268.35(e)				

SPA 11

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 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)				
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)				

SPA

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
persons granted extension to the effective date of a prohibition under 268.5	78	268.35(i)(4)				
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						
restricted waste under 268.41 may be land disposed if extract of waste or treatment residue, developed using 261 Appendix II methods, does not exceed 268.41 Table CCWE values; exceptions; specific wastes may be land disposed if extract or treatment residue developed as specified does not exceed Table CCWE values for any hazardous constituent in Table CCWE for waste	34,†39, 50,78,83	268.40(a)				

SPA 11

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
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)				
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						
treatment standards; explanation of Table CCWE	34,50, 63,78	268.41(a)				
Constituent Concentrations in Waste Extract	34,50, 63,70,83	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)				

SPA 11

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
	standard for incineration of certain nonliquid hazardous wastes containing HOCs; where standards do not apply	39,50, 78,83	268.42(a)(2)				
37	mixture of waste-water (discharge of which is subject to Clean Water Act) and de minimis losses of materials that meet the criteria of D001 ignitable liquids with greater than 10% TOC is subject to Table 1 DEACT treat-ment standard; de minimis defined	63,78,83	268.42(a)(3)				
38	removed	63,78	268.42(a)(4)				
	Technology Codes and Description of Technology-Based Standards	78,83	268.42(a)/Table 1				
	Technology-Based Standards by RCRA Waste Code	78,83	268.42(a)/Table 2				
	Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste	78,83	268.42(a)/Table 3				

SPA 11

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: 268.42(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 alternate treatment can achieve 268.42(a), (c), & (d) performance specifications; information demonstrating compliance with Federal, State and local requirements; criteria for approval by Administrator; approval in writing containing provisions and conditions as the Administrator deems appropriate; compliance by person to whom approval is issued	34,39,78	268.42(b)				
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)				

SPA,

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
	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)				
39	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, 63,78,83	268.43(a)/ Table CCW				

SPA 11

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
40	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:	78,83	268.43(c)				
	treatment standards 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	78,83	268.43(c)(1)				
	organic constituents treated using paragraph 268.43(c)(1) methods	78,83	268.43(c)(2)				
	good-faith efforts fail to detect the organic constituents; when such efforts must be demonstrated	78,83	268.43(c)(3)				

SPA

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 Federal Register; final decision in Federal Register	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)				

SPA 11

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(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)				
	during application review process, compliance 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)				

SPA 11

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 the 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)						
7,41	TCLP is published in Appendix II of Part 261	34,74	Appendix I				
	APPENDIX II TO PART 268						
	TREATMENT STANDARDS (AS CONCENTRATIONS IN THE TREATMENT RESIDUAL EXTRACT)						
	table	34	Appendix II				

SPA 11

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				
APPENDIX IV TO PART 268						
†,9 ORGANOMETALLIC LAB PACKS						
list of hazardous wastes that may be placed in "organometallic" or "Appendix IV lab packs"	78,83	Appendix IV				
APPENDIX V TO PART 268						
†,9 ORGANIC LAB PACKS						
list of hazardous wastes that may be placed in "organic" or "Appendix V lab packs"	78,83	Appendix V				

SPA 11

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				
APPENDIX VII TO PART 268						
EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs						
comprehensive list of wastes and effective dates	78,83	Appendix VII				
APPENDIX VIII TO PART 268						
NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES						
comprehensive list of national capacity LDR variances for UIC wastes	78,83	Appendix VIII				

SPA 11

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 IX TO PART 268						
EXTRACTION PROCEDURE (EP) TOXICITY TEST METHOD AND STRUCTURAL INTEGRITY TEST (SW-846, METHOD 1310A)						
interim method to determine whether a waste exhibits the characteristic of EP Toxicity	83	Appendix IX				
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)				
SUBPART C - PERMIT CONDITIONS						
ESTABLISHING PERMIT CONDITIONS						
insert "through 268"; remove "267"	34	270.32(b)(1)				
SUBPART D - CHANGES TO PERMIT						
42 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)				

SPA 11

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 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)				
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 necessity to comply with 268 or RCRA 3004; and	†39	270.42(p)(2)				
ensures compliance pending administrative determination	†39	270.42(p)(3)				

APPENDIX I TO SECTION 270.42

43	CLASSIFICATION OF PERMIT MODIFICATION						
44	add new item involving F039 under "General Facility Standards"; add a footnote symbol to the Class I designation at B(1)(b)	78,83	270.42 Appendix I, B(1)(b)				

SPA 11

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
45	redesignate old B(1)(b) as B(1)(c)	78	270.42 Appendix I, B(1)(c)				
	SUBPART G - INTERIM STATUS						
	CHANGES DURING INTERIM STATUS						
46	no reconstruction; changes do not include tank/ container changes to comply with land disposal restrictions	39	270.72(e)				

1 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)(8), 268.7(a)(9), 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

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] 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.

[11] 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.

[12] 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.

[13] 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.

[14] 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).

[15] 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.

[16] 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).

[17] 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).

[18] 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).

[19] 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).

[20] 268.6(d)-(j) were originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated these paragraphs as 268.6(g)-(m).

[21] 268.6(k) was originally introduced by Revision Checklist 39. Revision Checklist 50 redesignated it as 268.6(n).

[22] 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 subparagraphs should remain in the code.

SPA 11

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] 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).

[24] 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.

[25] 268.7(a)(7) was originally 268.7(a)(6) on Checklist 50. Revision Checklist 83 inserted a new 268.7(a)(6) and redesignated the old 268.7(a)(6) as 268.7(a)(7). Revision Checklist 83 also redesignated 268.7(a)(7)-(a)(9) as 268.7(a)(8)-(a)(10).

[26] 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.

[27] 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.

[28] 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.

[29] 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 these requirements were still part of 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.

[30] 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.

[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] 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.

[33] 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).

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 268.31(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).

[35] While this subparagraph appeared in the final rule addressed by Revision Checklist 50, this rule did not change this subparagraph. See Footnote 9, page 28 of Revision Checklist 50.

[36] The current text of 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).

[37] 268.42(a)(3) was introduced into the code by Revision Checklist 63. Revision Checklist 78 removed this paragraph and Revision Checklist 83 added a new 268.42(a)(3).

[38] 268.42(a)(4) was introduced into the code by Revision Checklist 63. Revision Checklist 78 removed this paragraph.

[39] 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).

[40] 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.

[41] 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.

SPA 11

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

[42] 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 Modifications 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.

[43] 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.

[44] Revision Checklist 78 redesignated item B(1)(b) as item B(1)(c) and added a new B(1)(b).

[45] This item was entered into the code as Appendix I, B(1)(b) and was redesignated as B(1)(c) by Revision Checklist 78.

[46] 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.