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Solid Waste and
Emergency Response
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WASHINGTON, D.C. 20460

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OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: State Program Advisory Number Fifteen

FROM: Michael H. Shapiro, 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 15, which covers RCRA program changes for the period of July 1, 1993, through June 30, 1994. SPA 15 contains 10 new revision checklists and Model Attorney General's Statement language for the changes covered in the SPA.

If you have any questions about any of these materials, please contact State and Regional Programs Branch Chief, Michaelle Wilson at (703) 308-8790.

Attachments

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

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Summary for State Program Advisory Fifteen

This SPA covers the period July 1, 1993, through June 30, 1994, and includes this summary plus three attachments. The first attachment, Attachment A, contains new Revision Checklists 125-134 and their corresponding summaries and FR articles. Attachment B contains updates to the State Authorization Manual (SAM), including Tables G-1 and G-2, the Checklist Linkage Table, the Model Revision Attorney General's Statement, and a revised Revision Checklist 49. Attachment C includes the updated (through June 30, 1994) consolidated checklists for the Land Disposal Restrictions, Boilers and Industrial Furnaces, Toxicity Characteristic, Wood Preserving, and the Bevill Exclusion for Mining Wastes. Attachment C also contains two new consolidated checklists: 1) Recycled Used Oil Management Standards Consolidated Checklist, which consolidates the requirements of Revision Checklists 112, 122 and 130, and 2) Treatability Studies Consolidated Checklist, which consolidates the requirements of Revision Checklists 49 and 129.

The following points briefly highlight the content of SPA 15. These points are organized by topic.

Checklists

New

- This SPA provides ten new checklists (Numbers 125 through 134) covering regulatory changes for the period July 1, 1993, through June 30, 1994. All checklists are in RCRA Cluster IV. Revision Checklists 125, 126 and 130 contain both HSWA and Non-HSWA provisions, Checklist 127 contains HSWA provisions, and Checklists 128, 129, 131, 132, 133 and 134 contain only non-HSWA provisions.

Existing

- A new prenote was added to Revision Checklist 49 that explains the relationship of this checklist to Revision Checklist 129. This note also states that, while Revision Checklist 49 is optional, EPA strongly encourages States to adopt the provisions addressed by it. These provisions help facilitate evaluating remediation alternatives for CERCLA clean-ups and for the RCRA Corrective Action Program. The rule addressed by Revision Checklist 49 also will speed research and development for treatment alternatives to land disposal and waste minimization, recycling and reuse.

Cluster Information

- SPA 15 delineates timeframes by which States must obtain authorization for RCRA Cluster IV. The due date is July 1, 1995 (July 1, 1996 if a State statutory change is necessary). For further information on the Cluster Rule, see September 26, 1986 (51 FR 33712).

SAM

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

ATTACHMENT A

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

Revision Checklist 125 Summary

Rule Title:	Requirements for Preparation, Adoption, and Submittal of Implementation Plans
Checklist Title:	Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations
Reference:	58 FR 38816-38884
Promulgation Date:	July 20, 1993
Effective Date:	August 19, 1993
Cluster:	RCRA Cluster IV
Provision Type:	HSWA/non-HSWA
Linkage:	Revision Checklists 85, 94
Optional:	No

Summary: This final rule was promulgated pursuant to the Clean Air Act, rather than the Resource Conservation and Recovery Act, and primarily amends the "Guideline on Air Quality Models (Revised)" (referred to as the "Guideline") in 40 CFR Parts 51 and 52. However, this rule also makes conforming changes to 40 CFR Parts 260 and 266 to ensure that the guidelines for air quality modeling and screening for boilers and industrial furnaces burning hazardous waste are consistent with the guidelines in 40 CFR Part 51. Specifically, EPA is removing Appendix X to 40 CFR Part 266 and is changing references to the Guideline in that Part to refer to 40 CFR Part 51, Appendix W. EPA also revises the "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" reference at § 260.11(a).

State Authorization: This rule was promulgated under the Clean Air Act. However, with respect to the RCRA revisions, it is considered promulgated under the same authorities as the Boilers and Industrial Furnaces (BIF) rule that added the RCRA provisions being amended by this present rule. The BIFs rule is considered HSWA or non-HSWA, depending on the type of units to which the regulations are being applied. In the case of sludge dryers, infrared incinerators, carbon regeneration units and plasma arc incinerators, the provisions are non-HSWA and do not go into effect until a State is authorized for them. With respect to all other devices, the provisions are considered HSWA provisions and go into effect immediately. Only final authorization is available for the non-HSWA portion. Both interim and final authorization are available for the HSWA portion. Interim authorization expires January 1, 2003. The rule is placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 125, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following entry should be placed at Subsection XX F in the Model Revision Attorney General's Statement.

> F. State statutes and regulations are amended such that the procedures for conducting air quality modeling and screening for boilers and industrial furnaces burning hazardous wastes reference the method recommended in Appendix W of 40 CFR Part 51. State regulations and

Revision Checklist 125 Summary (cont'd)

statutes also incorporate by reference the October 1992 edition of "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" as indicated in Revision Checklist 125.

Federal Authority: §§1006, 2002, 3001 through 3007, 3010 and 7004; 40 CFR 260.11(a), 266.104(e)(3), 266.106(h) and Part 266 Appendix X, as amended July 20, 1993 (58 FR 38816).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

RCRA REVISION CHECKLIST 125

Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations 58 FR 38816-38884 July 20, 1993 (RCRA Cluster IV, HSWA/non-HSWA provisions)

Notes: 1) The final rule addressed by this checklist was promulgated pursuant to the Clean Air Act, rather than the Resource Conservation and Recovery Act, and primarily amends regulations in 40 CFR Parts 51 and 52. However, this rule also makes conforming changes to 40 CFR Parts 260 and 266 to ensure that the guidelines for air quality modeling and screening for boilers and industrial furnaces burning hazardous waste are consistent with the guidelines in 40 CFR Part 51. Only the changes to 40 CFR Parts 260 and 266 are included in this checklist. These revisions are necessary. Therefore, this checklist has been developed to help States maintain consistency with the Federal regulations. Note that States do not have to adopt the changes to 40 CFR Parts 51 and 52 to make the Part 260 and 266 changes. Rather, States should reference Appendix W, Part 51 at 266.104(e)(3) and 266.106(h).

2) Note that EPA's Office of Solid Waste is treating the changes made by the Air rule to 40 CFR Parts 260 and 266 as HSWA provisions because they amend the BIF regulations promulgated under HSWA.

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL						
SUBPART B - DEFINITIONS						
REFERENCES						
revise reference to "U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" to refer to the October 1992 version	260.11(a)					

RCRA REVISION CHECKLIST 125: Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES						
SUBPART H - HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES						
STANDARDS TO CONTROL ORGANIC EMISSIONS						
change wording to refer to Appendix W, Part 51, methods rather than Appendix X, Part 266, methods; change wording to reflect updated 260.11(a) reference; remove "on-site" after "average" in last sentence	266.104(e)(3)					
STANDARDS TO CONTROL METALS EMISSIONS						
change wording to refer to Appendix W, Part 51, methods rather than Appendix X, Part 266, methods; change wording to reflect updated 260.11(a) reference	266.106(h)					
APPENDIX X TO PART 266						
GUIDELINE ON AIR QUALITY MODELS (REVISED)						
remove text; change title to "Appendix X--Removed"	266, Appendix X					

125

federal register

Tuesday
July 20, 1993

Part II

Environmental Protection Agency

40 CFR Part 51, et al.
Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51, 52, 260 and 266

[AH–FRL–4672–7, Docket No. A–88–04]

Requirements for Preparation, Adoption, and Submittal of Implementation Plans

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The "Guideline on Air Quality Models (Revised)" (hereinafter, the "Guideline"), as modified by supplement A (1987), sets forth air quality models and guidance for estimating ambient air concentrations due to sources of air pollutants. The Guideline is presently incorporated by reference into the prevention of significant deterioration (PSD) regulations under the Clean Air Act. On February 13, 1991, EPA issued a Notice of Proposed Rulemaking (NPR) to further clarify and update the Guideline, as well as to augment the Guideline with several new modeling techniques, and to codify the Guideline for all air quality planning purposes. Today EPA takes final action in order to add new models to the Guideline and improve existing models. In addition, this action amends the CFR to incorporate supplement B as codified text, as well as giving regulatory status to long-standing EPA policy regarding the use of air quality models for other regulatory programs. Therefore, EPA is setting out the Guideline, revised by supplements A and B, as appendix W to 40 CFR part 51. Adoption of these new and refined modeling techniques and associated guidance should significantly improve the technical basis for impact assessment of air pollution sources.

EFFECTIVE DATE: This rule is effective August 19, 1993.

FOR FURTHER INFORMATION CONTACT: Joseph A. Tikvart, Chief, Source Receptor Analysis Branch, Office of Air Quality Planning and Standards (MD–14), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; Telephone (919) 541–5562 or C. Thomas Coulter, (919) 541–0832.

ADDRESSES: Docket Statement: All documents relevant to this rule have been placed in Docket No. A–88–04, located in the Central Docket Section, Room M1500 (First Floor, Waterside Mall), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. This docket is available for public inspection and copying from 8:30–12 a.m. and 1:30–3:30 p.m., Monday through Friday. A reasonable fee may be charged for copying.

Document Availability: The new modeling techniques are incorporated as supplement B (1993) to the Guideline. Supplement B may be obtained by downloading a text file from the SCRAM (Support Center for Regulatory Air Models) electronic bulletin board system by dialing in on (919) 541–5742. Supplement B may also be obtained upon written request from the Source Receptor Analysis Branch, U.S. Environmental Protection Agency (MD–14), Research Triangle Park, NC 27711. The "Guideline on Air Quality Models (Revised)" (1986), supplement A (1987), and supplement B (1993) are for sale from the U.S. Department of Commerce, Technical Information Service (NTIS), 5825 Port Royal Road, Springfield, VA 22161. These documents are also available for inspection at each of the ten EPA Regional Offices and at the EPA library at 401 M Street SW, Washington, DC.

SUPPLEMENTARY INFORMATION:

Background [1]

The "Guideline on Air Quality Models" (hereinafter, the "Guideline") was originally published in April 1978. The Guideline promotes consistency in the use of modeling as part of the air management process. By setting forth models, techniques and guidance, the Guideline provides model users with a common basis for estimating pollutant concentrations and impacts, assessing control strategies and specifying emission limits. By rulemaking in June 1978 (43 FR 26380), the Guideline was incorporated by reference into the PSD regulations at 40 CFR 51.166(l) and 52.21(l). The Guideline was subsequently revised in 1986 (51 FR 32176), and later updated with the addition of supplement A (53 FR 392).[2] As a matter of EPA policy, the Guideline has also been applied since its inception to SIP revisions for existing sources of air pollutants and to all new source reviews.

Between 1978 and 1988, in order to support the process of developing and revising the Guideline and in accordance with section 320 of the Clean Air Act, the First, Second, Third and Fourth Conferences on Air Quality Modeling were held. These modeling conferences provided EPA with comments on the Guideline and associated revisions, thereby facilitating introduction of improved modeling techniques into the regulatory process.[3]

On February 13, 1991 (*op. cit.*), EPA proposed additional changes to the Guideline referred to as supplement B. Pursuant to this proposal and Clean Air Act Section 320, the Fifth Conference on Air Quality Modeling was held in March 1991. Its purpose was to solicit public comment on new modeling techniques proposed for inclusion in supplement B, and to guide EPA's consideration of any rulemaking needed to further revise the Guideline. The revisions proposed in supplement B included techniques and guidance for situations where specific procedures had not previously been available, and also improved several previously adopted techniques. As discussed at the modeling conference, proposed changes included:

Complex terrain models (CTDMPLUS and CTSCREEN);
Mobile source modeling at signalized intersections;
Emissions and dispersion modeling system for airports;
Modeling techniques for air pathway analyses;
On-site meteorological program guidance;
General screening techniques;
Method for evaluating models;
Alternate models in appendix B;
Supplementary changes; and
Other topics (including deletion of models no longer used).

For additional information of these issues, please refer to 56 FR 5900–5907, February 13, 1991.

Final Action

Today's action updates the Guideline with changes incorporating supplement B, slightly modified in form since proposal. All significant comments have been considered, and whenever they revealed any new information or suggested any alternative solutions, such were considered in EPA's final action. Also, in keeping with the Office of the Federal Register's current policy on compliance with the Federal Register Act (44 U.S.C. 1502 *et seq.*) and the Administrative Procedures Act (5 U.S.C. 551 *et seq.*), as set forth in 1 CFR part 51, EPA is setting out the Guideline,

[1] In reviewing this preamble, note the distinction between the terms "supplement" and "appendix". Supplements A and B contain the replacement pages to effect Guideline revisions; appendix A to the Guideline is the repository for preferred models, while appendix B is the repository for alternate models justified for use on a case-by-case basis.

[2] On February 21, 1991 the Guideline, as modified by supplement A, was incorporated into the hazardous waste boiler and industrial furnace rules at 40 CFR part 266, subpart H (56 FR 7206). The Guideline was subsequently published as appendix X to part 266 (56 FR 32798); this marked the first time the Guideline had been published for inclusion in the Code of Federal Regulations.

[3] On November 15, 1990, the Clean Air Act Amendments of 1990, Pub. L. 101–549, were enacted. As amended, the Clean Air Act provides continued authority for the air quality modeling conferences and associated revisions to the Guideline.

revised by supplements A and B, as appendix W to 40 CFR part 51. In a complementary action, EPA is hereby removing appendix X to 40 CFR part 266, and changing references to the Guideline in that part to 40 CFR part 51, appendix W. EPA is also updating a reference in § 260.11(a).

As proposed, EPA is adopting CTDMPLUS as a refined technique to be included in appendix A of the Guideline. However, requirements regarding measurement height for collection of meteorological data to run CTDMPLUS are being relaxed from those originally proposed: the maximum height is 100 meters, provided that remote sensing data (e.g., SODAR) up to representative plume height are available on a routine hourly basis. CTSCREEN is being adopted as an acceptable screening technique. The previously used screening model, RTDM, may continue to be used, but the hierarchy in terms of degree of conservatism for complex terrain screening models has been eliminated.

As proposed, a new model, CAL3QHC, is included in the Guideline for estimating carbon monoxide concentrations at signalized intersections. Use of CALINE4 and TEXIN2 may continue in areas where their application has already been established at the time supplement B is promulgated. In response to public comments, the "Guideline for Modeling Carbon Monoxide from Roadway Intersections" has been modified and expanded.

As proposed, EDMS (Emissions and *D*ispersion *M*odeling *S*ystem) is being included in appendix A of the Guideline for assessing air pollutant concentrations at civilian airports and military bases.

As proposed, DEGADIS (*DENse GAs DIS*persion Model) is being included in appendix B of the Guideline. The ISC2 (*I*ndustrial *S*ource *C*omplex) model is not being generally recommended for all air pathway analyses, as originally proposed; it is now being recommended for some specific regulatory programs.

The proposed Solar Radiation/Delta-T (SRDT) method for determining atmospheric stability class is being withdrawn from supplement B (see explanation under "Discussion of Public Comments and Issues").

As proposed, EPA has identified general screening techniques, namely SCREEN and VISCREEN, for preliminary estimates of air quality impact. Minor code changes have been made to SCREEN (renamed "SCREEN2") to ensure reasonable comparability with ISC2 (especially for downwash calculations). To better support VISCREEN, EPA is working with the National Park Service to improve information on background visual ranges and encourage research development of a regional haze model.

As proposed, EPA is including the "Protocol for Determining the Best Performing Model" as the basis for justifying use of an alternative (appendix B) model for a site-specific application.

As proposed, Shoreline Dispersion Model (sea/lake breeze fumigation) and WYNDvalley (valley stagnation) are being included in appendix B of the Guideline. These models, along with MESOPUFF II (long range transport) and PLUVUE II (visibility), which are already in appendix B, are identified as available for application in the unique circumstances to which they apply on a case-by-case basis.

EPA is making several supplementary changes to the Guideline. As proposed, ERTAQ and MPSDM have been deleted from appendix B of the Guideline. EPA has also clarified and updated portions of the Guideline to make it consistent with current regulatory programs that had been established through other Agency activities. As proposed, OCD (*O*ffshore and *C*oastal *D*ispersion Model) in appendix A of the Guideline is being updated. Also as proposed, EKMA and UAM (*U*rban *A*irshed *M*odel), which is also in appendix A, are being updated to include the CB-IV chemical mechanism and guidance.

Finally, supplement B clarifies the appropriate input data for various compliance demonstrations, including that allowable emissions are to be used in PSD NAAQS analyses. Moreover, the Guideline is being codified in the Code of Federal Regulations for projections associated with AQMA analyses (§ 51.46), SIP attainment demonstrations (§ 51.112), analysis of lead concentrations (§ 51.117), regional classification for episode planning (§ 51.150), and preconstruction review of new and modified sources (§ 51.160). As proposed, EPA is not including in the Guideline either a screening technique for point sources of O_3 precursors or recommendations on the use of regional scale models.

Discussion of Public Comments and Issues

All comments presented at the fifth modeling conference and/or submitted to Docket No. A–88–04 are filed in Docket Category IV–D. Also, a verbatim transcript of the conference proceedings is available as Docket Item IV–F–1. EPA has summarized these comments, developed detailed responses, and drawn conclusions on appropriate actions for this Notice of Final Rulemaking in the document "Summary of Public Comments and EPA Responses on the Fifth Conference on Air Quality Modeling: March 1991" (Docket Item V–C–1). In this document, all significant comments have been considered and discussed. Whenever the comments revealed any new information or suggested any alternative solutions, such were considered in EPA's final action.

Major issues raised by the commenters, along with EPA responses, are summarized below. Guidance and editorial changes associated with the resolution of these issues are adopted in the appropriate sections of the Guideline and are promulgated as supplement B (1993) to the "Guideline on Air Quality Models (Revised)" (1986) (Docket Item V–B–1). See the ADDRESSES Section of this Notice (above) for general availability.

Although a more detailed summary of the comments and EPA's responses are contained in the aforementioned response-to-comments document (Docket Item V–C–1), the remainder of this preamble section overviews the primary issues encountered by the Agency during the public comment period. This overview also serves to explain the changes to the Guideline from today's action, and the main technical and policy concerns addressed by the Agency. In our view, all of the changes being made reasonably implement the mandates of the Clean Air Act, and are in fact beneficial to both EPA and the regulated community. While modeling by its nature involves approximation based on scientific methodology, and entails utilization of advanced technology as it evolves, EPA believes these changes respond to recent advances in the area so that the Guideline continues to be comprised of the best and most proven of the available models and analytical techniques, as well as reflect reasonable policy choices.

A. Complex Terrain Models

1. Refined Model: CTDMPLUS (Complex Terrain Model PLus Algorithms for Unstable Situations)

There was general support for the proposal to adopt CTDMPLUS as a refined complex terrain model. However, there was a wide variety of comments on various aspects of the model, e.g., evaluation of CTDMPLUS performance, the need for meteorological data collection using a 150 meter tower, concerns with several of the model's preprocessors, averaging times for pollutant concentration

estimates, PC (personal computer) execution time, and the definition of "complex terrain".

EPA does not agree with those comments suggesting that CTDMPLUS has been inadequately evaluated or tested. Indeed, CTDMPLUS is one of the most extensively analyzed and reviewed models ever considered. It is clearly superior in terms of accuracy and utility to other complex terrain models. The Agency does not believe that further evaluation is needed in order to include CTDMPLUS into appendix A of the Guideline.

In so doing, EPA recognizes that data requirements may prove problematical in some circumstances due to the comprehensive nature of the information demanded by the model. Although it would be imprudent to reduce multi-level data requirements for specific parameters as that would significantly compromise the model's accuracy, requirements on measurement location have been relaxed to reflect practical reality. For instance, the maximum height required for tower measurements is 100m, provided that remote sensing data (e.g., SODAR) up to representative plume height are available on a routine hourly basis; this makes the tower height requirement consistent with that already established for RTDM, as a screening technique, in the Guideline. As to those issues related to users learning and applying various preprocessors for CTDMPLUS, they can only be resolved with experience gained through wide application, and EPA encourages consultation with the EPA Regional Offices to discuss appropriate resolution. In addition to seeking assistance from the Regional Offices, users should watch for clarifications to the User's Guide as they are released via SCRAM BBS (Support Center for Regulatory Air Models Bulletin Board System).

For technical and policy reasons, EPA has decided not to make any changes to the handling of averaging times, computer system efficiency, terrain processing modules, or the definition of "complex terrain", although appropriate clarifications have been made to the Guideline to explain limitations and to urge users to confer with the EPA Regional Offices if problems are encountered.

2. Complex Terrain Screening Techniques: CTSCREEN

With regard to CTSCREEN, there was wide support for the proposed adoption of the model as a screening technique. Comments generally related to tabular values for CTSCREEN's operating parameters and the need for adequate technical guidance. Minor typographical errors regarding various model parameters have been corrected. Efforts to ensure the availability of consultation for operating the model will continue through the Regional Offices.

There was also general support for continuing RTDM as an acceptable screening technique, as EPA had proposed. The comments on elimination of a hierarchy in terms of degree of conservatism for complex terrain screening models were somewhat more mixed; the arguments for some structure were ambivalent. However, since all the screening models are conservative, the need for a hierarchy is not clear. Thus, as proposed, the hierarchy of screening models has been eliminated.

3. Intermediate Terrain

There were many comments concerning EPA's proposed clarification of acceptable modeling approaches for receptors in intermediate terrain, i.e., between stack top and plume height. The problems identified by the commenters occur where simplistic complex terrain screening techniques are used. In such circumstances, a more detailed analysis involving comparison of estimates between flat terrain and complex terrain models is necessary.

Given the focus of the comments, it is clear that there is no issue when the newer complex terrain models, i.e., CTSCREEN and CTDMPLUS, are used since these models apply to all terrain above stack height. Recognizing the commenters' concern that the proposed procedure was burdensome, overly complex, lacked formal validation and essentially represented a new technique, EPA is not recommending the approach generally at this time; however, EPA will consider accepting the use of the technique on a case-by-case basis from those who choose to implement the technique.

B. Mobile Source Modeling at Signalized Intersections

1. CAL3QHC

This model is used for estimating carbon monoxide concentrations at signalized intersections. Public comments contend that the Illinois intersection model evaluation study, on which the proposed adoption of CAL3QHC in supplement B was based, was flawed. The comments also contend that the selection of the supplement B intersection model should not be made until further intersection model evaluation is completed, utilizing the more recent New York City data base.

In response to these comments, EPA reevaluated the eight intersection models evaluated with the Illinois data base with the New York City data base. Using the MOBILE4 emissions model, the models were initially evaluated at all six intersection sites in New York City where data were collected. The MOBILE4.1 emissions model, an update to MOBILE4, was then released. The five models performing best using MOBILE4 were then evaluated using MOBILE4.1 at the three intersection sites in New York City with the highest quality data. A statistical scoring scheme was developed to determine the best performing models. The evaluation results showed CAL3QHC, TEXIN2, and CALINE4 to be the best performing models, with none of the three being statistically superior in performance to the others.

EPA points out, however, that TEXIN2 and CALINE4 contain the outdated (mid-1970s) modal emission factors. Since CAL3QHC performed as well as TEXIN2 and CALINE4 and does not contain the obsolete modal emission factors, it is being selected as the recommended intersection model for inclusion in supplement B, as proposed. However, since CALINE4 and TEXIN2 performed as well as CAL3QHC, the use of these models is being allowed for applications where their use has already been established at the time supplement B is promulgated.

2. "Guideline for Modeling CO From Roadway Intersections" (Draft)

Relatively minor public comments were received on receptor placement, ranking criteria for intersections, ambient temperature, persistence factor, hot/cold starts, background levels and wind direction. In response, the "Guideline for Modeling Carbon Monoxide from Roadway Intersections" has been modified, as appropriate, to reflect the commenters' concerns and recommendations.

C. Emissions and Dispersion Modeling System (EDMS)

Since no negative comments were received, EDMS has been identified, as proposed, in the Guideline as a recommended model in appendix A for assessing air pollutant concentrations at civilian airports and military air bases.

D. Modeling Techniques for Air Pathway Analyses

Commenters addressed a variety of topics concerning air toxics. These included applicability of Gaussian models to unconventional or intermittent sources, dense gas models, and model accuracy. In some cases, EPA has planned actions that are responsive to the commenters' concerns. In others,

due to limitations of available data bases or alternative modeling techniques on which to base a different approach, the changes to the Guideline have been implemented as originally proposed. As to these and others, commenters were unable to provide specific improvements.

ISC2 is general enough to apply to a broad category of toxic pollutant releases, which is why the model has been included in appendix A. However, supplement B now indicates that ISC2 has been recommended only for some specific regulatory programs; it is not being generally recommended for all air pathway analyses, as originally proposed.

The algorithms in ISC2 for various source types are continuously being reviewed and improvements released as appropriate. Dense gas models in the public domain have been indicated as available for use, but no one model is being required at this time. Per public comment, SLAB and HGSYSTEM will be proposed for addition to appendix B through a supplemental NPR; DENGADIS (DENse GAs DISpersion Model) is being added to appendix B as proposed in the February 1991 NPR.

Evaluating model accuracy is a continuing concern for EPA. However, there is a lack of suitable data bases to take such evaluations beyond their current extent. Nevertheless, where Gaussian models are applied to conventional source types for risk assessment, there is little basis for concern about overestimates of health risks; these models have consistently demonstrated a tendency to underestimate concentrations for longer averaging times.

E. On-Site Meteorological Program Guidance

Since the close of the public comment period, the evaluation supporting the SRDT method was found to have been based on a flawed implementation of the method (software error) and thus the conclusions of that evaluation are suspect. While public comments were generally supportive of the SRDT method, it unfortunately must be withdrawn from supplement B because of this oversight. Pending results of additional evaluations, the SRDT method may be re-proposed in a future supplemental rulemaking to augment the Guideline. However, as proposed, "On-site Meteorological Program Guidance for Regulatory Modeling Applications" (EPA–450/4–87–013) and a Meteorological Processor for Regulatory Models (MPRM)(EPA–600/3–88–043) are cited as the primary source of supplemental guidance and analysis for collection and use of on-site meteorological data (without reference to the SRDT system).

F. General Screening Techniques

1. SCREEN

EPA proposed to identify "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" with SCREEN as the recommended screening technique in Guideline Section 4.2. A number of changes to SCREEN were suggested by public commenters. As necessary, a number of these changes have been made, through minor code corrections, to ensure reasonable comparability with ISC2. However, based on careful analyses of other suggested changes (e.g., those involving flares and mixing height), EPA has decided to retain SCREEN largely as proposed so as to keep intact the philosophy of SCREEN as a conservative screening technique. As a result of the minor code corrections, this technique has been renamed "SCREEN2".

2. VISCREEN

EPA proposed to identify "Workbook for Plume Visual Impact Screening and Analysis" with VISCREEN as the recommended screening technique for visibility assessments in Guideline section 7.2.4. Numerous detailed comments were provided on VISCREEN and the associated Workbook. However, after careful review, it is apparent that many of the comments were misdirected, sought a level of detail that is inappropriate for a screening analysis, or requested procedures still being researched. As a result, EPA is not changing its proposal on this point. However, to better support the technique, EPA is working with the National Park Service to provide information on background visual ranges and to encourage research development in regional haze modeling techniques.

G. Method for Evaluating Models

EPA proposed to include the "Protocol for Determining the Best Performing Model" ("Protocol") as an adjunct to "Interim Procedures for Evaluating Air Quality Models" (EPA–450/4–84–023) when a party seeks to justify the use of an alternative model for a site-specific application. Most of the comments offered by the public dealt with the degree of flexibility that EPA will permit in developing case-specific model evaluation protocols. This issue is addressed in the Protocol, which indicates that specific test statistics and performance measures described therein may need to be adapted to coincide with the data bases and objectives established for a particular evaluation study. Therefore, EPA has referenced the Protocol in Guideline Sections 3.2 and 10.1, as proposed.

H. Alternate Models in Appendix B

Unlike appendix A of the Guideline, which is a repository of summaries of refined air quality models that are "preferred" for specific applications, appendix B contains summaries of other refined models that may be considered with a case-specific justification. In the February 1991 NPR, EPA solicited comments on the inclusion of four models in appendix B: SDM (Shoreline Dispersion Model), WYNDvalley, MESOPUFF II, and PLUVUE II.

Public comments concerned the lack of an adequate performance evaluation for MESOPUFF II, although data bases for development and assessment of MESOPUFF II or other long range transport models were not identified. In fact, EPA has evaluated the performance of MESOPUFF II and several other long range transport models using available data bases. Although MESOPUFF II was found to be the best performing model, this evaluation resulted in EPA's decision to not propose the model for listing in appendix A of the Guideline. Furthermore, since public comments identifying concerns with the MESOPUFF II estimates of SO_2 conversion and removal presented no additional justification for changes in the model, the policy of case-by-case application of the model using agreed-upon protocols is continuing.

Regarding other models, no comments specifically related to PLUVUE II were received; comments about the proposed inclusion of SDM and WYNDvalley in appendix B of the Guideline were generally favorable. EPA has added SDM and WYNDvalley to appendix B of the Guideline, as proposed; PLUVUE II is already in appendix B. These three models, along with MESOPUFF II and its application protocol, have been identified, as proposed, as models available for application on a case-by-case basis in the following respective parts of the Guideline: Section 8.2.9, 8.2.10, 7.2.4, and 7.2.6. These models are either unique to the specified application or are at least as accurate as other available models. However, due to limitations of data bases for evaluating the models, no further model development or evaluation is feasible at this time. Nor is more detailed guidance appropriate; case-specific consultation with Regional Offices appears to be the most reasonable approach.

I. Supplementary Changes

1. Regional Office Consultation on VOC/NO_x Point Source Modeling

No negative comments were received on this topic, and the Guideline reflects the changes noted in the NPR.

2. Clarification of Modeling Requirements Applicable to PSD (NO_2)

Commenters expressed a desire for modeling techniques more refined than those proposed to handle annual average concentrations of NO_2 as they relate to PSD compliance demonstrations. However, no practical techniques which deal with the explicit use of UAM (*Urban Airshed Model*) or with estimating long-term averages were identified. Therefore, since some procedure is needed to treat NO_2 and long-term averages for PSD, the original proposal, though limited, is being maintained for inclusion in the Guideline.

3. PM–10 Issues

No negative comments were received on the proposal to change references to particulate matter so that "PM–10" replaces "TSP" (Guideline Sections 7.2.2 and 11.2.3). Other Guideline changes suggested by commenters which involve references to receptor models are already addressed in the Guideline in a clear and consistent manner; they require no further changes or additions.

4. Clarification on Emissions Data for PSD NAAQS Analyses

Commenters took exception to the use of allowable emissions in modeling analyses for PSD NAAQS. A variety of alternatives was suggested for changing Table 9–2 as proposed, which ranged from the use of actual emissions to use of techniques for statistically approximating emissions variability. EPA maintains however that, once permitted, sources may operate at their legally allowable levels and that these must be considered in the modeling analyses. Appropriate allowances for modifying emissions to represent annual impacts and to account for background sources have been provided for in Guideline Table 9–1 and the proposed Table 9–2, and have long standing in past practice. EPA is authorized by the Clean Air Act to require the use of allowable emissions. Thus, no change to the proposed guidance is being made.

5. Deletion of ERTAQ and MPSDM From Appendix B

No negative comments were received on the proposal to delete these two models from appendix B as requested by the models' developer. These models have been deleted, as proposed.

6. Updates to OCD

No negative comments were received on this topic. This model has been updated to reflect recent improvements prepared by the Minerals Management Service, as proposed.

7. Updates to UAM and EKMA (OZIPP)

No negative comments were received on the proposal to update EKMA (OZIPP) to include the CB–IV chemical mechanism and guidance. Likewise, with respect to UAM, there were no comments on the use of the CB–IV mechanism; therefore, a version of UAM with that chemical mechanism has been specifically recommended in appendix A of the Guideline. Public comments on the "Guideline for Regulatory Application of the Urban Airshed Model" concerning such topics as data base criteria, grid size, boundary conditions, and UAM performance evaluation have been thoroughly addressed through consultation with the work group that helped in its development. A revised guide on the use of UAM in SIP development has been prepared and released; that guidance has been referenced in the Guideline.

8. Codification of the "Guideline on Air Quality Models"

Several commenters opposed EPA's proposal to codify the Guideline in the Code of Federal Regulations for regulatory purposes in certain programs, in addition to PSD permitting. These commenters claimed that codification would unduly limit flexibility of States and sources to use alternative models, data bases, and procedures for these other SIP applications. As stated in its Introduction, the Guideline describes "air quality modeling techniques that should be applied to State Implementation Plan (SIP) revisions for existing sources and to new source reviews * * *", and this has always been EPA policy. Use of the Guideline represents long-standing EPA policy and codification would not, in fact, limit flexibility of States or industry as to models, data bases or attainment demonstrations for SIPs. The Guideline, by its terms, provides the flexibility sought by these commenters, because it allows the use of models other than these set forth in appendix A whenever it is appropriate to do so. EPA believes that the comprehensive use of the Guideline under the other provisions promotes consistency in model usage and is in accordance with the authority granted by Sections 110(a)(2), 165(e), 172, 173, 301(a)(1) and 320 of the 1977 Clean Air Act Amendments (42 U.S.C 7410(a)(2), 7475(e), 7502(a) & (b), 7503, 7601(a)(1) and 7620, respectively). The codification therefore is being implemented as proposed. In order to better facilitate this action, the Guideline, as revised through supplement B, will now be published as appendix W to 40 CFR part 51.[4]

J. Other Topics

1. A Screening Technique for Point Sources of O_3 Precursors

Based on public support, screening techniques for estimating VOC/NO_x point source emission impacts on O_3 have not been included in the Guideline at this time.

2. Usefulness of Regional Scale Models to Regulatory Programs

No public comments on this topic were received. Therefore, as proposed by EPA, recommendations on the use of regional scale models have not been included in the Guideline at this time.

K. Miscellaneous Comments

In addition to the topics described above, substantial comments were received which were not specifically solicited in the February 1991 NPR. These comments pertained to the following: (1) Industrial Source Complex (*ISC2*) *Model*; (2) *Fugitive Dust Model* (FDM); and (3) general modeling guidance.

1. Industrial Source Complex Model

A wide range of comments were presented on the adequacy of the computational code in general and more specifically on the downwash, area source and deposition algorithms. In response to some of these comments, it should be noted that EPA has completed a program to improve the structure of the code. This enhanced code makes the model much more usable, but does not change the way concentrations are calculated and does not alter the basic downwash, area source and deposition algorithms. In addition, a preprocessor which addresses building orientation in a way consistent with current guidance will be made available, thus relieving some of the computational burden.

Lack of a cavity algorithm in ISC2 to calculate downwash is also of concern to EPA and is a high research priority, but no immediate solution is available.

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[4] In a conforming action, EPA is hereby deleting appendix X to 40 CFR 266, subpart H (Hazardous Waste Burned in Boilers and Industrial Furnaces). EPA is also changing reference to the Guideline in part 266 to 40 CFR part 51, appendix W.

Where there is confusion in the Guideline about downwash calculations, clarifications have been made. Other remarks about the downwash calculations reflected confusion on the part of the commenter(s) or a lack of data on which to base a better algorithm. Thus, no further action to change downwash calculations is planned at this time.

EPA shares the commenters' concerns about potential deficiencies in the area source and deposition algorithms and is evaluating these and alternative schemes. If new algorithms are identified for use, they will be proposed for public review and comment before being implemented for regulatory application. Until such a proposal is prepared, the current algorithms in ISC2 should continue to be used, as appropriate.

2. Fugitive Dust Model

There were several strong comments in favor of adopting FDM in appendix A of the Guideline as the recommended model for sources of fugitive dust as it relates to both PM–10 and airborne toxic materials. Nevertheless, there has been insufficient opportunity for public comment on this model. Thus, the model algorithms will be considered in a supplemental NPR.

3. General Modeling Guidance

Highly varied comments and Agency responses on other topics not addressed in the February 1991 NPR are summarized in Section 12 of the "Summary of Public Comments and EPA Responses on the Fifth Conference on Air Quality Modeling: March 1991" (Docket Item V–C–1). The comments deal with a wide range of topics primarily related to management of EPA's modeling guidance. In most cases, the commenters seem to have misunderstood the way in which such guidance is issued and updated by the Agency, or the commenters have made inappropriate recommendations that are not consistent with long-standing EPA policies. As such, with one exception, no action appears appropriate. That exception has to do with determination of PSD impacts in Class I areas; work is underway on this topic and will be subjected to public review and comment when completed.

Administrative Requirements

A. Executive Order 12291

Under Executive Order (E.O.) 12291, EPA is required to judge whether a regulation is "major" and therefore subject to the requirement of a regulatory impact analysis (RIA). The criteria set forth in section 1 of the Order for this determination are: (1) Likelihood to have an annual effect on the economy of $100 million or more; (2) likelihood to cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local governments, or geographic regions; or (3) likelihood to result in significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule does not change the proposal's conclusions regarding E.O. 12291, specifically that the regulation is not "major" because it would result in none of the adverse effects mentioned above. This rule has been submitted to the Office of Management and Budget (OMB) for review under E.O. 12291, as required, and their written comments and any EPA responses thereto will be available as Docket Item IV–H–1 (see ADDRESSES).

B. Paperwork Reduction Act

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

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires EPA to consider potential impacts of regulations on small business "entities". Pursuant to the provisions of 5 U.S.C. 605(b), the Administrator hereby certifies that the attached final rule will not have a significant impact on a substantial number of such entities. This rule merely updates existing technical requirements for air quality modeling analyses mandated by various Clean Air Act programs (e.g., prevention of significant deterioration, new source review, SIP revisions) and imposes no new regulatory burdens.

List of Subjects

40 CFR Part 51

Administrative practice and procedure, Air pollution control, Carbon monoxide, Hydrocarbons, Incorporation by reference, Intergovernmental relations, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides.

40 CFR Part 52

Air pollution control, Lead, Nitrogen dioxide, Ozone, Sulfur oxides.

40 CFR Parts 260 and 266

Air pollution control, Hazardous waste.

Dated: June 21, 1993.

Carol M. Browner,

Administrator.

Parts 51, 52, 260 and 266, chapter I, title 40 of the Code of Federal Regulations are amended as follows:

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

1. The authority citation for part 51 is revised to read as follows:

Authority: 42 U.S.C. 7410(a)(2), 7475(e), 7502 (a) and (b), 7503, 7601(a)(1) and 7620.

2. Section 51.46 is amended by revising paragraph (b) and removing paragraph (c) to read as follows:

§ 51.46 AQMA analysis: Projection of air quality concentrations.

* * * * *

(b) Unless alternative techniques are approved under § 51.63, such concentrations shall be projected using techniques consistent with the requirements in § 51.112(a).

§ 51.63 [Amended]

3. In § 51.63, paragraph (a) is amended by removing "51.46,".

4. In § 51.112, paragraph (a) is amended by removing the second sentence and adding paragraphs (a)(1) and (a)(2) to read as follows:

§ 51.112 Demonstration of adequacy.

(a) * * *

(1) The adequacy of a control strategy shall be demonstrated by means of applicable air quality models, data bases, and other requirements specified in the appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)). The Guideline and its supplements (EPA Publication No. 450/2–78–027R) are also for sale from the U.S. Department of Commerce, National Technical Information Service, 5825 Port Royal Road, Springfield, VA 22161.

(2) Where an air quality model specified in appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)) is inappropriate, the model may be modified or another model substituted. Such a modification or substitution of a model may be made on a case-by-case basis or, where appropriate, on a generic basis for a specific state program. Written approval of the Administrator

must be obtained for any modification or substitution. In addition, use of a modified or substituted model must be subject to notice and opportunity for public comment under procedures set forth in § 51.102.

* * * * *

§ 51.117 [Amended]

5. In § 51.117, paragraph (c)(1) is amended by adding the phrase ", consistent with requirements contained in § 51.112(a)" immediately after "if desired". Paragraph (c)(2) is amended by adding the phrase ", consistent with requirements contained in § 51.112(a)" immediately after "for demonstration of attainment". Paragraph (c)(3) is amended by adding the phrase ", consistent with requirements contained in § 51.112(a)" immediately after "for the demonstration of attainment".

§ 51.150 [Amended]

6. In § 51.150, paragraph (e) is amended by adding the phrase ", consistent with the requirements contained in § 51.112(a)" immediately after "of this section" in the first sentence, and by removing the second sentence.

7. Section 51.160 is amended by adding paragraphs (f)(1) and (f)(2) to read as follows:

§ 51.160 Legally enforceable procedures.

* * * * *

(f) * * *

(1) All applications of air quality modeling involved in this subpart shall be based on the applicable models, data bases, and other requirements specified in the appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)). The Guideline and its supplements (EPA Publication No. 450/2–78–027R) are also for sale from the U.S. Department of Commerce, National Technical Information Service, 5825 Port Royal Road, Springfield, VA, 22161.

(2) Where an air quality model specified in the appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)) is inappropriate, the model may be modified or another model substituted. Such a modification or substitution of a model may be made on a case-by-case basis or, where appropriate, on a generic basis for a specific state program. Written approval of the Administrator must be obtained for any modification or substitution. In addition, use of a modified or substituted model must be subject to notice and opportunity for public comment under procedures set forth in § 51.102.

8. Section 51.166 is amended by revising paragraphs (l)(1) and (l)(2) to read as follows:

§ 51.166 Prevention of significant deterioration of air quality.

* * * * *

(l) * * *

(1) All applications of air quality modeling involved in this subpart shall be based on the applicable models, data bases, and other requirements specified in the appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)). The Guideline and its supplements (EPA Publication No. 450/2–78–027R) are also for sale from the U.S. Department of Commerce, National Technical Information Service, 5825 Port Royal Road, Springfield, VA, 22161.

(2) Where an air quality model specified in the Appendix W of this part ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)) is inappropriate, the model may be modified or another model substituted. Such a modification or substitution of a model may be made on a case-by-case basis or, where appropriate, on a generic basis for a specific state program. Written approval of the Administrator must be obtained for any modification or substitution. In addition, use of a modified or substituted model must be subject to notice and opportunity for public comment under procedures set forth in § 51.102.

* * * * *

9. Part 51 is amended by adding appendix W to read as follows:

Appendix W to Part 51—Guideline on Air Quality Models (Revised)

[EPA Document Number EPA–450/2–78–027R]

Preface

Industry and control agencies have long expressed a need for consistency in the application of air quality models for regulatory purposes. In the 1977 Clean Air Act, Congress mandated such consistency and encouraged the standardization of model applications. The Guideline on Air Quality Models was first published in April 1978 to satisfy these requirements by specifying models and providing guidance for their use. This guideline provides a common basis for estimating the air quality concentrations used in assessing control strategies and developing emission limits.

The continuing development of new air quality models in response to regulatory requirements and the expanded requirements for models to cover even more complex problems have emphasized the need for periodic review and update of guidance on these techniques. Four primary on-going activities provide direct input to revisions of this modeling guideline. The first is a series of annual EPA workshops conducted for the purpose of ensuring consistency and providing clarification in the application of models. The second activity, directed toward the improvement of modeling procedures, is the cooperative agreement that EPA has with the scientific community represented by the American Meteorological Society. This agreement provides scientific assessment of procedures and proposed techniques and sponsors workshops on key technical issues. The third activity is the solicitation and review of new models from the technical and user community. In the March 27, 1980 Federal Register, a procedure was outlined for the submittal to EPA of privately developed models. After extensive evaluation and scientific review, these models, as well as those made available by EPA, are considered for recognition in this guideline. The fourth activity is the extensive on-going research efforts by EPA and others in air quality and meteorological modeling.

Based primarily on these four activities, this document embodies revisions to the "Guideline on Air Quality Models." Although the text has been revised from the 1978 guide, the present content and topics are similar. As necessary, new sections and topics are included. EPA does not make changes to the guidance on a predetermined schedule, but rather on an as needed basis. EPA believes that revisions to this guideline should be timely and responsive to user needs and should involve public participation to the greatest possible extent. All future changes to the guidance will be proposed and finalized in the Federal Register. Information on the current status of modeling guidance can always be obtained from EPA's Regional Offices.

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1.0 Introduction

This guideline recommends air quality modeling techniques that should be applied to State Implementation Plan (SIP)[1] revisions for existing sources and to new source reviews,[2] including prevention of significant deterioration (PSD).[3] It is intended for use by EPA Regional Offices in judging the adequacy of modeling analyses performed by EPA, State and local agencies and by industry. The guidance is appropriate for use by other Federal agencies and by State agencies with air quality and land management responsibilities. It serves to identify, for all interested parties, those techniques and data bases EPA considers acceptable. The guide is not intended to be a compendium of modeling techniques. Rather, it should serve as a basis by which air quality managers, supported by sound scientific judgment, have a common measure of acceptable technical analysis.

Due to limitations in the spatial and temporal coverage of air quality measurements, monitoring data normally are not sufficient as the sole basis for demonstrating the adequacy of emission limits for existing sources. Also, the impacts of new sources that do not yet exist can only be determined through modeling. Thus, models, while uniquely filling one program need, have become a primary analytical tool in most air quality assessments. Air quality measurements though can be used in a complementary manner to dispersion models, with due regard for the strengths and weaknesses of both analysis techniques. Measurements are particularly useful in assessing the accuracy of model estimates. The use of air quality measurements alone however could be preferable, as detailed in a later section of this document, when models are found to be unacceptable and monitoring data with sufficient spatial and temporal coverage are available.

It would be advantageous to categorize the various regulatory programs and to apply a designated model to each proposed source needing analysis under a given program. However, the diversity of the nation's topography and climate, and variations in source configurations and operating characteristics dictate against a strict modeling "cookbook." There is no one model capable of properly addressing all conceivable situations even within a broad category such as point sources. Meteorological phenomena associated with threats to air quality standards are rarely amenable to a single mathematical treatment; thus, case-by-case analysis and judgment are frequently required. As modeling efforts become more complex, it is increasingly important that they be directed by highly competent individuals with a broad range of experience and knowledge in air quality meteorology. Further, they should be coordinated closely with specialists in emissions characteristics, air monitoring and data processing. The judgment of experienced meteorologists and analysts is essential.

The model that most accurately estimates concentrations in the area of interest is always sought. However, it is clear from the needs expressed by the States and EPA Regional Offices, by many industries and trade associations, and also by the deliberations of Congress, that consistency in the selection and application of models and data bases should also be sought, even in case-by-case analyses. Consistency ensures that air quality control agencies and the general public have a common basis for estimating pollutant concentrations, assessing control strategies and specifying emission limits. Such consistency is not, however, promoted at the expense of model and data base accuracy. This guide provides a consistent basis for selection of the most accurate models and data bases for use in air quality assessments.

Recommendations are made in this guide concerning air quality models, data bases, requirements for concentration estimates, the use of measured data in lieu of model estimates, and model evaluation procedures. Models are identified for some specific applications. The guidance provided here should be followed in all air quality analyses relative to State Implementation Plans and in analyses required by EPA, State and local agency air programs. The EPA may approve the use of another technique that can be demonstrated to be more appropriate than those recommended in this guide. This is discussed at greater length in Section 3.0. In all cases, the model applied to a given situation should be the one that provides the most accurate representation of atmospheric transport, dispersion, and chemical transformations in the area of interest. However, to ensure consistency, deviations from this guide should be carefully documented and fully supported.

From time to time situations arise requiring clarification of the intent of the guidance on a specific topic. Periodic workshops are held with the EPA Regional Meteorologists to

ensure consistency in modeling guidance and to promote the use of more accurate air quality models and data bases. The workshops serve to provide further explanations of guideline requirements to the Regional Offices and workshop reports are issued with this clarifying information. In addition, findings from on-going research programs, new model submittals, or results from model evaluations and applications are continuously evaluated. Based on this information changes in the guidance may be indicated.

All changes to this guidance must follow rulemaking requirements since the guideline is codified in Appendix W of part 51. EPA will promulgate proposed and final rules in the Federal Register to amend this Appendix. Ample opportunity for public comment will also be provided for each proposed change and public hearings scheduled if requested. Final rule changes will also be made available through the National Technical Information Service (NTIS).

A wide range of topics on modeling and data bases are discussed in the remainder of this guideline. Chapter 2 gives an overview of models and their appropriate use. Chapter 3 provides specific guidance on the use of "preferred" air quality models and on the selection of alternative techniques. Chapters 4 through 7 provide recommendations on modeling techniques for application to simple-terrain stationary source problems, complex terrain problems, and mobile source problems. Specific modeling requirements for selected regulatory issues are also addressed. Chapter 8 discusses issues common to many modeling analyses, including acceptable model components. Chapter 9 makes recommendations for data inputs to models including source, meteorological and background air quality data. Chapter 10 covers the uncertainty in model estimates and how that information can be useful to the regulatory decision-maker. The last chapter summarizes how estimates and measurements of air quality are used in assessing source impact and in evaluating control strategies.

Appendix W to 40 CFR part 51 (the "Guideline on Air Quality Models (Revised)") itself contains three appendices: A, B, and C. Thus, when reference is made to "appendix A" in this document, it refers to the appendix A to appendix W to 40 CFR part 51. Appendices B and C are referenced in the same way.

Appendix A contains summaries of refined air quality models that are "preferred" for specific applications; both EPA models and models developed by others are included. Appendix B contains summaries of other refined models that may be considered with a case-specific justification. Appendix C contains a checklist of requirements for an air quality analysis.

2.0 Overview of Model Use

Before attempting to implement the guidance contained in this document, the reader should be aware of certain general information concerning air quality models and their use. Such information is provided in this section.

2.1 Suitability of Models

The extent to which a specific air quality model is suitable for the evaluation of source impact depends upon several factors. These include: (1) The meteorological and topographic complexities of the area; (2) the level of detail and accuracy needed for the analysis; (3) the technical competence of those undertaking such simulation modeling; (4) the resources available; and (5) the detail and accuracy of the data base, i.e., emissions inventory, meteorological data, and air quality data. Appropriate data should be available before any attempt is made to apply a model. A model that requires detailed, precise, input data should not be used when such data are unavailable. However, assuming the data are adequate, the greater the detail with which a model considers the spatial and temporal variations in emissions and meteorological conditions, the greater the ability to evaluate the source impact and to distinguish the effects of various control strategies.

Air quality models have been applied with the most accuracy or the least degree of uncertainty to simulations of long term averages in areas with relatively simple topography. Areas subject to major topographic influences experience meteorological complexities that are extremely difficult to simulate. Although models are available for such circumstances, they are frequently site specific and resource intensive. In the absence of a model capable of simulating such complexities, only a preliminary approximation may be feasible until such time as better models and data bases become available.

Models are highly specialized tools. Competent and experienced personnel are an essential prerequisite to the successful application of simulation models. The need for specialists is critical when the more sophisticated models are used or the area being investigated has complicated meteorological or topographic features. A model applied improperly, or with inappropriately chosen data, can lead to serious misjudgments regarding the source impact or the effectiveness of a control strategy.

The resource demands generated by use of air quality models vary widely depending on the specific application. The resources required depend on the nature of the model and its complexity, the detail of the data base, the difficulty of the application, and the amount and level of expertise required. The costs of manpower and computational facilities may also be important factors in the selection and use of a model for a specific analysis. However, it should be recognized that under some sets of physical circumstances and accuracy requirements, no present model may be appropriate. Thus, consideration of these factors should not lead to selection of an inappropriate model.

2.2 Classes of Models

The air quality modeling procedures discussed in this guide can be categorized into four generic classes: Gaussian, numerical, statistical or empirical, and physical. Within these classes, especially Gaussian and numerical models, a large number of individual "computational algorithms" may exist, each with its own specific applications. While each of the algorithms may have the same generic basis, e.g., Gaussian, it is accepted practice to refer to them individually as models. For example, the CRSTER model and the RAM model are commonly referred to as individual models. In fact, they are both variations of a basic Gaussian model. In many cases the only real difference between models within the different classes is the degree of detail considered in the input or output data.

Gaussian models are the most widely used techniques for estimating the impact of nonreactive pollutants. Numerical models may be more appropriate than Gaussian models for area source urban applications that involve reactive pollutants, but they require much more extensive input data bases and resources and therefore are not as widely applied. Statistical or empirical techniques are frequently employed in situations where incomplete scientific understanding of the physical and chemical processes or lack of the required data bases make the use of a Gaussian or numerical model impractical. Various specific models in these three generic types are discussed in this guideline.

Physical modeling, the fourth generic type, involves the use of wind tunnel or other fluid modeling facilities. This class of modeling is a complex process requiring a high level of technical expertise, as well as access to the necessary facilities. Nevertheless, physical modeling may be useful for complex flow situations, such as building, terrain or stack down-wash conditions, plume impact on elevated terrain, diffusion in an urban environment, or diffusion in complex terrain. It is particularly applicable to such situations for a source or group of sources in a geographic area limited to a few square kilometers. If physical modeling is available and its applicability demonstrated, it may be the best technique. A discussion of physical modeling is beyond the scope of this guide. The EPA publication "Guideline for Fluid Modeling of Atmospheric Diffusion,"[4] provides information on fluid modeling applications and the limitations of that method.

2.3 Levels of Sophistication of Models

In addition to the various classes of models, there are two levels of sophistication. The first level consists of general, relatively simple estimation techniques that provide conservative estimates of the air quality impact of a specific source, or source category. These are screening techniques or screening models. The purpose of such techniques is to eliminate the need of further more detailed modeling for those sources that clearly will not cause or contribute to ambient concentrations in excess of either the National Ambient Air Quality Standards (NAAQS)[5] or the allowable prevention of significant deterioration (PSD) concentration increments.[3] If a screening technique indicates that the concentration contributed by the source exceeds the PSD increment or the increment remaining to just meet the NAAQS, then the second level of more sophisticated models should be applied

The second level consists of those analytical techniques that provide more detailed treatment of physical and chemical atmospheric processes, require more detailed and precise input data, and provide more specialized concentration estimates. As a result they provide a more refined and, at least theoretically, a more accurate estimate of source impact and the effectiveness of control strategies. These are referred to as refined models.

The use of screening techniques followed by a more refined analysis is always desirable, however there are situations where the screening techniques are practically and technically the only viable option for estimating source impact. In such cases, an attempt should be made to acquire or improve the necessary data bases and to develop appropriate analytical techniques.

3.0 Recommended Air Quality Models

This section recommends refined modeling techniques that are preferred for use in regulatory air quality programs. The status of models developed by EPA, as well as those submitted to EPA for review and possible inclusion in this guidance, is discussed. The section also addresses the selection of models for individual cases and provides recommendations for situations where the preferred models are not applicable. Two additional sources of modeling guidance, the Model Clearinghouse[6] and periodic Regional Meteorologists' workshops, are also briefly discussed here.

In all regulatory analyses, especially if other than preferred models are selected for use, early discussions among Regional Office staff, State and local control agencies, industry representatives, and where appropriate, the Federal Land Manager, are invaluable and are encouraged. Agreement on the data base to be used, modeling techniques to be applied and the overall technical approach, prior to the actual analyses, helps avoid misunderstandings concerning the final results and may reduce the later need for additional analyses. The use of an air quality checklist, such as presented in appendix C, and the preparation of a written protocol help to keep misunderstandings at a minimum.

It should not be construed that the preferred models identified here are to be permanently used to the exclusion of all others or that they are the only models available for relating emissions to air quality. The model that most accurately estimates concentrations in the area of interest is always sought. However, designation of specific models is needed to promote consistency in model selection and application.

The 1980 solicitation of new or different models from the technical community[7] and the program whereby these models are evaluated, established a means by which new models are identified, reviewed and made available in the guideline. There is a pressing need for the development of models for a wide range of regulatory applications. Refined models that more realistically simulate the physical and chemical process in the atmosphere and that more reliably estimate pollutant concentrations are required. Thus, the solicitation of models is considered to be continuous.

3.1 Preferred Modeling Techniques

3.1.1 Discussion

EPA has developed approximately 10 models suitable for regulatory application. More than 20 additional models were submitted by private developers for possible inclusion in the guideline. These refined models have all been organized into eight categories of use: rural, urban industrial complex, reactive pollutants, mobile sources, complex terrain, visibility, and long range transport. They are undergoing an intensive evaluation by category. The evaluation exercises[8,9,10] include statistical measures of model performance in comparison with measured air quality data as suggested by the American Meteorological Society[11] and, where possible, peer scientific reviews.[12,13,14]

When a single model is found to perform better than others in a given category, it is recommended for application in that category as a preferred model and listed in Appendix A. If no one model is found to clearly perform better through the evaluation exercise, then the preferred model listed in appendix A is selected on the basis of other factors such as past use, public familiarity, cost or resource requirements, and availability. No further evaluation of a preferred model is required if the source follows EPA recommendations specified for the model in this guideline. The models not specifically recommended for use in a particular category are summarized in appendix B. These models should be compared with measured air quality data when they are used for regulatory applications consistent with recommendations in section 3.2.

The solicitation of new refined models which are based on sounder scientific principles and which more reliably estimate pollutant concentrations is considered by EPA to be continuous. Models that are submitted in accordance with the provisions outlined in the Federal Register notice of March 1980 (45 FR 20157)[7] will be evaluated as submitted. These requirements are:

1. The model must be computerized and functioning in a common Fortran language suitable for use on a variety of computer systems.

2. The model must be documented in a user's guide which identifies the mathematics of the model, data requirements and program operating characteristics at a level of detail comparable to that available for currently recommended models, e.g., the Single Source (CRSTER) Model.

3. The model must be accompanied by a complete test data set including input parameters and output results. The test data must be included in the user's guide as well as provided in computer-readable form.

4. The model must be useful to typical users, e.g., State air pollution control agencies, for specific air quality control problems. Such users should be able to operate the computer program(s) from available documentation.

5. The model documentation must include a comparison with air quality data or with other well-established analytical techniques.

6. The developer must be willing to make the model available to users at reasonable cost or make it available for public access through the National Technical Information Service; the model cannot be proprietary.

The evaluation process will include a determination of technical merit, in accordance with the above six items including the practicality of the model for use in ongoing regulatory programs. Each model will also be subjected to a performance evaluation for an appropriate data base and to a peer scientific review. Models for wide use (not just an isolated case!) found to perform better, based on an evaluation for the same data bases used to evaluate models in appendix A, will be proposed for inclusion as preferred models in future guideline revisions.

3.1.2 Recommendations

Appendix A identifies refined models that are preferred for use in regulatory applications. If a model is required for a particular application, the user should select a model from that appendix. These models may be used without a formal demonstration of applicability as long as they are used as indicated in each model summary of appendix A. Further recommendations for the application of these models to specific source problems are found in subsequent sections of this guideline.

If changes are made to a preferred model without affecting the concentration estimates, the preferred status of the model is unchanged. Examples of modifications that do not affect concentrations are those made to enable use of a different computer or those that affect only the format or averaging time of the model results. However, when any changes are made, the Regional Administrator should require a test case example to demonstrate that the concentration estimates are not affected.

A preferred model should be operated with the options listed in appendix A as "Recommendations for Regulatory Use." If other options are exercised, the model is no longer "preferred." Any other modification to a preferred model that would result in a change in the concentration estimates likewise alters its status as a preferred model. Use of the model must then be justified on a case-by-case basis.

3.2 Use of Alternative Models

3.2.1 Discussion Selection of the best techniques for each individual air quality analysis is always encouraged, but the selection should be done in a consistent manner. A simple listing of models in this guide cannot alone achieve that consistency nor can it necessarily provide the best model for all possible situations. An EPA document, "Interim Procedures for Evaluating Air Quality Models",[15,16] has been prepared to assist in developing a consistent approach when justifying the use of other than the preferred modeling techniques recommended in this guide. An alternative to be considered to the performance measures contained in chapter 3 of this document is set forth in another EPA document "Protocol for Determining the Best Performing Model".[17] The procedures in both documents provide a general framework for objective decision-

making on the acceptability of an alternative model for a given regulatory application. The documents contain procedures for conducting both the technical evaluation of the model and the field test or performance evaluation.

This section discusses the use of alternate modeling techniques and defines three situations when alternative models may be used.

3.2.2 Recommendations. Determination of acceptability of a model is a Regional Office responsibility. Where the Regional Administrator finds that an alternative model is more appropriate than a preferred model, that model may be used subject to the recommendations below. This finding will normally result from a determination that (1) a preferred air quality model is not appropriate for the particular application; or (2) a more appropriate model or analytical procedure is available and is applicable.

An alternative model should be evaluated from both a theoretical and a performance perspective before it is selected for use. There are three separate conditions under which such a model will normally be approved for use: (1) If a demonstration can be made that the model produces concentration estimates equivalent to the estimates obtained using a preferred model; (2) if a statistical performance evaluation has been conducted using measured air quality data and the results of that evaluation indicate the alternative model performs better for the application than a comparable model in appendix A; and (3) if there is no preferred model for the specific application but a refined model is needed to satisfy regulatory requirements. Any one of these three separate conditions may warrant use of an alternative model. Some known alternative models that are applicable for selected situations are contained in appendix B. However, inclusion there does not infer any unique status relative to other alternative models that are being or will be developed in the future.

Equivalency is established by demonstrating that the maximum or highest, second highest concentrations are within 2 percent of the estimates obtained from the preferred model. The option to show equivalency is intended as a simple demonstration of acceptability for an alternative model that is so nearly identical (or contains options that can make it identical) to a preferred model that it can be treated for practical purposes as the preferred model. Two percent was selected as the basis for equivalency since it is a rough approximation of the fraction that PSD Class I increments are of the NAAQS for SO_2, i.e., the difference in concentrations that is judged to be significant. However, notwithstanding this demonstration, use of models that are not equivalent may be used when one of the two other conditions identified below are satisfied.

The procedures and techniques for determining the acceptability of a model for an individual case based on superior performance is contained in the document entitled "Interim Procedures for Evaluating Air Quality Models",[15] and should be followed, as appropriate.[a] Preparation and implementation of an evaluation protocol which is acceptable to both control agencies and regulated industry is an important element in such an evaluation.

When no appendix A model is applicable to the modeling problem, an alternative refined model may be used provided that:

1. The model can be demonstrated to be applicable to the problem on a theoretical basis, and

2. The data bases which are necessary to perform the analysis are available and adequate, and

3a. Performance evaluations of the model in similar circumstances have shown that the model is not biased toward underestimates, or

3b. After consultation with the EPA Regional Office, a second model is selected as a baseline or reference point for performance and the interim procedures [15]/ protocol [17] are then used to demonstrate that the proposed model performs better than the reference model.

3.3 Availability of Supplementary Modeling Guidance

The Regional Administrator has the authority to select models that are appropriate for use in a given situation. However, there is a need for assistance and guidance in the selection process so that fairness and consistency in modeling decisions is fostered among the various Regional Offices and the States. To satisfy that need, EPA established the Model Clearinghouse and also holds periodic workshops with headquarters, Regional Office and State modeling representatives.

3.3.1 The Model Clearinghouse

3.3.1.1 *Discussion.* The Model Clearinghouse is the single EPA focal point for review of air quality simulation models proposed for use in specific regulatory applications. Details concerning the Clearinghouse and its operation are found in the document, "Model Clearinghouse: Operational Plan." [6] Three primary functions of the Clearinghouse are:

(1) Review of decisions proposed by EPA Regional Offices on the use of modeling techniques and data bases.

(2) Periodic visits to Regional Offices to gather information pertinent to regulatory model usage.

(3) Preparation of an annual report summarizing activities of the Clearinghouse including specific determinations made during the course of the year.

3.3.1.2 *Recommendations.* The Regional Administrator may request assistance from the Model Clearinghouse after an initial evaluation and decision has been reached concerning the application of a model, analytical technique or data base in a particular regulatory action. The Clearinghouse may also consider and evaluate the use of modeling techniques submitted in support of any regulatory action. Additional responsibilities are: (1) Review proposed action for consistency with agency policy; (2) determine technical adequacy; and (3) make recommendations concerning the technique or data base.

3.3.2 Regional Meteorologists Workshops

3.3.2.1 *Discussion.* EPA conducts an annual in-house workshop for the purpose of mutual discussion and problem resolution among Regional Office modeling specialists, EPA research modeling experts, EPA Headquarters modeling and regulatory staff and representatives from State modeling programs. A summary of the issues resolved at previous workshops was issued in 1981 as "Regional Workshops on Air Quality Modeling: A Summary Report." [17] That report clarified procedures not specifically defined in the 1978 guideline and was issued to ensure the consistent interpretation of model requirements from Region to Region. Similar workshops for the purpose of clarifying guideline procedures or providing detailed instructions for the use of those procedures are anticipated in the future.

3.3.2.2 *Recommendations.* The Regional Office should always be consulted for information and guidance concerning modeling methods and interpretations of modeling guidance, and to ensure that the air quality model user has available the latest most up-to-date policy and procedures.

4.0 Simple-Terrain Stationary Source Models

4.1 Discussion

Simple terrain, as used here, is considered to be an area where terrain features are all lower in elevation than the top of the stack of the source(s) in question. The models recommended in this section are generally used in the air quality impact analysis of stationary sources for most criteria pollutants. The averaging time of the concentration estimates produced by these models ranges from 1 hour to an annual average.

Model evaluation exercises have been conducted to determine the "best, most appropriate point source model" for use in simple terrain.[8,12] However, no one model has been found to be clearly superior. Thus, based on past use, public familiarity, and availability CRSTER remains the recommended model for rural, simple terrain, single point source applications. Similar determinations were made for the other refined models that are identified in the following sections.

4.2 Recommendations

4.2.1 Screening Techniques

Point source screening techniques are an acceptable approach to air quality analyses. One such approach is contained in the EPA document "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources." [18] A computerized version of the screening technique, SCREEN2, is available.[19,20]

All screening procedures should be adjusted to the site and problem at hand.

[a] Another EPA document, "Protocol for Determining the Best Performing Model", [17] contains advanced statistical techniques for determining which model performs better than other competing models. In many cases, this protocol should be considered by users of the "Interim Procedures for Evaluating Air Quality Models" in preference to the material currently in Chapter 3 of that document.

Close attention should be paid to whether the area should be classified urban or rural in accordance with Section 8.2.8. The climatology of the area should be studied to help define the worst-case meteorological conditions. Agreement should be reached between the model user and the reviewing authority on the choice of the screening model for each analysis, and on the input data as well as the ultimate use of the results.

4.2.2 Refined Analytical Techniques

Table 4–1 lists preferred models for selected applications. These preferred models should be used for the sources, land use categories and averaging times indicated in the table. A brief description of each of these models is found in appendix A. Also listed in that appendix are the model input requirements, the standard options that should be selected when running the program and output options.

When modeling for compliance with short term NAAQS and PSD increments is of primary concern, the short term models listed in Table 4-1 may also be used to provide long term concentration estimates. When modeling for sources for which long term standards alone are applicable (e.g., lead), then the long term models should be used.

The conversion from long term to short term concentration averages by any transformation technique is not acceptable in regulatory applications.

TABLE 4–1.—PREFERRED MODELS FOR SELECTED APPLICATIONS IN SIMPLE TERRAIN

	Land Use	Model [1]
Short Term (i.e., 1–24 hours):		
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source.	Rural	MPTER
	Urban	RAM
Complicated Sources [2].	Rural/Urban	ISCST2
Buoyant Industrial Line Sources.	Rural	BLP
Long Term (i.e., monthly, seasonal or annual):		
Single Source	Rural	CRSTER
	Urban	RAM
Multiple Source.	Rural	MPTER
	Urban	CDM 2.0 or RAM [3]
Complicated Sources [2].	Rural/Urban	ISCLT2
Buoyant Industrial Line Sources.	Rural	BLP

[1] Several of these models contain options which allow them to be interchanged. For Example, ISCST2 can be substituted for CRSTER and equivalent, if not identical, concentration estimates obtained. Similarly, for a point source application, MPTER with urban option can be substituted for RAM. Where a substitution is convenient to the user and equivalent estimates are assured, it may be made. The models as listed here reflect the applications for which they were originally intended.

[2] Complicated sources are those with special problems such as aerodynamic downwash, particle deposition, volume and area sources, etc.

[3] If only a few sources in an urban area are to be modeled, RAM should be used.

5.0 Model Use in Complex Terrain

5.1 Discussion

For the purpose of this guideline, complex terrain is defined as terrain exceeding the height of the stack being modeled. Complex terrain dispersion models are normally applied to stationary sources of pollutants such as SO_2 and particulates.

A major outcome from the EPA Complex Terrain Model Development project has been the publication of a refined dispersion model (CTDM) suitable for regulatory application to plume impaction assessments in complex terrain.[21] Although CTDM as originally produced was only applicable to those hours characterized as neutral or stable, a computer code for all stability conditions, CTDMPLUS,[19] together with a user's guide,[22] and on-site meteorological and terrain data processors,[23,24] is now available. Moreover, CTSCREEN,[19,25] a version of CTDMPLUS that does not require on-site meteorological data inputs, is also available as a screening technique.

The methods discussed in this section should be considered in two categories: (1) Screening techniques, and (2) the refined dispersion model, CTDMPLUS, discussed below and listed in Appendix A.

Continued improvements in ability to accurately model plume dispersion in complex terrain situations can be expected, e.g., from research on lee side effects due to terrain obstacles. New approaches to improve the ability of models to realistically simulate atmospheric physics, e.g., hybrid models which incorporate an accurate wind field analysis, will ultimately provide more appropriate tools for analyses. Such hybrid modeling techniques are also acceptable for regulatory applications after the appropriate demonstration and evaluation.[19]

5.2 Recommendations

Recommendations in this Section apply primarily to those situations where the impaction of plumes on terrain at elevations equal to or greater than the plume centerline during stable atmospheric conditions are determined to be the problem. If a violation of any NAAQS or the controlling increment is indicated by using any of the preferred screening techniques, then a refined complex terrain model may be used. Phenomena such as fumigation, wind direction shear, lee-side effects, building wake- or terrain-induced downwash, deposition, chemical transformation, variable plume trajectories, and long range transport are not addressed by the recommendations in this section.

Where site-specific data are used for either screening or refined complex terrain models, a data base of at least 1 full-year of meteorological data is preferred. If more data are available, they should be used. Meteorological data used in the analysis should be reviewed for both spatial and temporal representativeness.

Placement of receptors requires very careful attention when modeling in complex terrain. Often the highest concentrations are predicted to occur under very stable conditions, when the plume is near, or impinges on, the terrain. The plume under such conditions may be quite narrow in the vertical, so that even relatively small changes in a receptor's location may substantially affect the predicted concentration. Receptors within about a kilometer of the source may be even more sensitive to location. Thus, a dense array of receptors may be required in some cases. In order to avoid excessively large computer runs due to such a large array of receptors, it is often desirable to model the area twice. The first model run would use a moderate number of receptors carefully located over the area of interest. The second model run would use a more dense array of receptors in areas showing potential for high concentrations, as indicated by the results of the first model run.

When CTSCREEN or CTDMPLUS is used, digitized contour data must be first processed by the CTDM Terrain Processor [23] to provide hill shape parameters in a format suitable for direct input to CTDMPLUS. Then the user supplies receptors either through an interactive program that is part of the model or directly, by using a text editor; using both methods to select receptors will generally be necessary to assure that the maximum concentrations are estimated by either model. In cases where a terrain feature may "appear to the plume" as smaller, multiple hills, it may be necessary to model the terrain both as a single feature and as multiple hills to determine design concentrations.

The user is encouraged to confer with the Regional Office if any unresolvable problems are encountered with any screening or refined analytical procedures, e.g., meteorological data, receptor siting, or terrain contour processing issues.

5.2.1 Screening Techniques

Five preferred screening techniques are currently available to aid in the evaluation of concentrations due to plume impaction during stable conditions: (1) for 24-hour impacts, the Valley Screening Technique [18] as outlined in the Valley Model User's Guide;[26] (2) CTSCREEN,[19] as outlined in the CTSCREEN User's Guide;[25] (3) COMPLEX I;[18] (4) SHORTZ/LONGZ;[19,27] and (5) Rough Terrain Dispersion Model (RTDM)[19,30] in its

prescribed mode described below. As appropriate, any of these screening techniques may be used consistent with the needs, resources, and available data of the user.

The Valley Model, COMPLEX I, SHORTZ/LONGZ, and RTDM should be used only to estimate concentrations at receptors whose elevations are greater than or equal to plume height. For receptors at or below stack height, a simple terrain model should be used (see Chapter 4). Receptors between stack height and plume height present a unique problem since none of the above models were designed to handle receptors in this narrow regime, the definition of which will vary hourly as meteorological conditions vary. CTSCREEN may be used to estimate concentrations under all stability conditions at all receptors located "on terrain" above stack top, but has limited applicability in multi-source situations. As a result, the estimation of concentrations at receptors between stack height and plume height should be considered on a case-by-case basis after consultation with the EPA Regional Office; the most appropriate technique may be a function of the actual source(s) and terrain configuration unique to that application. One technique that will generally be acceptable, but is not necessarily preferred for any specific application, involves applying both a complex terrain model (except for the Valley Model) and a simple terrain model. The Valley Model should not be used for any intermediate terrain receptor. For each receptor between stack height and plume height, an hour-by-hour comparison of the concentration estimates from both models is made. The higher of the two modeled concentrations should be chosen to represent the impact at that receptor for that hour, and then used to compute the concentration for the appropriate averaging time(s). For the simple terrain models, terrain may have to be "chopped off" at stack height, since these models are frequently limited to receptors no greater than stack height.

5.2.1.1 *Valley Screening Technique.* The Valley Screening Technique may be used to determine 24-hour averages. This technique uses the Valley Model with the following worst-case assumptions for rural areas: (1) P-G stability "F"; (2) wind speed of 2.5 m/s; and (3) 8 hours of occurrence. For urban areas the stability should be changed to "P-G stability E."

When using the Valley Screening Technique to obtain 24-hour average concentrations the following apply: (1) Multiple sources should be treated individually and the concentrations for each wind direction summed; (2) only one wind direction should be used (see User's Guide, page 2-15) even if individual runs are made for each source; (3) for buoyant sources, the BID option may be used, and the option to use the 2.8 stable plume rise factor should be selected; (4) if plume impaction is likely on any elevated terrain closer to the source than the distance from the source to the final plume rise, then the transitional (or gradual) plume rise option for stable conditions should be selected.

The standard polar receptor grid found in the Valley Model User's Guide may not be sufficiently dense for all analyses if only one geographical scale factor is used. The user should choose an additional set of receptors at appropriate downwind distances whose elevations are equal to plume height minus 10 meters. Alternatively, the user may exercise the "Valley equivalent" option in COMPLEX I or SCREEN2 and note the comments above on the placement of receptors in complex terrain models.

When using the "Valley equivalent" option in COMPLEX I, set the wind profile exponents (PL) to 0.0, respectively, for all six stability classes.

5.2.1.2 *CTSCREEN.* CTSCREEN may be used to obtain conservative, yet realistic, worst-case estimates for receptors located on terrain above stack height. CTSCREEN accounts for the three-dimensional nature of plume and terrain interaction and requires detailed terrain data representative of the modeling domain. The model description and user's instructions are contained in the user's guide.[28] The terrain data must be digitized in the same manner as for CTDMPLUS and a terrain processor is available.[29] A discussion of the model's performance characteristics is provided in a technical paper.[30] CTSCREEN is designed to execute a fixed matrix of meteorological values for wind speed (u), standard deviation of horizontal and vertical wind speeds (σ_v, σ_w), vertical potential temperature gradient ($d\theta/dz$), friction velocity (u_*), Monin-Obukhov length (L), mixing height (z_i) as a function of terrain height, and wind directions for both neutral/stable conditions and unstable convective conditions. Table 5-1 contains the matrix of meteorological variables that is used for each CTSCREEN analysis. There are 96 combinations, including exceptions, for each wind direction for the neutral/stable case, and 108 combinations for the unstable case. The specification of wind direction, however, is handled internally, based on the source and terrain geometry. The matrix was developed from examination of the range of meteorological variables associated with maximum monitored concentrations from the data bases used to evaluate the performance of CTDMPLUS. Although CTSCREEN is designed to address a single source scenario, there are a number of options that can be selected on a case-by-case basis to address multi-source situations. However, the Regional Office should be consulted, and concurrence obtained, on the protocol for modeling multiple sources with CTSCREEN to ensure that the worst case is identified and assessed. The maximum concentration output from CTSCREEN represents a worst-case 1-hour concentration. Time-scaling factors of 0.7 for 3-hour, 0.15 for 24-hour and 0.03 for annual concentration averages are applied internally by CTSCREEN to the highest 1-hour concentration calculated by the model.

5.2.1.3 *COMPLEX I.* If the area is rural, COMPLEX I may be used to estimate concentrations for all averaging times. COMPLEX I is a modification of the MPTER model that incorporates the plume impaction algorithm of the Valley Model.[10] It is a multiple-source screening technique that accepts hourly meteorological data as input. The output is the same as the normal MPTER output. When using COMPLEX I the following options should be selected: (1) set terrain adjustment IOPT(1) = 1; (2) set buoyancy induced dispersion IOPT (4) = 1; (3) set IOPT (23) = 1; (4) set the terrain adjustment values to 0.5, 0.5, 0.5 0.5, 0.0, 0.0, (respectively for six stability classes); and (5) set Z MIN = 10.

When using the "Valley equivalent" option (only) in COMPLEX I, set the wind profile exponents (PL) to 0.0, respectively, for all six stability classes. For all other regulatory uses of COMPLEX I, set the wind profile exponents to the values used in the simple terrain models, i.e., 0.07, 0.07, 0.10, 0.15, 0.35, and 0.55, respectively, for rural modeling.

Gradual plume rise should be used to estimate concentrations at nearby elevated receptors, if plume impaction is likely on an elevated terrain closer to the source than the distance from the source to the final plume rise (see Section 8.2.5).

5.2.1.4 *SHORTZ/LONGZ.* If the source is located in an urbanized (Section 8.2.8) complex terrain valley, then the suggested screening technique is SHORTZ for short-term averages or LONGZ for long-term averages. SHORTZ and LONGZ may be used as screening techniques in these complex terrain applications without demonstration and evaluation. Application of these models in other than urbanized valley situations will require the same evaluation and demonstration procedures as are required for all Appendix B models.

Both SHORTZ and LONGZ have a number of options. When using these models as screening techniques for urbanized valley applications, the options listed in Table 5-2 should be selected.

5.2.1.5 *RTDM (Screening Mode).* RTDM with the options specified in Table 5-3 may be used as a screening technique in rural complex terrain situations without demonstration and evaluation.

The RTDM screening technique can provide a more refined concentration estimate if on-site wind speed and direction characteristic of plume dilution and transport are used as input to the model. In complex terrain, these winds can seldom be estimated accurately from the standard surface (10m level) measurements. Therefore, in order to increase confidence in model estimates, EPA recommends that wind data input to RTDM should be based on fixed measurements at stack top height. For stacks greater than 100m, the measurement height may be limited to 100m in height relative to stack base. However, for very tall stacks, see guidance in section 9.3.3.2. This recommendation is broadened to include wind data representative of plume transport height where such data are derived from measurements taken with remote sensing devices such as SODAR. The data from both fixed and remote measurements should meet quality assurance and recovery rate requirements. The user should also be aware that RTDM in the screening mode accepts the input of measured wind speeds at only one height. The default values for the wind speed profile exponents shown in Table 5-3 are used in the model to determine the wind

speed at other heights. RTDM uses wind speed at stack top to calculate the plume rise and the critical dividing streamline height, and the wind speed at plume transport level to calculate dilution. RTDM treats wind direction as constant with height.

RTDM makes use of the "critical dividing streamline" concept and thus treats plume interactions with terrain quite differently from other models such as SHORTZ and COMPLEX I. The plume height relative to the critical dividing streamline determines whether the plume impacts the terrain, or is lifted up and over the terrain. The receptor spacing to identify maximum impact concentrations is quite critical depending on the location of the plume in the vertical. Analysis of the expected plume height relative to the height of the critical dividing streamline should be performed for differing meteorological conditions in order to help develop an appropriate array of receptors. Then it is advisable to model the area twice according to the suggestions in section 5.2.

5.2.1.6 *Restrictions.* For screening analyses using the Valley Screening Technique, COMPLEX I or RTDM, a sector greater than 22½° should not be allowed. Full ground reflection should always be used in the Valley Screening Technique and COMPLEX I.

5.2.2 Refined Analytical Techniques

When the results of the screening analysis demonstrate a possible violation of NAAQS or the controlling PSD increments, a more refined analysis may need to be conducted.

The Complex Terrain Dispersion Model PLus Algorithms for Unstable Situations (CTDMPLUS) is a refined air quality model that is preferred for use in all stability conditions for complex terrain applications. CTDMPLUS is a sequential model that requires five input files: (1) General program specifications; (2) a terrain data file; (3) a receptor file; (4) a surface meteorological data file; and (5) a user created meteorological profile data file. Two optional input files consist of hourly emissions parameters and a file containing upper air data from rawinsonde data files, e.g., a National Climatic Data Center TD–6201 file, unless there are no hours categorized as unstable in the record. The model description and user instructions are contained in Volume 1 of the User's Guide.[22] Separate publications[23,24] describe the terrain preprocessor system and the meteorological preprocessor program. In *Part I* of a technical article[25] is a discussion of the model and its preprocessors; the model's performance characteristics are discussed in *Part II* of the same article.[26] The size of the CTDMPLUS executable file on a personal computer is approximately 360K bytes. The model produces hourly average concentrations of stable pollutants, i.e., chemical transformation or decay of species and settling/deposition are not simulated. To obtain concentration averages corresponding to the NAAQS, e.g., 3- or 24-hour, or annual averages, the user must execute a postprocessor program such as CHAVG.[19] CTDMPLUS is applicable to all receptors on terrain elevations above stack top. However, the model contains no algorithms for simulating building downwash or the mixing or recirculation found in cavity zones in the lee of a hill. The path taken by a plume through an array of hills cannot be simulated. CTDMPLUS does not explicitly simulate calm meteorological periods, and for those situations the user should follow the guidance in Section 9.3.4. The user should follow the recommendations in the User's Guide under General Program Specifications for: (1) Selecting mixed layer heights, (2) setting minimum scalar wind speed to 1 m/s, and (3) scaling wind direction with height. Close coordination with the Regional Office is essential to insure a consistent, technically sound application of this model.

The performance of CTDMPLUS is greatly improved by the use of meteorological data from several levels up to plume height. However, due to the vast range of source-plume-hill geometries possible in complex terrain, detailed requirements for meteorological monitoring in support of refined analyses using CTDMPLUS should be determined on a case-by-case basis. The following general guidance should be considered in the development of a meteorological monitoring protocol for regulatory applications of CTDMPLUS and reviewed in detail by the Regional Office before initiating any monitoring. As appropriate, the On-Site Meteorological Program Guidance document[66] should be consulted for specific guidance on siting requirements for meteorological towers, selection and exposure of sensors, etc. As more experience is gained with the model in a variety of circumstances, more specific guidance may be developed.

Site specific meteorological data are critical to dispersion modeling in complex terrain and, consequently, the meteorological requirements are more demanding than for simple terrain. Generally, three different meteorological files (referred to as surface, profile, and rawin files) are needed to run CTDMPLUS in a regulatory mode.

The surface file is created by the meteorological preprocessor (METPRO)[24] based on on-site measurements or estimates of solar and/or net radiation, cloud cover and ceiling, and the mixed layer height. These data are used in METPRO to calculate the various surface layer scaling parameters (roughness length, friction velocity, and Monin-Obukhov length) which are needed to run the model. All of the user inputs required for the surface file are based either on surface observations or on measurements at or below 10m.

The profile data file is prepared by the user with on-site measurements (from at least three levels) of wind speed, wind direction, turbulence, and potential temperature. These measurements should be obtained up to the representative plume height(s) of interest (i.e., the plume height(s) under those conditions important to the determination of the design concentration). The representative plume height(s) of interest should be determined using an appropriate complex terrain screening procedure (e.g., CTSCREEN) and should be documented in the monitoring/modeling protocol. The necessary meteorological measurements should be obtained from an appropriately sited meteorological tower augmented by SODAR if the representative plume height(s) of interest exceed 100m. The meteorological tower need not exceed the lesser of the representative plume height of interest (the highest plume height if there is more than one plume height of interest) or 100m.

Locating towers on nearby terrain to obtain stack height or plume height measurements for use in profiles by CTDMPLUS should be avoided unless it can clearly be demonstrated that such measurements would be representative of conditions affecting the plume.

The rawin file is created by a second meteorological preprocessor (READ62)[24] based on NWS (National Weather Service) upper air data. The rawin file is used in CTDMPLUS to calculate vertical potential temperature gradients for use in estimating plume penetration in unstable conditions. The representativeness of the off-site NWS upper air data should be evaluated on a case-by-case basis.

In the absence of an appropriate refined model, screening results may need to be used to determine air quality impact and/or emission limits.

TABLE 5–1a.—NEUTRAL/STABLE METEOROLOGICAL MATRIX FOR CTSCREEN

Variable	Specific Values				
U (m/s)	1.0	2.0	3.0	4.0	5.0
σ_v (m/s)	0.3	0.75	.....	.....	.....
σ_w (m/s)	0.08	0.15	0.30	0.75	.....
$\Delta\theta/\Delta z$ (K/m)	0.01	0.02	0.035	.....	.....
WD (Wind direction optimized internally for each meteorological combination)					

Exceptions:
(1) If U ≤ 2 m/s and σ_v ≤ 0.3 m/s, then include σ_w = 0.04 m/s.
(2) If σ_w = 0.75 m/s and U ≥ 3.0 m/s, then $\Delta\theta/\Delta z$ is limited to ≤ 0.01 K/m.

(3) If $U \geq 4$ m/s, then $\sigma_w \geq 0.15$ m/s.
(4) $\sigma_w \leq \sigma_v$

TABLE 5–1b.—UNSTABLE/CONVECTIVE METEOROLOGICAL MATRIX FOR CTSCREEN

Variable	Specific Values				
U (m/s)	1.0	2.0	3.0	4.0	5.0
u_* (m/s)	0.1	0.3	0.5	.....	.....
L (m)	−10	−50	−90	.....	.....
$\Delta\theta/\Delta z$ (K/m) 0.020 (potential temperature gradient above z_i)					
z_i (m)	0.5h	1.0h	1.5h	.....	.....

Where h = terrain height.

TABLE 5–2.—PREFERRED OPTIONS FOR THE SHORTZ/LONGZ COMPUTER CODES WHEN USED IN A SCREENING MODE

Option	Selection
I Switch 9	If using NWS data, set = 0.
	If using site-specific data, check with the Regional Office.
I Switch 17	Set = 1 (urban option).
GAMMA 1	Use default values (0.6 entrainment coefficient).
GAMMA 2	Always default to "stable".
XRY	Set = 0 (50m rectilinear expansion distance).
NS, VS, FRQ (SHORTZ) (particle size, etc.)	Do not use (applicable only in flat terrain.)
	NUS, VS, FRQ (LONGZ)
ALPHA	Select 0.9.
SIGEPU	Use Cramer curves (default); if site-specific turbulence data are available, see Regional Office for advice.
(dispersion parameters)	SIGAPU
P (wind profile)	Select default values given in Table 3–2 of User's Instructions; if site-specific data are available, see Regional Office for advice.

TABLE 5–3.—PREFERRED OPTIONS FOR THE RTDM COMPUTER CODE WHEN USED IN A SCREENING MODE

Parameter	Variable	Value	Remarks
PR001–003	SCALE	.....	Scale factors assuming horizontal distance is in kilometers, vertical distance is in feet, and wind speed is in meters per second.
PR004	ZWIN1	Wind measurement height	See Section 5.2.1.4.
	ZWIN2	Not used	Height of second anemometer.
	IDILUT	1	Dilution wind speed scaled to plume height.
	ZA	0 (default)	Anemometer-terrain height above stack base.
PR005	EXPON	0.09, 0.11, 0.12, 0.14, 0.2, 0.3 (default).	Wind profile exponents.
PR006	ICOEF	3 (default)	Briggs Rural/ASME (1979) dispersion parameters.
PR008	IPRP	3 (default)	Partial plume penetration; not used.
PR010	IBUOY	1 (default)	Buoyancy-enhanced dispersion is used.
	ALPHA	2.152 (default)	Buoyancy-enhanced dispersion coefficient.
PR011	IBMIX	1 (default)	Unlimited mixing height for stable conditions.
PR012	ITRANS	1 (default)	Transitional plume rise is used.
PR.013	TERCOR	6*0.5 (default)	Plume-patch correction factors.
PR014	RMPTG	0.02, 0.035 (default)	Vertical potential temperature gradient values for stabilities E and F.
PR015	IRFD	1	Stack-tip downwash is used.
PR020	ISHEAR	0 (default)	Wind shear; not used
PR022	IREFL	1 (default)	Partial surface reflection is used.
PR023	IHORIZ	2 (default)	Sector averaging.
	SECTOR	6*22.5 (default)	Using 22.5° sectors.
PR016 to 019; 021; and 024.	IY, IZ, IRVPTG, IHVPTG, IEPS, ISMIS	0	Hourly values of turbulence, vertical potential temperature gradient, wind speed profile exponents, and stack emissions are not used.

6.0 Models for Ozone, Carbon Monoxide and Nitrogen Dioxide

6.1 Discussion

Models discussed in this section are applicable to pollutants often associated with mobile sources, e.g., ozone (O_3), carbon monoxide (CO) and nitrogen dioxide (NO_2). Where stationary sources of CO and NO_2 are of concern, the reader is referred to sections 4 and 5.

A control agency with jurisdiction over areas with significant ozone problems and which has sufficient resources and data to use a photochemical dispersion model is encouraged to do so. Experience with and evaluations of the Urban Airshed Model show it to be an acceptable, refined approach, and better data bases are becoming available that support the more sophisticated analytical procedures. However, empirical

models (e.g., EKMA) fill the gap between more sophisticated photochemical dispersion models and proportional (rollback) modeling techniques and may be the only applicable procedure if the available data bases are insufficient for refined dispersion modeling.

Models for assessing the impact of carbon monoxide emissions are needed for a number of different purposes, e.g., to evaluate the effects of point sources, congested intersections and highways, as well as the cumulative effect on ambient CO concentrations of all sources of CO in an urban area.[24,25]

Nitrogen oxides are reactive and also an important contribution to the photochemical ozone problem. They are usually of most concern in areas of high ozone concentrations. Unless suitable photochemical dispersion models are used, assumptions regarding the conversion of NO to NO_2 are required when modeling. Site-specific conversion factors may be developed. If site-specific conversion factors are not available or photochemical models are not used, NO_2 modeling should be considered only a screening procedure.

6.2 Recommendations

6.2.1 Models for Ozone

The Urban Airshed Model (UAM)[19,20] is recommended for photochemical or reactive pollutant modeling applications involving entire urban areas. To ensure proper execution of this numerical model, users must satisfy the extensive input data requirements for the model as listed in appendix A and the users guide. Users are also referred to the "Guideline for Regulatory Application of the Urban Airshed Model"[20] for additional data requirements and procedures for operating this model.

The empirical model, City-specific EKMA,[19, 30-33] has limited applicability for urban ozone analyses. Model users should consult the appropriate Regional Office on a case-by-case basis concerning acceptability of this modeling technique.

Appendix B contains some additional models that may be applied on a case-by-case basis for photochemical or reactive pollutant modeling. Other photochemical models, including multi-layered trajectory models, that are available may be used if shown to be appropriate. Most photochemical dispersion models require emission data on individual hydrocarbon species and may require three dimensional meteorological information on an hourly basis. Reasonably sophisticated computer facilities are also often required. Because the input data are not universally available and studies to collect such data are very resource intensive, there are only limited evaluations of these models.

For those cases which involve estimating the impact on ozone concentrations due to stationary sources of VOC and NO_x, whether for permitting or other regulatory cases, the model user should consult the appropriate Regional Office on the acceptability of the modeling technique.

Proportional (rollback/forward) modeling is not an acceptable procedure for evaluating ozone control strategies.

6.2.2 Models for Carbon Monoxide

For analyzing CO impacts at roadway intersections, users should follow the procedures in the "Guideline for Modeling Carbon Monoxide from Roadway Intersections".[34] The recommended model for such analyses is CAL3QHC.[35] This model combines CALINE3 (already in Appendix A) with a traffic model to calculate delays and queues that occur at signalized intersections. In areas where the use of either TEXIN2 or CALINE4 has previously been established, its use may continue. The capability exists for these intersection models to be used in either a screening or refined mode. The screening approach is described in reference 34; a refined approach may be considered on a case-by-case basis. The latest version of the MOBILE (mobile source emission factor) model should be used for emissions input to intersection models.

For analyses of highways characterized by uninterrupted traffic flows, CALINE3 is recommended, with emissions input from the latest version of the MOBILE model.

The recommended model for urban areawide CO analyses is RAM or Urban Airshed Model (UAM); see appendix A. Information on SIP development and requirements for using these models can be found in references 34, 96, 97 and 98.

Where point sources of CO are of concern, they should be treated using the screening and refined techniques described in Section 4 or 5 of the Guideline.

6.2.3 Models for Nitrogen Dioxide (Annual Average)

A three-tiered screening approach is recommended to obtain annual average estimates of NO_2 from point sources for New Source Review analysis, including PSD, and for SIP planning purposes:

a. Initial screen: Use an appropriate Gaussian model from appendix A to estimate the maximum annual average concentration and assume a total conversion of NO to NO_2. If the concentration exceeds the NAAQS and/or PSD increments for NO_2, proceed to the 2nd level screen.

b. 2nd level screen: Apply the Ozone Limiting Method[36] to the annual NO_x estimate obtained in (a) above using a representative average annual ozone concentration. If the result is still greater than the NAAQS, and/or PSD increments, the more refined Ozone Limiting Method in the 3rd level screen should be applied.

c. 3rd level screen: Apply the Ozone Limiting Method separately for each hour of the year or multi-year period. Use representative hourly NO_2 background and ozone levels in the calculations.

In urban areas, a proportional model may be used as a preliminary assessment to evaluate control strategies to meet the NAAQS for multiple minor sources, i.e., minor point, area and mobile sources of NO_x. concentrations resulting from major point sources should be estimated separately as discussed above, then added to the impact of the minor sources. An acceptable screening technique for urban complexes is to assume that all NO_x is emitted in the form of NO_2 and to use a model from appendix A for nonreactive pollutants to estimate NO_2 concentrations. A more accurate estimate can be obtained by (1) calculating the annual average concentrations of NO_x with an urban model, and (2) converting these estimates to NO_2 concentrations based on a spatially averaged NO_2/NO_x annual ratio determined from an existing air quality monitoring network.

To demonstrate compliance with NO_2 PSD increments in urban areas, emissions from major and minor sources should be included in the modeling analysis. Point and area source emissions should be modeled as discussed above. If mobile source emissions do not contribute to localized areas of high ambient NO_2 concentrations, they should be modeled as area sources. When modeled as area sources, mobile source emissions should be assumed uniform over the entire highway link and allocated to each area source grid square based on the portion of highway link within each grid square. If localized areas of high concentrations are likely, then mobile sources should be modeled as line sources with the preferred model ISCLT2.

In situations where there are sufficient hydrocarbons available to significantly enhance the rate of NO to NO_2 conversion, the assumptions implicit in the Ozone Limiting Procedure may not be appropriate. More refined techniques should be considered on a case-by-case basis and agreement with the reviewing authority should be obtained. Such techniques should consider individual quantities of NO and NO_2 emissions, atmospheric transport and dispersion, and atmospheric transformation of NO to NO_2. Where it is available site-specific data on the conversion of NO to NO_2 may be used. Photochemical dispersion models, if used for other pollutants in the area, may also be applied to the NO_x problem.

7.0 Other Model Requirements

7.1 Discussion

This section covers those cases where specific techniques have been developed for special regulatory programs. Most of the programs have, or will have when fully developed, separate guidance documents that cover the program and a discussion of the tools that are needed. The following paragraphs reference those guidance documents, when they are available. No attempt has been made to provide a comprehensive discussion of each topic since the reference documents were designed to do that. This section will undergo periodic revision as new programs are added and new techniques are developed.

Other Federal agencies have also developed specific modeling approaches for their own regulatory or other requirements. An example of this is the three-volume manual issued by the U.S. Department of Housing and Urban Development, "Air Quality Considerations in Residential Planning."[37] Although such regulatory requirements and manuals may have come about because of EPA rules or standards, the implementation of such regulations and the use of the modeling techniques is under the jurisdiction of the agency issuing the manual or directive.

The need to estimate impacts at distances greater than 50km (the nominal distance to

which EPA considers most Gaussian models applicable) is an important one especially when considering the effects from secondary pollutants. Unfortunately, models submitted to EPA have not as yet undergone sufficient field evaluation to be recommended for general use. Existing data bases from field studies at mesoscale and long range transport distances are limited in detail. This limitation is a result of the expense to perform the field studies required to verify and improve mesoscale and long range transport models. Particularly important and sparse are meteorological data adequate for generating three dimensional wind fields. Application of models to complicated terrain compounds the difficulty. EPA has completed limited evaluation of several long range transport (LRT) models against two sets of field data. The evaluation results are discussed in the document, "Evaluation of Short-Term Long-Range Transport Models."[98,100] For the time being, long range and mesoscale transport models must be evaluated for regulatory use on a case-by-case basis.

There are several regulatory programs for which air pathway analysis procedures and modeling techniques have been developed. For continuous emission releases, ISC2 forms the basis of many analytical techniques. EPA is continuing to evaluate the performance of a number of proprietary and public domain models for intermittent and non-stack emission releases. Until EPA completes its evaluation, it is premature to recommend specific models for air pathway analyses of intermittent and non-stack releases in this guideline.

Regional scale models are used by EPA to develop and evaluate national policy and assist State and local control agencies. Two such models are the Regional Oxidant Model (ROM)[101,102,103] and the Regional Acid Deposition Model (RADM).[104] Due to the level of resources required to apply these models, it is not envisioned that regional scale models will be used directly in most modal applications.

7.2 Recommendations

7.2.1 Fugitive Dust/Fugitive Emissions

Fugitive dust usually refers to the dust put into the atmosphere by the wind blowing over plowed fields, dirt roads or desert or sandy areas with little or no vegetation. Reentrained dust is that which is put into the air by reason of vehicles driving over dirt roads (or dirty roads) and dusty areas. Such sources can be characterized as line, area or volume sources. Emission rates may be based on site-specific data or values from the general literature.

Fugitive emissions are usually defined as emissions that come from an industrial source complex. They include the emissions resulting from the industrial process that are not captured and vented through a stack but may be released from various locations within the complex. Where such fugitive emissions can be properly specified, the ISC model, with consideration of gravitational settling and dry deposition, is the recommended model. In some unique cases a model developed specifically for the situation may be needed.

Due to the difficult nature of characterizing and modeling fugitive dust and fugitive emissions, it is recommended that the proposed procedure be cleared by the appropriate Regional Office for each specific situation before the modeling exercise is begun.

7.2.2 Particulate Matter

The new particulate matter NAAQS, promulgated on July 1, 1987 (52 FR 24634), includes only particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM–10). EPA has also proposed regulations for PSD increments measured as PM–10 in a notice published on October 5, 1989 (54 FR 41218).

Screening techniques like those identified in section 4 are also applicable to PM–10 and to large particles. It is recommended that subjectively determined values for "half-life" or pollutant decay not be used as a surrogate for particle removal. Conservative assumptions which do not allow removal or transformation are suggested for screening. Proportional models (rollback/forward) may not be applied for screening analysis, unless such techniques are used in conjunction with receptor modeling.

Refined models such as those in Section 4 are recommended for PM–10 and large particles. However, where possible, particle size, gas-to-particle formation, and their effect on ambient concentrations may be considered. For urban-wide refined analyses CDM 2.0 or RAM should be used. CRSTER and MPTER are recommended for point sources of small particles. For source-specific analyses of complicated sources, the ISC2 model is preferred. No model recommended for general use at this time accounts for secondary particulate formation or other transformations in a manner suitable for SIP control strategy demonstrations. Where possible, the use of receptor models[90,99,105,106,107] in conjunction with dispersion models is encouraged to more precisely characterize the emissions inventory and to validate source specific impacts calculated by the dispersion model. A SIP development guideline,[108] model reconciliation guidance,[109] and an example model application [110] are available to assist in PM–10 analyses and control strategy development.

Under certain conditions, recommended dispersion models are not available or applicable. In such circumstances, the modeling approach should be approved by the appropriate Regional Office on a case-by-case basis. For example, where there is no recommended air quality model and area sources are a predominant component of PM–10, an attainment demonstration may be based on rollback of the apportionment derived from two reconciled receptor models, if the strategy provides a conservative demonstration of attainment. At this time, analyses involving model calculations for distances beyond 50km and under stagnation conditions should also be justified on a case-by-case basis (see Sections 7.2.6 and 8.2.10).

As an aid to assessing the impact on ambient air quality of particulate matter generated from prescribed burning activities, reference 110 is available.

7.2.3 Lead

The air quality analyses required for lead implementation plans are given in §§ 51.83, 51.84 and 51.85 of 40 CFR part 51. Sections 51.83 and 51.85 require the use of a modified rollback model as a minimum to demonstrate attainment of the lead air quality standard but the use of a dispersion model is the preferred approach. Section 51.83 requires the analysis of an entire urban area if the measured lead concentration in the urbanized area exceeds a quarterly (three month) average of 4.0 $\mu g/m^3$. Section 51.84 requires the use of a dispersion model to demonstrate attainment of the lead air quality standard around specified lead point sources. For other areas reporting a violation of the lead standard, § 51.85 requires an analysis of the area in the vicinity of the monitor reporting the violation. The NAAQS for lead is a quarterly (three month) average, thus requiring the use of modeling techniques that can provide long-term concentration estimates.

The SIP should contain an air quality analysis to determine the maximum quarterly lead concentration resulting from major lead point sources, such as smelters, gasoline additive plants, etc. For these applications the ISC model is preferred, since the model can account for deposition of particles and the impact of fugitive emissions. If the source is located in complicated terrain or is subject to unusual climatic conditions, a case-specific review by the appropriate Regional Office may be required.

In modeling the effect of traditional line sources (such as a specific roadway or highway) on lead air quality, dispersion models applied for other pollutants can be used. Dispersion models such as CALINE3 and APRAC–3 have been widely used for modeling carbon monoxide emissions from highways. However, where deposition is of concern, the line source treatment in ISC may be used. Also, where there is a point source in the middle of a substantial road network, the lead concentrations that result from the road network should be treated as background (see Section 9.2); the point source and any nearby major roadways should be modeled separately using the ISC model.

To model an entire major urban area or to model areas without significant sources of lead emissions, as a minimum a proportional (rollback) model may be used for air quality analysis. The rollback philosophy assumes that measured pollutant concentrations are proportional to emissions. However, urban or other dispersion models are encouraged in these circumstances where the use of such models is feasible.

For further information concerning the use of models in the development of lead implementation plans, the documents "Supplementary Guidelines for Lead Implementation Plans,"[40] and "Updated Information on Approval and Promulgation of Lead Implementation Plans,"[41] should be consulted.

7.2.4 Visibility

The visibility regulations as promulgated in December 1980[5] require consideration of

[5] 40 CFR 51.300–307.

the effect of new sources on the visibility values of Federal Class I areas. The state of scientific knowledge concerning identifying, monitoring, modeling, and controlling visibility impairment is contained in an EPA report "Protecting Visibility: An EPA Report to Congress".[42] In 1985, EPA promulgated Federal Implementation Plans (FIPs) for states without approved visibility provisions in their SIPs. A monitoring plan was established as part of the FIPs.[a]

Guidance and a screening model, VISCREEN, is contained in the EPA document "Workbook for Plume Visual Impact Screening and Analysis (Revised)."[43] VISCREEN can be used to calculate the potential impact of a plume of specified emissions for specific transport and dispersion conditions. If a more comprehensive analysis is required, any refined model should be selected in consultation with the EPA Regional Office and the appropriate Federal Land Manager who is responsible for determining whether there is an adverse effect by a plume on a Class I area.

PLUVUE II, listed in Appendix B, may be applied on a case-by-case basis when refined plume visibility evaluations are needed. Plume visibility models have been evaluated against several data sets.[44,45]

7.2.5 Good Engineering Practice Stack Height

The use of stack height credit in excess of Good Engineering Practice (GEP) stack height or credit resulting from any other dispersion technique is prohibited in the development of emission limitations by 40 CFR 51.118 and 40 CFR 51.164. The definitions of GEP stack height and dispersion technique are contained in 40 CFR 51.100. Methods and procedures for making the appropriate stack height calculations, determining stack height credits and an example of applying those techniques are found in references 46, 47, 48, and 49.

If stacks for new or existing major sources are found to be less than the height defined by EPA's refined formula for determining GEP height,[a] then air quality impacts associated with cavity or wake effects due to the nearby building structures should be determined. Detailed downwash screening procedures [10] for both the cavity and wake regions should be followed. If more refined concentration estimates are required, the Industrial Source Complex (ISC2) model contains algorithms for building wake calculations and should be used. Fluid modeling can provide a great deal of additional information for evaluating and describing the cavity and wake effects.

7.2.6 Long Range Transport (LRT) (i.e., beyond 50km)

Section 165(e) of the Clean Air Act requires that suspected significant impacts on PSD Class I areas be determined. However, 50km is the useful distance to which most Gaussian models are considered accurate for setting emission limits. Since in many cases PSD analyses may show that Class I areas may be threatened at distances greater than 50km from new sources, some procedure is needed to (1) determine if a significant impact will occur, and (2) identify the model to be used in setting an emission limit if the Class I increments are threatened (models for this purpose should be approved for use on a case-by-case basis as required in section 3.2). This procedure and the models selected for use should be determined in consultation with the EPA Regional Office and the appropriate Federal Land Manager (FLM). While the ultimate decision on whether a Class I area is adversely affected is the responsibility of the permitting authority, the FLM has an affirmative responsibility to protect air quality related values that may be affected.

If LRT is determined to be important, then estimates utilizing an appropriate refined model for receptors at distances greater than 50 km should be obtained. MESOPUFF II, listed in appendix B, may be applied on a case-by-case basis when LRT estimates are needed. Additional information on applying this model is contained in the EPA document "A Modeling Protocol For Applying MESOPUFF II to Long Range Transport Problems".[111]

7.2.7 Modeling Guidance for Other Governmental Programs

When using the models recommended or discussed in this guideline in support of programmatic requirements not specifically covered by EPA regulations, the model user should consult the appropriate Federal or State agency to ensure the proper application and use of that model. For modeling associated with PSD permit applications that involve a Class I area, the appropriate Federal Land Manager should be consulted on all modeling questions.

The Offshore and Coastal Dispersion (OCD) model [112] was developed by the Minerals Management Service and is recommended for estimating air quality impact from offshore sources on onshore flat terrain areas. The OCD model is not recommended for use in air quality impact assessments for onshore sources. Sources located on or just inland of a shoreline where fumigation is expected should be treated in accordance with section 8.2.9.

The Emissions and Dispersion Modeling System (EDMS) [113] was developed by the Federal Aviation Administration and the United States Air Force and is recommended for air quality assessment of primary pollutant impacts at airports or air bases. Regulatory application of EDMS is intended for estimating the cumulative effect of changes in aircraft operations, point source, and mobile source emissions on pollutant concentrations. It is not intended for PSD, SIP, or other regulatory air quality analyses of point or mobile sources at or peripheral to airport property that are independent of changes in aircraft operations. If changes in other than aircraft operations are associated with analyses, a model recommended in chapter 4, 5, or 6 should be used.

7.2.8 Air Pathway Analyses (Air Toxics and Hazardous Waste)

Modeling is becoming an increasingly important tool for regulatory control agencies to assess the air quality impact of releases of toxics and hazardous waste materials. Appropriate screening techniques [114,115] for calculating ambient concentrations due to various well-defined neutrally buoyant toxic/hazardous pollutant releases are available.

Several regulatory programs within EPA have developed modeling techniques and guidance for conducting air pathway analyses as noted in references 116–129. ISC2 forms the basis of the modeling procedures for air pathway analyses of many of these regulatory programs and, where identified, is appropriate for obtaining refined ambient concentration estimates of neutrally buoyant continuous air toxic releases from traditional sources. Appendix A to this Guideline contains additional models appropriate for obtaining refined estimates of continuous air toxic releases from traditional sources. Appendix B contains models that may be used on a case-by-case basis for obtaining refined estimates of denser-than-air intermittent gaseous releases, e.g., DEGADIS; [130] guidance for the use of such models is also available.[131]

Many air toxics models require input of chemical properties and/or chemical engineering variables in order to appropriately characterize the source emissions prior to dispersion in the atmosphere; reference 132 is one source of helpful data. In addition, EPA has numerous programs to determine emission factors and other estimates of air toxic emissions. The Regional Office should be consulted for guidance on appropriate emission estimating procedures and any uncertainties that may be associated with them.

8.0 General Modeling Considerations

8.1 Discussion

This section contains recommendations concerning a number of different issues not explicitly covered in other sections of this guide. The topics covered here are not specific to any one program or modeling area but are common to nearly all modeling analyses.

8.2 Recommendations

8.2.1 Design Concentrations

8.2.1.1 *Design Concentrations for Criteria Pollutants with Deterministic Standards.* An air quality analysis for SO_2, CO, Pb, and NO_2 is required to determine if the source will (1) cause a violation of the NAAQS, or (2) cause or contribute to air quality deterioration greater than the specified allowable PSD increment. For the former, background concentration (see Section 9.2) should be added to the estimated impact of the source to determine the design concentration. For the latter, the design concentration includes impact from all increment consuming sources.

If the air quality analyses are conducted using the period of meteorological input data recommended in section 9.3.1.2 (e.g., 5 years of NWS data or 1 year of site-specific data), then the design concentration based on the highest, second-highest short term concentration or long term average, whichever is controlling, should be used to determine emission limitations to assess

[a] 40 CFR 51.300–307.

[a] The EPA refined formula height is defined as H + 1.5L (see Reference 46).

compliance with the NAAQS and to determine PSD increments.

When sufficient and representative data exist for less than a 5-year period from a nearby NWS site, or when on-site data have been collected for less than a full continuous year, or when it has been determined that the on-site data may not be temporally representative, then the highest concentration estimate should be considered the design value. This is because the length of the data record may be too short to assure that the conditions producing worst-case estimates have been adequately sampled. The highest value is then a surrogate for the concentration that is not to be exceeded more than once per year (the wording of the deterministic standards). Also, the highest concentration should be used whenever selected worst-case conditions are input to a screening technique. This specifically applies to the use of techniques such as outlined in "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised".[16] Specific guidance for CO may be found in the "Guideline for Modeling Carbon Monoxide from Roadway Intersections".[34]

If the controlling concentration is an annual average value and multiple years of data (on-site or NWS) are used, then the design value is the highest of the annual averages calculated for the individual years. If the controlling concentration is a quarterly average and multiple years are used, then the highest individual quarterly average should be considered the design value.

As long a period of record as possible should be used in making estimates to determine design values and PSD increments. If more than 1 year of site-specific data is available, it should be used.

8.2.1.2 *Design Concentrations for Criteria Pollutants with Expected Exceedance Standards.* Specific instructions for the determination of design concentrations for criteria pollutants with expected exceedance standards, ozone and PM–10, are contained in special guidance documents for the preparation of SIPs for those pollutants.[35 105] For all SIP revisions the user should check with the Regional Office to obtain the most recent guidance documents and policy memoranda concerning the pollutant in question.

8.2.2 Critical Receptor Sites

Receptor sites for refined modeling should be utilized in sufficient detail to estimate the highest concentrations and possible violations of a NAAQS or a PSD increment. In designing a receptor network, the emphasis should be placed on receptor resolution and location, not total number of receptors. The selection of receptor sites should be a case-bycase determination taking into consideration the topography, the climatology, monitor sites, and the results of the initial screening procedure. For large sources (those equivalent to a 500 MW power plant) and where violations of the NAAQS or PSD increment are likely, 360 receptors for a polar coordinate grid system and 400 receptors for a rectangular grid system, where the distance from the source to the furthest receptor is 10km, are usually adequate to identify areas of high concentration. Additional receptors may be needed in the high concentration location if greater resolution is indicated by terrain or source factors.

8.2.3 Dispersion Coefficients

Gaussian models used in most applications should employ dispersion coefficients consistent with those contained in the preferred models in Appendix A. Factors such as averaging time, urban/rural surroundings, and type of source (point vs. line) may dictate the selection of specific coefficients. Generally, coefficients used in appendix A models are identical to, or at least based on, Pasquill-Gifford coefficients[50] in rural areas and McElroy-Pooler[51] coefficients in urban areas.

Research is continuing toward the development of methods to determine dispersion coefficients directly from measured or observed variables.[52 53] No method to date has proved to be widely applicable. Thus, direct measurement, as well as other dispersion coefficients related to distance and stability, may be used in Gaussian modeling only if a demonstration can be made that such parameters are more applicable and accurate for the given situation than are algorithms contained in the preferred models.

Buoyancy-induced dispersion (BID), as identified by Pasquill,[54] is included in the preferred models and should be used where buoyant sources, e.g., those involving fuel combustion, are involved.

8.2.4 Stability Categories

The Pasquill approach to classifying stability is generally required in all preferred models (Appendix A). The Pasquill method, as modified by Turner,[55] was developed for use with commonly observed meteorological data from the National Weather Service and is based on cloud cover, insolation and wind speed.

Procedures to determine Pasquill stability categories from other than NWS data are found in subsection 9.3. Any other method to determine Pasquill stability categories must be justified on a case-by-case basis.

For a given model application where stability categories are the basis for selecting dispersion coefficients, both σ_y and σ_z should be determined from the same stability category. "Split sigmas" in that instance are not recommended.

Sector averaging, which eliminates the σ_y term, is generally acceptable only to determine long term averages, such as seasonal or annual, and when the meteorological input data are statistically summarized as in the STAR summaries. Sector averaging is, however, commonly acceptable in complex terrain screening methods.

8.2.5 Plume Rise

The plume rise methods of Briggs[56 57] are incorporated in the preferred models and are recommended for use in all modeling applications. No provisions in these models are made for fumigation or multistack plume rise enhancement or the handling of such special plumes as flares; these problems should be considered on a case-by-case basis.

Since there is insufficient information to identify and quantify dispersion during the transitional plume rise period, gradual plume rise is not generally recommended for use. There are two exceptions where the use of gradual plume rise is appropriate: (1) In complex terrain screening procedures to determine close-in impacts; (2) when calculating the effects of building wakes. The building wake algorithm in the ISC2 model incorporates and automatically (i.e., internally) exercises the gradual plume rise calculations. If the building wake is calculated to affect the plume for any hour, gradual plume rise is also used in downwind dispersion calculations to the distance of final plume rise, after which final plume rise is used.

Stack tip downwash generally occurs with poorly constructed stacks and when the ratio of the stack exit velocity to wind speed is small. An algorithm developed by Briggs (Hanna, et al.)[57] is the recommended technique for this situation and is found in the point source preferred models.

Where aerodynamic downwash occurs due to the adverse influence of nearby structures, the algorithms included in the ISC2 model[58] should be used.

8.2.6 Chemical Transformation

The chemical transformation of SO_2 emitted from point sources or single industrial plants in rural areas is generally assumed to be relatively unimportant to the estimation of maximum concentrations when travel time is limited to a few hours. However, in urban areas, where synergistic effects among pollutants are of considerable consequence, chemical transformation rates may be of concern. In urban area applications, a half-life of 4 hours[59] may be applied to the analysis of SO_2 emissions. Calculations of transformation coefficients from site-specific studies can be used to define a "half-life" to be used in a Gaussian model with any travel time, or in any application, if appropriate documentation is provided. Such conversion factors for pollutant half-life should not be used with screening analyses.

Complete conversion of NO to NO_2 should be assumed for all travel time when simple screening techniques are used to model point source emissions of nitrogen oxides. If a Gaussian model is used, and data are available on seasonal variations in maximum ozone concentrations, the Ozone Limiting Method[36] is recommended. In refined analyses, case-by case conversion rates based on technical studies appropriate to the site in question may be used. The use of more sophisticated modeling techniques should be justified for individual cases.

Use of models incorporating complex chemical mechanisms should be considered only on a case-by-case basis with proper demonstration of applicability. These are generally regional models not designed for the evaluation of individual sources but used primarily for region-wide evaluations. Visibility models also incorporate chemical transformation mechanisms which are an integral part of the visibility model itself and should be used in visibility assessments.

8.2.7 Gravitational Settling and Deposition

An "infinite half-life" should be used for estimates of total suspended particulate

concentrations when Gaussian models containing only exponential decay terms for treating settling and deposition are used.

Gravitational settling and deposition may be directly included in a model if either is a significant factor. At least one preferred model (ISC) contains settling and deposition algorithms and is recommended for use when particulate matter sources can be quantified and settling and deposition are problems.

8.2.8 Urban/Rural Classification

The selection of either rural or urban dispersion coefficients in a specific application should follow one of the procedures suggested by Irwin[80] and briefly described below. These include a land use classification procedure or a population based procedure to determine whether the character of an area is primarily urban or rural.

Land Use Procedure: (1) Classify the land use within the total area, A_o, circumscribed by a 3km radius circle about the source using the meteorological land use typing scheme proposed by Auer[80]; (2) if land use types I1, I2, C1, R2, and R3 account for 50 percent or more of A_o, use urban dispersion coefficients; otherwise, use appropriate rural dispersion coefficients.

Population Density Procedure: (1) Compute the average population density, $\bar{p}$ per square kilometer with A_o as defined above; (2) if $\bar{p}$ is greater than 750 people/km^2, use urban dispersion coefficients; otherwise use appropriate rural dispersion coefficients.

Of the two methods the land use procedure is considered more definitive. Population density should be used with caution and should not be applied to highly industrialized areas where the population density may be low and thus a rural classification would be indicated, but the area is sufficiently built-up so that the urban land use criteria would be satisfied. In this case, the classification should already be "urban" and urban dispersion parameters should be used.

Sources located in an area defined as urban should be modeled using urban dispersion parameters. Sources located in areas defined as rural should be modeled using the rural dispersion parameters. For analyses of whole urban complexes, the entire area should be modeled as an urban region if most of the sources are located in areas classified as urban.

8.2.9 Fumigation

Fumigation occurs when a plume (or multiple plumes) is emitted into a stable layer of air and that layer is subsequently mixed to the ground either through convective transfer of heat from the surface or because of advection to less stable surroundings. Fumigation may cause excessively high concentrations but is usually rather short-lived at a given receptor. There are no recommended refined techniques to model this phenomenon. There are, however, screening procedures (see "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources"[10]) that may be used to approximate the concentrations. Considerable care should be exercised in using the results obtained from the screening techniques.

Fumigation is also an important phenomenon on and near the shoreline of bodies of water. This can affect both individual plumes and area-wide emissions. When fumigation conditions are expected to occur from a source or sources with tall stacks located on or just inland of a shoreline, this should be addressed in the air quality modeling analysis. The Shoreline Dispersion Model (SDM) listed in Appendix B may be applied on a case-by-case basis when air quality estimates under shoreline fumigation conditions are needed.[123] Information on the results of EPA's evaluation of this model together with other coastal fumigation models may be found in reference 134. Selection of the appropriate model for applications where shoreline fumigation is of concern should be determined in consultation with the Regional Office.

8.2.10 Stagnation

Stagnation conditions are characterized by calm or very low wind speeds, and variable wind directions. These stagnant meteorological conditions may persist for several hours to several days. During stagnation conditions, the dispersion of air pollutants, especially those from low-level emissions sources, tends to be minimized, potentially leading to relatively high ground-level concentrations.

When stagnation periods such as these are found to occur, they should be addressed in the air quality modeling analysis. WYNDvalley, listed in appendix B, may be applied on a case-by-case basis for stagnation periods of 24 hours or longer in valley-type situations. Caution should be exercised when applying the model to elevated point sources. Users should consult with the appropriate Regional Office prior to regulatory application of WYNDvalley.

8.2.11 Calibration of Models

Calibration of long term multi-source models has been a widely used procedure even though the limitations imposed by statistical theory on the reliability of the calibration process for long term estimates are well known.[61] In some cases, where a more accurate model is not available, calibration may be the best alternative for improving the accuracy of the estimated concentrations needed for control strategy evaluations.

Calibration of short term models is not common practice and is subject to much greater error and misunderstanding. There have been attempts by some to compare short term estimates and measurements on an event-by-event basis and then to calibrate a model with results of that comparison. This approach is severely limited by uncertainties in both source and meteorological data and therefore it is difficult to precisely estimate the concentration at an exact location for a specific increment of time. Such uncertainties make calibration of short term models of questionable benefit. Therefore, short term model calibration is unacceptable.

9.0 Model Input Data

Data bases and related procedures for estimating input parameters are an integral part of the modeling procedure. The most appropriate data available should always be selected for use in modeling analyses. Concentrations can vary widely depending on the source data or meteorological data used. Input data are a major source of inconsistencies in any modeling analysis. This section attempts to minimize the uncertainty associated with data base selection and use by identifying requirements for data used in modeling. A checklist of input data requirements for modeling analyses is included as appendix C. More specific data requirements and the format required for the individual models are described in detail in the users' guide for each model.

9.1 Source Data

9.1.1 Discussion

Sources of pollutants can be classified as point, line and area/volume sources. Point sources are defined in terms of size and may vary between regulatory programs. The line sources most frequently considered are roadways and streets along which there are well-defined movements of motor vehicles, but they may be lines of roof vents or stacks such as in aluminum refineries. Area and volume sources are often collections of a multitude of minor sources with individually small emissions that are impractical to consider as separate point or line sources. Large area sources are typically treated as a grid network of square areas, with pollutant emissions distributed uniformly within each grid square.

Emission factors are compiled in an EPA publication commonly known as AP-42;[62] an indication of the quality and amount of data on which many of the factors are based is also provided. Other information concerning emissions is available in EPA publications relating to specific source categories. The Regional Office should be consulted to determine appropriate source definitions and for guidance concerning the determination of emissions from and techniques for modeling the various source types.

9.1.2 Recommendations

For point source applications the load or operating condition that causes maximum ground-level concentrations should be established. As a minimum, the source should be modeled using the design capacity (100 percent load). If a source operates at greater than design capacity for periods that could result in violations of the standards or PSD increments, this load* should be modeled. Where the source operates at substantially less than design capacity, and the changes in the stack parameters associated with the operating conditions could lead to higher ground level concentrations, loads such as 50 percent and 75 percent of capacity should also be modeled. A range of operating conditions

*Malfunctions which may result in excess emissions are not considered to be a normal operating condition. They generally should not be considered in determining allowable emissions. However, if the excess emissions are the result of poor maintenance, careless operation, or other preventable conditions, it may be necessary to consider them in determining source impact.

should be considered in screening analyses; the load causing the highest concentration, in addition to the design load, should be included in refined modeling. The following example for a power plant is typical of the kind of data on source characteristics and operating conditions that may be needed. Generally, input data requirements for air quality models necessitate the use of metric units; where English units are common for engineering usage, a conversion to metric is required.

a. Plant layout. The connection scheme between boilers and stacks, and the distance and direction between stacks, building parameters (length, width, height, location and orientation relative to stacks) for plant structures which house boilers, control equipment, and surrounding buildings within a distance of approximately five stack heights.

b. Stack parameters. For all stacks, the stack height and inside diameter (meters), and the temperature (K) and volume flow rate (actual cubic meters per second) or exit gas velocity (meters per second) for operation at 100 percent, 75 percent and 50 percent load.

c. Boiler size. For all boilers, the associated megawatts, 10^6 BTU/hr, and pounds of steam per hour, and the design and/or actual fuel consumption rate for 100 percent load for coal (tons/hour), oil (barrels/hour), and natural gas (thousand cubic feet/hour).

d. Boiler parameters. For all boilers, the percent excess air used, the boiler type (e.g., wet bottom, cyclone, etc.), and the type of firing (e.g., pulverized coal, front firing, etc.).

e. Operating conditions. For all boilers, the type, amount and pollutant contents of fuel, the total hours of boiler operation and the boiler capacity factor during the year, and the percent load for peak conditions.

f. Pollution control equipment parameters. For each boiler served and each pollutant affected, the type of emission control equipment, the year of its installation, its design efficiency and mass emission rate, the data of the last test and the tested efficiency, the number of hours of operation during the latest year, and the best engineering estimate of its projected efficiency if used in conjunction with coal combustion; data for any anticipated modifications or additions.

g. Data for new boilers or stacks. For all new boilers and stacks under construction and for all planned modifications to existing boilers or stacks, the scheduled date of completion, and the data or best estimates available for items (a) through (f) above following completion of construction or modification.

In stationary point source applications for compliance with short term ambient standards, SIP control strategies should be tested using the emission input shown on Table 9–1. When using a refined model, sources should be modeled sequentially with these loads for every hour of the year. To evaluate SIPs for compliance with quarterly and annual standards, emission input data shown in Table 9–1 should again be used. Emissions from area sources should generally be based on annual average conditions. The source input information in each model user's guide should be carefully consulted and the checklist in Appendix C should also be consulted for other possible emission data that could be helpful. PSD NAAQS compliance demonstrations should follow the emission input data shown in Table 9–2. For purposes of emissions trading, new source review and demonstrations, refer to current EPA policy and guidance to establish input data.

Line source modeling of streets and highways requires data on the width of the roadway and the median strip, the types and amounts of pollutant emissions, the number of lanes, the emissions from each lane and the height of emissions. The location of the ends of the straight roadway segments should be specified by appropriate grid coordinates. Detailed information and data requirements for modeling mobile sources of pollution are provided in the user's manuals for each of the models applicable to mobile sources.

The impact of growth on emissions should be considered in all modeling analyses covering existing sources. Increases in emissions due to planned expansion or planned fuel switches should be identified. Increases in emissions at individual sources that may be associated with a general industrial/commercial/residential expansion in multi-source urban areas should also be treated. For new sources the impact of growth on emissions should generally be considered for the period prior to the start-up date for the source. Such changes in emissions should treat increased area source emissions, changes in existing point source emissions which were not subject to preconstruction review, and emissions due to sources with permits to construct that have not yet started operation.

TABLE 9–1.—MODEL EMISSION INPUT DATA FOR POINT SOURCES[1]

Averaging time	Emission limit (#/MMBtu)[2]	×	Operating level (MMBtu/hr)[2]	×	Operating factor (e.g., hr/yr, hr/day)
Stationary Point Source(s) Subject to SIP Emission Limit(s) Evaluation for Compliance with Ambient Standards (Including Areawide Demonstrations)					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition.		Actual operating factor averaged over most recent 2 years.[3]
Short term	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition[4].		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological data base).[4]
Nearby Background Source(s)—Same input requirements as for stationary point source(s) above.					
Other Background Source(s)—If modeled (see Section 9.2.3), input data requirements are defined below.					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Annual level when actually operating, averaged over the most recent 2 years[3].		Actual operating factor averaged over the most recent 2 years.[3]
Short term	Maximum allowable emission limit or federally enforceable permit limit.		Annual level when actually operating, averaged over the most recent 2 years[3].		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological data base).[5]

[1] The model input data requirements shown on this table apply to stationary source control strategies for STATE IMPLEMENTATION PLANS. For purposes of emissions trading, new source review, or prevention of significant deterioration, other model input criteria may apply. Refer to the policy and guidance for these programs to establish the input data.

[2] Terminology applicable to fuel burning sources; analogous terminology (e.g., #/throughput) may be used for other types of sources.

[3] Unless it is determined that this period is not representative.

[4] Operating levels such as 50 percent and 75 percent of capacity should also be modeled to determine the load causing the highest concentration.

[6] If operation does not occur for all hours of the time period of consideration (e.g., 3 or 24 hours) and the source operation is constrained by a federally enforceable permit condition, an appropriate adjustment to the modeled emission rate may be made (e.g., if operation is only 8 a.m. to 4 p.m. each day, only these hours will be modeled with emissions from the source. Modeled emissions should not be averaged across non-operating time periods.)

TABLE 9–2.—POINT SOURCE MODEL INPUT DATA (EMISSIONS) FOR PSD NAAQS COMPLIANCE DEMONSTRATIONS

Averaging time	Emission limit (#/MMBtu)[1]	×	Operating level (MMBtu)[1]	×	Operating factor (e.g., hr/yr, hr/day)
Proposed Major New or Modified Source					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Design capacity or federally enforceable permit condition.		Continuous operation (i.e., 8760 hours).[2]
Short term (≤ 24 hours).	Maximum allowable emission limit or federally enforceable permit limit.		Design capacity or federally enforceable permit condition[3].		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base).[2]
Nearby Background Source(s)[4]					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition.		Actual operating factor averaged over the most recent 2 years.[5 7]
Short term (≤ 24 hours).	Maximum allowable emission limit or federally enforceable permit limit.		Actual or design capacity (whichever is greater), or federally enforceable permit condition[3].		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base).[2]
Other Background Source(s)[6]					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Annual level when actually operating, averaged over the most recent 2 years[5].		Actual operating factor averaged over the most recent 2 years.[5 7]
Short term (≤ 24 hours).	Maximum allowable emission limit or federally enforceable permit limit.		Annual level when actually operating, averaged over the most recent 2 years[5].		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base).[2]

[1] Terminology applicable to fuel burning sources; analogous terminology (e.g., #/throughput) may be used for other types of sources.
[2] If operation does not occur for all hours of the time period of consideration (e.g., 3 or 24 hours) and the source operation is constrained by a federally enforceable permit condition, an appropriate adjustment to the modeled emission rate may be made (e.g., if operation is only 8:00 a.m. to 4:00 p.m. each day, only these hours will be modeled with emissions from the source. Modeled emissions should not be averaged across non-operating time periods.
[3] Operating levels such as 50 percent and 75 percent of capacity should also be modeled to determine the load causing the highest concentration.
[4] Includes existing facility to which modification is proposed if the emissions from the existing facility will not be affected by the modification. Otherwise use the same parameters as for major modification.
[5] Unless it is determined that this period is not representative.
[6] Generally, the ambient impacts from non-nearby background sources can be represented by air quality data unless adequate data do not exist.
[7] For those permitted sources not yet in operation or that have not established an appropriate factor, continuous operation (i.e., 8760 hours) should be used.

9.2 Background Concentrations

9.2.1 Discussion

Background concentrations are an essential part of the total air quality concentration to be considered in determining source impacts. Background air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.

Typically, air quality data should be used to establish background concentrations in the vicinity of the source(s) under consideration. The monitoring network used for background determinations should conform to the same quality assurance and other requirements as those networks established for PSD purposes.[63] An appropriate data validation procedure should be applied to the data prior to use.

If the source is not isolated, it may be necessary to use a multi-source model to establish the impact of nearby sources. Background concentrations should be determined for each critical (concentration) averaging time.

9.2.2 Recommendations (Isolated Single Source)

Two options are available to determine the background concentration near isolated sources.

Option One: Use air quality data collected in the vicinity of the source to determine the background concentration for the averaging times of concern.[7] Determine the mean background concentration at each monitor by excluding values when the source in question is impacting the monitor. The mean annual background is the average of the annual concentrations so determined at each monitor. For shorter averaging periods, the meteorological conditions accompanying the concentrations of concern should be identified. Concentrations for meteorological conditions of concern, at monitors not impacted by the source in question, should be averaged for each separate averaging time to determine the average background value. Monitoring sites inside a 90° sector downwind of the source may be used to determine the area of impact. One hour concentrations may be added and averaged to determine longer averaging periods.

Option Two: If there are no monitors located in the vicinity of the source, a "regional site" may be used to determine background. A "regional site" is one that is located away from the area of interest but is impacted by similar natural and distant man-made sources.

[7] For purposes of PSD, the location of monitors as well as data quality assurance procedures must satisfy requirements listed in the PSD Monitoring Guidelines.[63]

9.2.3 Recommendations (Multi-Source Areas)

In multi-source areas two components of background should be determined.

Nearby Sources: All sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration for emission limit(s) should be explicitly modeled. For evaluation for compliance with the short term and annual ambient standards, the nearby sources should be modeled using the emission input data shown in Table 9–1 or 9–2. The number of such sources is expected to be small except in unusual situations. The nearby source inventory should be determined in consultation with the reviewing authority. It is envisioned that the nearby sources and the sources under consideration will be evaluated together using an appropriate Appendix A model.

The impact of the nearby sources should be examined at locations where interactions between the plume of the point source under consideration and those of nearby sources (plus natural background) can occur. Significant locations include: (1) The area of maximum impact of the point source; (2) the area of maximum impact of nearby sources; and (3) the area where all sources combine to cause maximum impact. These locations may be identified through trial and error analyses.

Other Sources: That portion of the background attributable to all other sources (e.g., natural sources, minor sources and distant major sources) should be determined by the procedures found in section 9.2.2 or by application of a model using Table 9–1 or 9–2.

9.3 Meteorological Input Data

The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the data is dependent on: (1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected. The spatial representativeness of the data can be adversely affected by large distances between the source and receptors of interest and the complex topographic characteristics of the area. Temporal representativeness is a function of the year-to-year variations in weather conditions.

Model input data are normally obtained either from the National Weather Service or as part of an on-site measurement program. Local universities, FAA, military stations, industry and pollution control agencies may also be sources of such data. Some recommendations for the use of each type of data are included in this subsection.

9.3.1 Length of Record of Meteorological Data

9.3.1.1 *Discussion.* The model user should acquire enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results. The trend toward statistically based standards suggests a need for all meteorological conditions to be adequately represented in the data set selected for model input. The number of years of record needed to obtain a stable distribution of conditions depends on the variable being measured and has been estimated by Landsberg and Jacobs[84] for various parameters. Although that study indicates in excess of 10 years may be required to achieve stability in the frequency distributions of some meteorological variables, such long periods are not reasonable for model input data. This is due in part to the fact that hourly data in model input format are frequently not available for such periods and that hourly calculations of concentration for long periods are prohibitively expensive. A recent study[85] compared various periods from a 17-year data set to determine the minimum number of years of data needed to approximate the concentrations modeled with a 17-year period of meteorological data from one station. This study indicated that the variability of model estimates due to the meteorological data input was adequately reduced if a 5-year period of record of meteorological input was used.

9.3.1.2 *Recommendations.* Five years of representative meteorological data should be used when estimating concentrations with an air quality model. Consecutive years from the most recent, readily available 5-year period are preferred. The meteorological data may be data collected either onsite or at the nearest National Weather Service (NWS) station. If the source is large, e.g., a 500 MW power plant, the use of 5 years of NWS meteorological data or at least 1 year of site-specific data is required.

If one year or more, up to five years, of sitespecific data is available, these data are preferred for use in air quality analyses. Such data should have been subjected to quality assurance procedures as described in Section 9.3.3.2.

For permitted sources whose emission limitations are based on a specific year of meteorological data that year should be added to any longer period being used (e.g., 5 years of NWS data) when modeling the facility at a later time.

9.3.2 National Weather Service Data

9.3.2.1 *Discussion.* The National Weather Service (NWS) meteorological data are routinely available and familiar to most model users. Although the NWS does not provide direct measurements of all the needed dispersion model input variables, methods have been developed and successfully used to translate the basic NWS data to the needed model input. Direct measurements of model input parameters have been made for limited model studies and those methods and techniques are becoming more widely applied; however, most model applications still rely heavily on the NWS data.

There are two standard formats of the NWS data for use in air quality models. The short term models use the standard hourly weather observations available from the National Climatic Data Center (NCDC). These observations are then "preprocessed" before they can be used in the models. "STAR" summaries are available from NCDC for long term model use. These are joint frequency distributions of wind speed, direction and P–G stability category. They are used as direct input to models such as the long term version of ISC.[86]

9.3.2.2 *Recommendations.* The preferred short term models listed in appendix A all accept as input the NWS meteorological data preprocessed into model compatible form. Long-term (monthly seasonal or annual) preferred models use NWS "STAR" summaries. Summarized concentration estimates from the short term models may also be used to develop long-term averages; however, concentration estimates based on the two separate input data sets may not necessarily agree.

Although most NWS measurements are made at a standard height of 10 meters, the actual anemometer height should be used as input to the preferred model.

National Weather Service wind directions are reported to the nearest 10 degrees. A specific set of randomly generated numbers has been developed for use with the preferred EPA models and should be used to ensure a lack of bias in wind direction assignments within the models.

Data from universities, FAA, military stations, industry and pollution control agencies may be used if such data are equivalent in accuracy and detail to the NWS data.

9.3.3 Site-Specific Data

9.3.3.1 *Discussion.* Spatial or geographical representativeness is best achieved by collection of all of the needed model input data at the actual site of the source(s). Site-specific measured data are therefore preferred as model input, provided appropriate instrumentation and quality assurance procedures are followed and that the data collected are representative (free from undue local or "micro" influences) and compatible with the input requirements of the model to be used. However, direct measurements of all the needed model input parameters may not be possible. This section discusses suggestions for the collection and use of on-site data. Since the methods outlined in this section are still being tested, comparison of the model parameters derived using these site-specific data should be compared at least on a spot-check basis, with parameters derived from more conventional observations.

9.3.3.2 *Recommendations—Site-specific Data Collection.* The document "On-Site Meteorological Program Guidance for Regulatory Modeling Applications"[88] provides recommendations on the collection and use of on-site meteorological data. Recommendations on characteristics, siting, and exposure of meteorological instruments and on data recording, processing, completeness requirements, reporting, and archiving are also included. This publication should be used as a supplement to the limited guidance on these subjects now found in the "Ambient Monitoring Guidelines for Prevention of Significant Deterioration"[62] and the "Quality Assurance Handbook for Air Pollution Measurement

Systems"[87] contains such information for meteorological measurements. As a minimum, site-specific measurements of ambient air temperature, transport wind speed and direction, and the parameters to determine Pasquill-Gifford stability categories should be available in meteorological data sets to be used in modeling. Care should be taken to ensure that monitors are located to represent the area of concern and that they are not influenced by very localized effects. Site-specific data for model applications should cover as long a period of measurement as is possible to ensure adequate representation of "worst-case" meteorology. The Regional Office will determine the appropriateness of the measurement locations.

All site-specific data should be reduced to hourly averages. Table 9–3 lists the wind related parameters and the averaging time requirements.

Temperature Measurements. Temperature measurements should be made at standard shelter height (2m) in accordance with the guidance in reference 88.

Wind Measurements. Wind speed and direction should be measured at or near plume height for use in estimating transport and dilution. To approximate this, if a source has a stack below 100m, select the stack top height as the transport wind measurement height. For sources with stacks extending above 100m, a 100m tower is suggested unless the stack top is significantly above 100 meters (200m or more). In cases with stacks 200m or above, the Regional Office should determine the appropriate measurement height on a case-by-case basis. Remote sensing may be a feasible alternative. The dilution wind speed used in determining plume rise and also used in the Gaussian dispersion equation is, by convention, defined as the wind speed at stack top.

Multiple level (typically three or more) measurements of wind-temperature and turbulence (wind fluctuation statistics) are required for refined modeling applications in complex terrain. Such measurements should be obtained up to the representative plume height(s) of interest (i.e., the plume height(s) under those conditions important to the determination of the design concentration). The representative plume height(s) of interest should be determined using an appropriate complex terrain screening procedure (e.g., CTSCREEN) and should be documented in the monitoring/modeling protocol. The necessary meteorological measurements should be obtained from an appropriately sited meteorological tower augmented by SODAR if the representative plume height(s) of interest exceed 100m. The meteorological tower need not exceed the lesser of the representative plume height of interest (the highest plume height if there is more than one plume height of interest) or 100m.

For routine tower and surface measurements, the wind speed should be measured using an anemometer, and the wind direction measured using a horizontal vane. Specifications for wind measuring instruments and systems are contained in the "On-Site Meteorological Program Guidance for Regulatory Modeling Applications".[89]

Stability Categories. The Pasquill-Gifford (P–G) stability categories, as originally defined, couple near-surface measurements of wind speed with subjectively determined insolation assessments based on hourly cloud cover and ceiling observations. The wind speed measurements are made at or near 10m. The insolation rate is typically assessed using observations of cloud cover and ceiling based on criteria outlined by Turner.[90] In the absence of site specific observations of cloud cover and ceiling, alternative procedures using wind fluctuation statistics (i.e., the σ_A and σ_θ methods)[88] and Turner's method with off-site cloud cover and ceiling and on-site 10m wind speed are recommended.

The two methods of stability classification which use wind fluctuation statistics, the σ_A and σ_θ methods, are described in detail in EPA's "On-Site Meteorological Program Guidance for Regulatory Modeling Applications"[89] (note applicable tables in chapter 6). In the case of the σ_A method it should be noted that wind meander may occasionally bias the determination of σ_A and thus lead to an erroneous determination of the P–G stability category. To minimize wind direction meander contributions, σ_A may be determined for each of four 15-minute periods in an hour. However, 360 samples are needed during each 15-minute period. If the σ_A method is being used for stability determinations in these situations, take the square root of one-quarter of the sum of the square of the four 15 minute σ_A's, as illustrated in the footnote to Table 9–3. While this approach is an acceptable alternative for determining stability, as qualified above, σ_A's calculated in this manner are not likely to be suitable for input to models under development that are designed to accept on-site hourly σ's based on 60-minute periods. For additional information on stability classification using wind fluctuation statistics, see references 68–72.

In summary, when on-site data are being used, P–G stability categories should be estimated based on:

(1) Turner's method[90] using site-specific data which include cloud cover, ceiling height and surface (~10m) wind speeds;

(2) σ_θ from site-specific measurements in accordance with guidance;[88]

(3) σ_A from site-specific measurements in accordance with guidance;[88]

(4) Turner's method[90] using site-specific wind speed with cloud cover and ceiling height from a nearby NWS site.

Meteorological Data Processors. The following meteorological preprocessors are recommended by EPA: RAMMET, PCRAMMET, STAR, PCSTAR, MPRM,[126] and METPRO.[24] RAMMET is the recommended meteorological preprocessor for use in applications employing hourly NWS data. The RAMMET format is the standard data input format used in sequential Gaussian models recommended by EPA. PCRAMMET is the PC equivalent of the mainframe version (RAMMET). STAR is the recommended preprocessor for use in applications employing joint frequency distributions (wind direction and wind speed by stability class) based on NWS data. PCSTAR is the PC equivalent of the mainframe version (STAR). MPRM is the recommended preprocessor for use in applications employing on-site meteorological data. MPRM is a general purpose meteorological data preprocessor which supports regulatory models requiring RAMMET formatted data and STAR formatted data. In addition to on-site data, MPRM provides equivalent processing of NWS data. METPRO is the required meteorological data preprocessor for use with CTDMPLUS. All of the above mentioned data preprocessors are available for downloading from the SCRAM BBS.[19]

TABLE 9–3.—AVERAGING TIMES FOR SITE-SPECIFIC WIND AND TURBULENCE MEASUREMENTS

Parameter	Averaging time
Surface wind speed (for use in stability determinations).	1-hr
Transport direction	1-hr.
Dilution wind speed	1-hr.
Turbulence measurements (σ_θ and σ_A) for use in stability determinations.	1-hr.[1]

[1] To minimize meander effects in σ_A when wind conditions are light and/or variable, determine the hourly average σ value from four sequential 15-minute σ's according to the following formula:

$$\sigma_{1\text{-hr}} = \sqrt{\frac{\sigma_{15}^2 + \sigma_{15}^2 + \sigma_{15}^2 + \sigma_{15}^2}{4}}$$

9.3.4 Treatment of Calms

9.3.4.1 *Discussion.* Treatment of calm or light and variable wind poses a special problem in model applications since Gaussian models assume that concentration is inversely proportional to wind speed. Furthermore, concentrations become unrealistically large when wind speeds less than 1 m/s are input to the model. A procedure has been developed for use with NWS data to prevent the occurrence of overly conservative concentration estimates during periods of calms. This procedure acknowledges that a Gaussian plume model does not apply during calm conditions and that our knowledge of plume behavior and wind patterns during these conditions does not, at present, permit the development of a better technique. Therefore, the procedure disregards hours which are identified as calm. The hour is treated as missing and a

convention for handling missing hours is recommended.

Preprocessed meteorological data input to most appendix A EPA models substitute a 1.00 m/s wind speed and the previous direction for the calm hour. The new treatment of calms in those models attempts to identify the original calm cases by checking for a 1.00 m/s wind speed coincident with a wind direction equal to the previous hour's wind direction. Such cases are then treated in a prescribed manner when estimating short term concentrations.

9.3.4.2 *Recommendations.* Hourly concentrations calculated with Gaussian models using calms should not be considered valid; the wind and concentration estimates for these hours should be disregarded and considered to be missing. Critical concentrations for 3-, 8-, and 24-hour averages should be calculated by dividing the sum of the hourly concentration for the period by the number of valid or nonmissing hours. If the total number of valid hours is less than 18 for 24-hour averages, less than 6 for 8-hour averages or less than 3 for 3-hour averages, the total concentration should be divided by 18 for the 24-hour average, 6 for the 8-hour average and 3 for the 3-hour average. For annual averages, the sum of all valid hourly concentrations is divided by the number of non-calm hours during the year. A post-processor computer program, CALMPRO[72] has been prepared following these instructions and has been hardwired in the following models: RAM, ISC, MPTER and CRSTER.

The recommendations above apply to the use of calms for short term averages and do not apply to the determination of long term averages using "STAR" data summaries. Calms should continue to be included in the preparation of "STAR" summaries. A treatment for calms and very light winds is built into the software that produces the "STAR" summaries.

Stagnant conditions, including extended periods of calms, often produce high concentrations over wide areas for relatively long averaging periods. The standard short term Gaussian models are often not applicable to such situations. When stagnation conditions are of concern, other modeling techniques should be considered on a case-by-case basis. (See also section 8.2.10)

When used in Gaussian models, measured on-site wind speeds of less than 1 m/s but higher than the response threshold of the instrument should be input as 1m/s; the corresponding wind direction should also be input. Observations below the response threshold of the instrument are also set to 1 m/s but the wind direction from the previous hour is used. If the wind speed or direction can not be determined, that hour should be treated as missing and short term averages should then be calculated as above.

10.0 Accuracy and Uncertainty of Models

10.1 Discussion

Increasing reliance has been placed on concentration estimates from models as the primary basis for regulatory decisions concerning source permits and emission control requirements. In many situations, such as review of a proposed source, no practical alternative exists. Therefore, there is an obvious need to know how accurate models really are and how any uncertainty in the estimates affects regulatory decisions. EPA recognizes the need for incorporating such information and has sponsored workshops[11,74] on model accuracy, the possible ways to quantify accuracy, and on considerations in the incorporation of model accuracy and uncertainty in the regulatory process. The Second (EPA) Conference on Air Quality Modeling, August 1982,[75] was devoted to that subject.

10.1.1 *Overview of Model Uncertainty*

Dispersion models generally attempt to estimate concentrations at specific sites that really represent an ensemble average of numerous repetitions of the same event. The event is characterized by measured or "known" conditions that are input to the models, e.g., wind speed, mixed layer height, surface heat flux, emission characteristics, etc. However, in addition to the known conditions, there are unmeasured or unknown variations in the conditions of this event, e.g., unresolved details of the atmospheric flow such as the turbulent velocity field. These unknown conditions, may vary among repetitions of the event. As a result, deviations in observed concentrations from their ensemble average, and from the concentrations estimated by the model, are likely to occur even though the known conditions are fixed. Even with a perfect model that predicts the correct ensemble average, there are likely to be deviations from the observed concentrations in individual repetitions of the event, due to variations in the unknown conditions. The statistics of these concentration residuals are termed "inherent" uncertainty. Available evidence suggests that this source of uncertainty alone may be responsible for a typical range of variation in concentrations of as much as ±50 percent.[76]

Moreover, there is "reducible" uncertainty[77] associated with the model and its input conditions; neither models nor data bases are perfect. Reducible uncertainties are caused by: (1) Uncertainties in the input values of the known conditions—emission characteristics and meteorological data; (2) errors in the measured concentrations which are used to compute the concentration residuals; and (3) inadequate model physics and formulation. The "reducible" uncertainties can be minimized through better (more accurate and more representative) measurements and better model physics.

To use the terminology correctly, reference to model accuracy should be limited to that portion of reducible uncertainty which deals with the physics and the formulation of the model. The accuracy of the model is normally determined by an evaluation procedure which involves the comparison of model concentration estimates with measured air quality data.[78] The statement of accuracy is based on statistical tests or performance measures such as bias, noise, correlation, etc.[11] However, information that allows a distinction between contributions of the various elements of inherent and reducible uncertainty is only now beginning to emerge. As a result most discussions of the accuracy of models make no quantitative distinction between (1) limitations of the model versus (2) limitations of the data base and of knowledge concerning atmospheric variability. The reader should be aware that statements on model accuracy and uncertainty may imply the need for improvements in model performance that even the "perfect" model could not satisfy.

10.1.2 Studies of Model Accuracy

A number of studies[79,80] have been conducted to examine model accuracy, particularly with respect to the reliability of short-term concentrations required for ambient standard and increment evaluations. The results of these studies are not surprising. Basically, they confirm what leading atmospheric scientists have said for some time: (1) Models are more reliable for estimating longer time-averaged concentrations than for estimating short-term concentrations at specific locations; and (2) the models are reasonably reliable in estimating the magnitude of highest concentrations occurring sometime, somewhere within an area. For example, errors in highest estimated concentrations of ± 10 to 40 percent are found to be typical,[81] i.e., certainly well within the often quoted factor-of-two accuracy that has long been recognized for these models. However, estimates of concentrations that occur at a specific time and site, are poorly correlated with actually observed concentrations and are much less reliable.

As noted above, poor correlations between paired concentrations at fixed stations may be due to "reducible" uncertainties in knowledge of the precise plume location and to unquantified inherent uncertainties. For example, Pasquill[82] estimates that, apart from data input errors, maximum ground-level concentrations at a given hour for a point source in flat terrain could be in error by 50 percent due to these uncertainties. Uncertainty of five to 10 degrees in the measured wind direction, which transports the plume, can result in concentration errors of 20 to 70 percent for a particular time and location, depending on stability and station location. Such uncertainties do not indicate that an estimated concentration does not occur, only that the precise time and locations are in doubt.

10.1.3 Use of Uncertainty in Decision-Making

The accuracy of model estimates varies with the model used, the type of application, and site-specific characteristics. Thus, it is desirable to quantify the accuracy or uncertainty associated with concentration estimates used in decision-making. Communications between modelers and decision-makers must be fostered and further developed. Communications concerning concentration estimates currently exist in most cases, but the communications dealing with the accuracy of models and its meaning to the decision-maker are limited by the lack of a technical basis for quantifying and directly including uncertainty in decisions. Procedures for quantifying and interpreting uncertainty in the practical application of such concepts are only beginning to evolve, much study is still required.[74,75,77]

In all applications of models an effort is encouraged to identify the reliability of the model estimates for that particular area and to determine the magnitude and sources of error associated with the use of the model. The analyst is responsible for recognizing and quantifying limitations in the accuracy, precision and sensitivity of the procedure. Information that might be useful to the decision-maker in recognizing the seriousness of potential air quality violations includes such model accuracy estimates as accuracy of peak predictions, bias, noise, correlation, frequency distribution, spatial extent of high concentration, etc. Both space/time pairing of estimates and measurements and unpaired comparisons are recommended. Emphasis should be on the highest concentrations and the averaging times of the standards or increments of concern. Where possible, confidence intervals about the statistical values should be provided. However, while such information can be provided by the modeler to the decision-maker, it is unclear how this information should be used to make an air pollution control decision. Given a range of possible outcomes, it is easiest and tends to ensure consistency if the decision-maker confines his judgment to use of the "best estimate" provided by the modeler (i.e., the design concentration estimated by a model recommended in this guideline or an alternate model of known accuracy). This is an indication of the practical limitations imposed by current abilities of the technical community.

To improve the basis for decision-making, EPA has developed and is continuing to study procedures for determining the accuracy of models, quantifying the uncertainty, and expressing confidence levels in decisions that are made concerning emissions controls.[83,84] However, work in this area involves "breaking new ground" with slow and sporadic progress likely. As a result, it may be necessary to continue using the "best estimate" until sufficient technical progress has been made to meaningfully implement such concepts dealing with uncertainty.

10.1.4 Evaluation of Models

A number of actions are being taken to ensure that the best model is used correctly for each regulatory application and that a model is not arbitrarily imposed. First, this guideline clearly recommends the most appropriate model be used in each case. Preferred models, based on a number of factors, are identified for many uses. General guidance on using alternatives to the preferred models is also provided. Second, all the models in eight categories (i.e., rural, urban, industrial complex, reactive pollutants, mobile source, complex terrain, visibility and long range transport) that are candidates for inclusion in this guideline are being subjected to a systematic performance evaluation and a peer scientific review.[85] The same data bases are being used to evaluate all models within each of eight categories. Statistical performance measures, including measures of difference (or residuals) such as bias, variance of difference and gross variability of the difference, and measures of correlation such as time, space, and time and space combined as recommended by the AMS Woods Hole Workshop,[11] are being followed. The results of the scientific review are being incorporated in this guideline and will be the basis for future revision.[12, 13] Third, more specific information has been provided for justifying the site specific use of alternative models in the documents "Interim Procedures for Evaluating Air Quality Models",[15] and the "Protocol for Determining the Best Performing Model".[17] Together these documents provide methods that allow a judgment to be made as to what models are most appropriate for a specific application. For the present, performance and the theoretical evaluation of models are being used as an indirect means to quantify one element of uncertainty in air pollution regulatory decisions.

In addition to performance evaluation of models, sensitivity analyses are encouraged since they can provide additional information on the effect of inaccuracies in the data bases and on the uncertainty in model estimates. Sensitivity analyses can aid in determining the effect of inaccuracies of variations or uncertainties in the data bases on the range of likely concentrations. Such information may be used to determine source impact and to evaluate control strategies. Where possible, information from such sensitivity analyses should be made available to the decision-maker with an appropriate interpretation of the effect on the critical concentrations.

10.2 Recommendations

No specific guidance on the consideration of model uncertainty in decision-making is being given at this time. There is incomplete technical information on measures of model uncertainty that are most relevant to the decision-maker. It is not clear how a decisionmaker could use such information, particularly given limitations of the Clean Air Act. As procedures for considering uncertainty develop and become implementable, this guidance will be changed and expanded. For the present, continued use of the "best estimate" is acceptable and is consistent with CAA requirements.

11.0 Regulatory Application of Models

11.1 Discussion

Procedures with respect to the review and analysis of air quality modeling and data analyses in support of SIP revisions, PSD permitting or other regulatory requirements need a certain amount of standardization to ensure consistency in the depth and comprehensiveness of both the review and the analysis itself. This section recommends procedures that permit some degree of standardization while at the same time allowing the flexibility needed to assure the technically best analysis for each regulatory application.

Dispersion model estimates, especially with the support of measured air quality data, are the preferred basis for air quality demonstrations. Nevertheless, there are instances where the performance of recommended dispersion modeling techniques, by comparison with observed air quality data, may be shown to be less than acceptable. Also, there may be no recommended modeling procedure suitable for the situation. In these instances, emission limitations may be established solely on the basis of observed air quality data as would be applied to a modeling analysis. The same care should be given to the analyses of the air quality data as would be applied to a modeling analysis.

The current NAAQS for SO_2 and CO are both stated in terms of a concentration not to be exceeded more than once a year. There is only an annual standard for NO_2 and a quarterly standard for Pb. The PM–10 and ozone standards permit the exceedance of a concentration on an average of not more than once a year; the convention is to average over a 3-year period.[5, 86, 100] This represents a change from a deterministic to a more statistical form of the standard and permits some consideration to be given to unusual circumstances. The NAAQS are subjected to extensive review and possible revision every 5 years.

This section discusses general requirements for concentration estimates and identifies the relationship to emission limits. The following recommendations apply to: (1) Revisions of State Implementation Plans; (2) the review of new sources and the prevention of significant deterioration (PSD); and (3) analyses of the emissions trades ("bubbles").

11.2 Recommendations

11.2.1 Analysis Requirements

Every effort should be made by the Regional Office to meet with all parties involved in either a SIP revision or a PSD permit application prior to the start of any work on such a project. During this meeting, a protocol should be established between the preparing and reviewing parties to define the procedures to be followed, the data to be collected, the model to be used, and the analysis of the source and concentration data. An example of requirements for such an effort is contained in the Air Quality Analysis Checklist included here as Appendix C. This checklist suggests the level of detail required to assess the air quality resulting from the proposed action. Special cases may require additional data collection or analysis and this should be determined and agreed upon at this preapplication meeting. The protocol should be written and agreed upon by the parties concerned, although a formal legal document is not intended. Changes in such a protocol are often required as the data collection and analysis progresses. However, the protocol establishes a common understanding of the requirements.

An air quality analysis should begin with a screening model to determine the potential of the proposed source or control strategy to violate the PSD increment or NAAQS. It is recommended that the screening techniques found in "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources"[18] be used for point source analyses. Screening procedures for area source analysis are discussed in "Applying Atmospheric Simulation Models to Air Quality Maintenance Areas".[87] For mobile source impact assessments the

"Guideline for Modeling Carbon Monoxide from Roadway Intersections"[24] is available.

If the concentration estimates from screening techniques indicate that the PSD increment or NAAQS may be approached or exceeded, then a more refined modeling analysis is appropriate and the model user should select a model according to recommendations in sections 4–8. In some instances, no refined technique may be specified in this guide for the situation. The model user is then encouraged to submit a model developed specifically for the case at hand. If that is not possible, a screening technique may supply the needed results.

Regional Offices should require permit applicants to incorporate the pollutant contributions of all sources into their analysis. Where necessary this may include emissions associated with growth in the area of impact of the new or modified source's impact. PSD air quality assessments should consider the amount of the allowable air quality increment that has already been granted to any other sources. Therefore, the most recent source applicant should model the existing or permitted sources in addition to the one currently under consideration. This would permit the use of newly acquired data or improved modeling techniques if such have become available since the last source was permitted. When remodeling, the worst case used in the previous modeling analysis should be one set of conditions modeled in the new analysis. All sources should be modeled for each set of meteorological conditions selected and for all receptor sites used in the previous applications as well as new sites specific to the new source.

11.2.2 Use of Measured Data in Lieu of Model Estimates

Modeling is the preferred method for determining emission limitations for both new and existing sources. When a preferred model is available, model results alone (including background) are sufficient. Monitoring will normally not be accepted as the sole basis for emission limitation determination in flat terrain areas. In some instances when the modeling technique available is only a screening technique, the addition of air quality data to the analysis may lend credence to model results.

There are circumstances where there is no applicable model, and measured data may need to be used. Examples of such situations are: (1) Complex terrain locations; (2) land/water interface areas; and (3) urban locations with a large fraction of particulate emissions from nontraditional sources. However, only in the case of an existing source should monitoring data alone be a basis for emission limits. In addition, the following items should be considered prior to the acceptance of the measured data:

a. Does a monitoring network exist for the pollutants and averaging times of concern;

b. Has the monitoring network been designed to locate points of maximum concentration;

c. Do the monitoring network and the data reduction and storage procedures meet EPA monitoring and quality assurance requirements;

d. Do the data set and the analysis allow impact of the most important individual sources to be identified if more than one source or emission point is involved;

e. Is at least one full year of valid ambient data available; and

f. Can it be demonstrated through the comparison of monitored data with model results that available models are not applicable?

The number of monitors required is a function of the problem being considered. The source configuration, terrain configuration, and meteorological variations all have an impact on number and placement of monitors. Decisions can only be made on a case-by-case basis. The Interim Procedures for Evaluating Air Quality Models[16] should be used in establishing criteria for demonstrating that a model is not applicable.

Sources should obtain approval from the Regional Office or reviewing authority for the monitoring network prior to the start of monitoring. A monitoring protocol agreed to by all concerned parties is highly desirable. The design of the network, the number, type and location of the monitors, the sampling period, averaging time as well as the need for meteorological monitoring or the use of mobile sampling or plume tracking techniques, should all be specified in the protocol and agreed upon prior to start-up of the network.

11.2.3 Emission Limits

11.2.3.1 *Design Concentrations.* Emission limits should be based on concentration estimates for the averaging time that results in the most stringent control requirements. The concentration used in specifying emission limits is called the design value or design concentration and is a sum of the concentration contributed by the source and the background concentration.

To determine the averaging time for the design value, the most restrictive National Ambient Air Quality Standard (NAAQS) should be identified by calculating, for each averaging time, the ratio of the applicable NAAQS (S) minus background (B) to the predicted concentration (P) (i.e., (S–B)/P). The averaging time with the lowest ratio identifies the most restrictive standard. If the annual average is the most restrictive, the highest estimated annual average concentration from one or a number of years of data is the design value. When short term standards are most restrictive, it may be necessary to consider a broader range of concentrations than the highest value. For example, for pollutants such as SO_2, the highest, second-highest concentration is the design value. For pollutants with statistically based NAAQS, the design value is found by determining the more restrictive of: (1) The short-term concentration that is not expected to be exceeded more than once per year over the period specified in the standard, or (2) the long-term concentration that is not expected to exceed the long-term NAAQS. Determination of design values for PM–10 is presented in more detail in the "PM–10 SIP Development Guideline".[102]

When the highest, second-highest concentration is used in assessing potential violations of a short term NAAQS, criteria that are identified in "Guideline for Interpretation of Air Quality Standards"[88] should be followed. This guideline specifies that a violation of a short term standard occurs at a site when the standard is exceeded a second time. Thus, emission limits that protect standards for averaging times of 24 hours or less are appropriately based on the highest, second-highest estimated concentration plus a background concentration which can reasonably be assumed to occur with the concentration.

11.2.3.2 *NAAQS Analyses for New or Modified Sources.* For new or modified sources predicted to have a significant ambient impact[63] and to be located in areas designated attainment or unclassifiable for the SO_2, Pb, NO_2, or CO NAAQS, the demonstration as to whether the source will cause or contribute to an air quality violation should be based on: (1) The highest estimated annual average concentration determined from annual averages of individual years; or (2) the highest, second-highest estimated concentration for averaging times of 24-hours or less; and (3) the significance of the spatial and temporal contribution to any modeled violation. For Pb, the highest estimated concentration based on an individual calendar quarter averaging period should be used. Background concentrations should be added to the estimated impact of the source. The most restrictive standard should be used in all cases to assess the threat of an air quality violation. For new or modified sources predicted to have a significant ambient impact[63] in areas designated attainment or unclassifiable for the PM–10 NAAQS, the demonstration of whether or not the source will cause or contribute to an air quality violation should be based on sufficient data to show whether: (1) The projected 24-hour average concentrations will exceed the 24-hour NAAQS more than once per year, on average; (2) the expected (i.e., average) annual mean concentration will exceed the annual NAAQS; and (3) the source contributes significantly, in a temporal and spatial sense, to any modeled violation.

11.2.3.3 *PSD Air Quality Increments and Impacts.* The allowable PSD increments for criteria pollutants are established by regulation and cited in 40 CFR 51.166. These maximum allowable increases in pollutant concentrations may be exceeded once per year at each site, except for the annual increment that may not be exceeded. The highest, second-highest increase in estimated concentrations for the short term averages as determined by a model should be less than or equal to the permitted increment. The modeled annual averages should not exceed the increment.

Screening techniques defined in sections 4 and 5 can sometimes be used to estimate short term incremental concentrations for the first new source that triggers the baseline in a given area. However, when multiple increment-consuming sources are involved in the calculation, the use of a refined model with at least 1 year of on-site or 5 years of off-site NWS data is normally required. In such cases, sequential modeling must demonstrate that the allowable increments are not exceeded temporally and spatially, i.e., for all receptors for each time period

throughout the year(s) (time period means the appropriate PSD averaging time, e.g., 3-hour, 24-hour, etc.).

The PSD regulations require an estimation of the SO_2, particulate matter, and NO_2 impact on any Class I area. Normally, Gaussian models should not be applied at distances greater than can be accommodated by the steady state assumptions inherent in such models. The maximum distance for refined Gaussian model application for regulatory purposes is generally considered to be 50km. Beyond the 50km range, screening techniques may be used to determine if more refined modeling is needed. If refined models are needed, long range transport models should be considered in accordance with section 7.2.6. As previously noted in sections 3 and 7, the need to involve the Federal Land Manager in decisions on potential air quality impacts, particularly in relation to PSD Class I areas, cannot be overemphasized.

11.2.3.4 *Emissions Trading Policy (Bubbles).* EPA's final Emissions Trading Policy, commonly referred to as the "bubble policy," was published in the Federal Register in 1986.[se] Principles contained in the policy should be used to evaluate ambient impacts of emission trading activities.

Emission increases and decreases within the bubble should result in ambient air quality equivalence. Two levels of analysis are defined for establishing this equivalence. In a Level I analysis the source configuration and setting must meet certain limitations (defined in the policy) that ensure ambient equivalence; no modeling is required. In a Level II analysis a modeling demonstration of ambient equivalence is required but only the sources involved in the emissions trade are modeled. The resulting ambient estimates of net increases/decreases are compared to a set of significance levels to determine if the bubble can be approved. A Level II analysis requires the use of a refined model and the most recent readily available full year of representative meteorological data. Sequential modeling must demonstrate that the significance levels are met temporally and spatially, i.e., for all receptors for each time period throughout the year (time period means the appropriate NAAQS averaging time, e.g., 3-hour, 24-hour, etc.).

For those bubbles that cannot meet the Level I or Level II requirements, the Emissions Trading Policy allows for a Level III analysis. A Level III analysis, from a modeling standpoint, is generally equivalent to the requirements for a standard SIP revision where all sources (and background) are considered and the estimates are compared to the NAAQS as in section 11.2.3.2.

The Emissions Trading Policy allows States to adopt generic regulations for processing bubbles. The modeling procedures recommended in this guideline apply to such generic regulations. However, an added requirement is that the modeling procedures contained in any generic regulation must be replicable such that there is no doubt as to how each individual bubble will be modeled. In general this means that the models, the data bases and the procedures for applying the model must be defined in the regulation. The consequences of the replicability requirement are that bubbles for sources located in complex terrain and certain industrial sources where judgments must be made on source characterization cannot be handled generically.

12.0 References[a,b]

1. Code of Federal Regulations (Title 40, Part 51): Protection of the Environment; Requirements for Preparation, Adoption, and Submittal of Implementation Plans.

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[1] The documents listed here are major sources of supplemental information on the theory and application of mathematical air quality models.

14.0 Glossary of Terms

Air quality: Ambient pollutant concentrations and their temporal and spatial distribution.

Algorithm: A specific mathematical calculation procedure. A model may contain several algorithms.

Background: Ambient pollutant concentrations due to (1) natural sources, (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.

Calibrate: An objective adjustment using measured air quality data (e.g., an adjustment based on least-squares linear regression).

Calm: For purposes of air quality modeling, calm is used to define the situation when the wind is indeterminate with regard to speed or direction.

Complex Terrain: Terrain exceeding the height of the stack being modeled.

Computer Code: A set of statements that comprise a computer program.

Evaluate: To appraise the performance and accuracy of a model based on a comparison of concentration estimates with observed air quality data.

Fluid Modeling: Modeling conducted in a wind tunnel or water channel to

quantitatively evaluate the influence of buildings and/or terrain on pollutant concentrations.

Fugitive Dust: Dust discharged to the atmosphere in an unconfined flow stream such as that from unpaved roads, storage piles and heavy construction operations.

Model: A quantitative or mathematical representation or simulation which attempts to describe the characteristics or relationships of physical events.

Preferred Model: A refined model that is recommended for a specific type of regulatory application.

Receptor: A location at which ambient air quality is measured or estimated.

Receptor Models: Procedures that examine an ambient monitor sample of particulate matter and the conditions of its collection to infer the types or relative mix of sources impacting on it during collection.

Refined Model: An analytical technique that provides a detailed treatment of physical and chemical atmospheric processes and requires detailed and precise input data. Specialized estimates are calculated that are useful for evaluating source impact relative to air quality standards and allowable increments. The estimates are more accurate than those obtained from conservative screening techniques.

Rollback: A simple model that assumes that if emissions from each source affecting a given receptor are decreased by the same percentage, ambient air quality concentrations decrease proportionately.

Screening Technique: A relatively simple analysis technique to determine if a given source is likely to pose a threat to air quality. Concentration estimates from screening techniques are conservative.

Simple Terrain: An area where terrain features are all lower in elevation than the top of the stack of the source.

Appendix A to Appendix W of Part 51—Summaries of Preferred Air Quality Models

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A.5 Industrial Source Complex Model (ISC2)
A.6 Multiple Point Gaussian Dispersion Algorithm With Terrain Adjustment (MPTER)
A.7 Single Source (CRSTER) MODEL
A.8 Urban Airshed Model (UAM)
A.9 Offshore and Coastal Dispersion Model (OCD)
A.10 Emissions and Dispersion Model System (EDMS)
A.11 Complex Terrain Dispersion Model Plus Algorithms for Unstable situations (CTDMPLUS)
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A.0 Introduction and Availability

This appendix summarizes key features of refined air quality models preferred for specific regulatory applications. For each model, information is provided on availability, approximate cost in 1990, regulatory use, data input, output format and options, simulation of atmospheric physics, and accuracy. These models may be used without a formal demonstration of applicability provided they satisfy the recommendations for regulatory use; not all options in the models are necessarily recommended for regulatory use.

Many of these models have been subjected to a performance evaluation using comparisons with observed air quality data. A summary of such comparisons for models contained in this appendix is included in "A Survey of Statistical Measures of Model Performance and Accuracy for Several Air Quality Models," EPA–450/4–83–001. Where possible, several of the models contained herein have been subjected to evaluation exercises, including (1) statistical performance tests recommended by the American Meteorological Society and (2) peer scientific reviews. The models in this appendix have been selected on the basis of the results of the model evaluations, experience with previous use, familiarity of the model to various air quality programs, and the costs and resource requirements for use.

The Availability statement for models in this Appendix that refers to the User's Network for Applied Modeling of Air Pollution (UNAMAP) should be ignored since UNAMAP is no longer operational. However, all models and user's documentation in this appendix are available from: Computer Products, National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

In addition, model codes and selected, abridged user's guides are available from the Support Center for Regulatory Air Models Bulletin Board System [10] (SCRAM BBS), telephone (919) 541–5742. The SCRAM BBS is an electronic bulletin board system designed to be user friendly and accessible from anywhere in the country. Model users with personal computers are encouraged to use the SCRAM BBS to download current model codes and text files.

A.1 Buoyant Line and Point Source Dispersion Model (BLP)

Reference

Schulman, Lloyd L., and Joseph S. Scire, 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide. Document P–7304B. Environmental Research and Technology, Inc., Concord, MA. (NTIS No. PB 81–164642)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract:

BLP is a Gaussian plume dispersion model designed to handle unique modeling problems associated with aluminum reduction plants, and other industrial sources where plume rise and downwash effects from stationary line sources are important.

a. *Recommendations for Regulatory Use*

The BLP model is appropriate for the following applications:

Aluminum reduction plants which contain buoyant, elevated line sources;

Rural areas;

Transport distances less than 50 kilometers;

Simple terrain; and

One hour to one year averaging times.

The following options should be selected for regulatory applications:

Rural (IRU=1) mixing height option;

Default (no selection) for plume rise wind shear (LSHEAR), transitional point source plume rise (LTRANS), vertical potential temperature gradient (DTHTA), vertical wind speed power law profile exponents (PEXP), maximum variation in number of stability classes per hour (IDELS), pollutant decay (DECFAC), the constant in Briggs' stable plume rise equation (CONST2), constant in Briggs' neutral plume rise equation (CONST3), convergence criterion for the line source calculations (CRIT), and maximum iterations allowed for line source calculations (MAXIT); and

Terrain option (TERAN) set equal to 0.0, 0.0, 0.0, 0.0, 0.0, 0.0.

For other applications, BLP can be used if it can be demonstrated to give the same estimates as a recommended model for the same application, and will subsequently be executed in that mode.

BLP can be used on a case-by-case basis with specific options not available in a recommended model if it can be demonstrated, using the criteria in section 3.2, that the model is more appropriate for a specific application.

b. *Input Requirements*

Source data: Point sources require stack location, elevation of stack base, physical stack height, stack inside diameter, stack gas exit velocity, stack gas exit temperature, and pollutant emission rate. Line sources require coordinates of the end points of the line, release height, emission rate, average line source width, average building width, average spacing between buildings, and average line source buoyancy parameter.

Meteorological data: Hourly surface weather data from punched cards or from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height.

Receptor data: Locations and elevations of receptors, or location and size of receptor grid or request automatically generated receptor grid.

c. *Output*

Printed output (from a separate post-processor program) includes:

Total concentration or, optionally, source contribution analysis; monthly and annual frequency distributions for 1-, 3-, and 24-hour average concentrations; tables of 1-, 3-, and 24-hour average concentrations at each receptor; table of the annual (or length of run) average concentrations at each receptor;

Five highest 1-, 3-, and 24-hour average concentrations at each receptor; and

Fifty highest 1-, 3-, and 24-hour concentrations over the receptor field.

d. *Type of Model*

BLP is a gaussian plume model.

e. *Pollutant Types*

BLP may be used to model primary pollutants. This model does not treat settling and deposition.

f. *Source-Receptor Relationship*

BLP treats up to 50 point sources, 10 parallel line sources, and 100 receptors arbitrarily located.

User-input topographic elevation is applied for each stack and each receptor.

g. *Plume Behavior*

BLP uses plume rise formulas of Schulman and Scire (1980).

Vertical potential temperature gradients of 0.02 Kelvin per meter for E stability and 0.035 Kelvin per meter are used for stable plume rise calculations. An option for user input values is included.

Transitional rise is used for line sources.

Option to suppress the use of transitional plume rise for point sources is included.

The building downwash algorithm of Schulman and Scire (1980) is used.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Wind speeds profile exponents of 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 are used for stability classes A through F, respectively. An option for user-defined values and an option to suppress the use of the wind speed profile feature are included.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients are from Turner (1969), with no adjustment made for variations in surface roughness or averaging time.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients are from Turner (1969), with no adjustment made for variations in surface roughness.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform mixing is assumed beyond that point.

Perfect reflection at the ground is assumed.

l. *Chemical Transformation*

Chemical transformations are treated using linear decay. Decay rate is input by the user.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

Schulman, L.L., and J.S. Scire. 1980. Buoyant Line and Point Source (BLP) Dispersion Model User's Guide, P–7304B. Environmental Research and Technology, Inc., Concord, MA.

Scire, J.S., and L.L. Schulman. 1981. Evaluation of the BLP and ISC Models with SF_6 Tracer Data and SO_2 Measurements at Aluminum Reduction Plants. APCA Specialty Conference on Dispersion Modeling for Complex Sources, St. Louis, MO.

A.2 CALINE3

Reference

Benson, Paul E. 1979. CALINE3—A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets. Interim Report, Report Number FHWA/CA/TL–79/23. Federal Highway Administration, Washington, DC. (NTIS No. PB 80–220841)

Availability

The CALINE3 model computer tape is available from NTIS as PB 80–220839. The model is also available from the California Department of Transportation (manual free of charge and approximately $50 for the computer tape). Requests should be directed to: Mr. Marlin Beckwith, Chief, Office of Computer Systems, California Department of Transportation, 1120 N. Street, Sacramento, CA 95814.

Abstract

CALINE3 can be used to estimate the concentrations of nonreactive pollutants from highway traffic. This steady-state Gaussian model can be applied to determine air pollution concentrations at receptor locations downwind of "at-grade," "fill," "bridge," and "cut section" highways located in relatively uncomplicated terrain. The model is applicable for any wind direction, highway orientation, and receptor location. The model has adjustments for averaging time and surface roughness, and can handle up to 20 links and 20 receptors. It also contains an algorithm for deposition and settling velocity so that particulate concentrations can be predicted.

a. *Recommendations for Regulatory Use*

CALINE–3 is appropriate for the following applications:

Highway (line) sources;

Urban or rural areas;

Simple terrain;

Transport distances less than 50 kilometers; and

One-hour to 24-hour averaging times.

b. *Input Requirements*

Source data: Up to 20 highway links classed as "at-grade," "fill," "bridge," or "depressed"; coordinates of link end points; traffic volume; emission factor; source height; and mixing zone width.

Meteorological data: Wind speed, wind angle (measured in degrees clockwise from the Y axis), stability class, mixing height, ambient (background to the highway) concentration of pollutant.

Receptor data: Coordinates and height above ground for each receptor. c.

Output

Printed output includes:

Concentration at each receptor for the specified meteorological condition.

d. *Type of Model*

CALINE–3 is a Gaussian plume model.

e. *Pollutant Types*

CALINE–3 may be used to model primary pollutants.

f. *Source-Receptor Relationship*

Up to 20 highway links are treated.

CALINE–3 applies user input location and emission rate for each link. User-input receptor locations are applied.

g. *Plume Behavior*

Plume rise is not treated.

h. *Horizontal Winds*

User-input hourly wind speed and direction are applied.

Constant, uniform (steady-state) wind is assumed for an hour.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Six stability classes are used.

Rural dispersion coefficients from Turner (1969) are used, with adjustment for roughness length and averaging time.

Initial traffic-induced dispersion is handled implicitly by plume size parameters.

k. *Vertical Dispersion*

Six stability classes are used.

Empirical dispersion coefficients from Benson (1979) are used including an adjustment for roughness length.

Initial traffic-induced dispersion is handled implicitly by plume size parameters.

Adjustment for averaging time is included.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Optional deposition calculations are included.

n. *Evaluation Studies*

Bemis, G. R. et al., 1977. Air Pollution and Roadway Location, Design, and Operation—Project Overview. FHWA–CA–TL–7089–77–25, Federal Highway Administration, Washington, DC.

Cadle, S. H. et al., 1978. Results of the General Motors Sulfate Dispersion Experiment, GMR–2107. General Motors Research Laboratories, Warren, MI.

Dabberdt, W. F., 1975. Studies of Air Quality on and Near Highways, Project 2761. Stanford Research Institute, Menlo Park, CA.

A.3 Climatological Dispersion Model (CDM 2.0)

References

Irwin, J. S., T. Chico, and J. Catalano. 1985. CDM 2.0-Climatological Dispersion Model—User's Guide. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 85–129542)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is

available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

CDM is a climatological steady-state Gaussian plume model for determining long-term (seasonal or annual) arithmetic average pollutant concentrations at any ground-level receptor in an urban area.

a. *Recommendations for Regulatory Use*

CDM is appropriate for the following applications:

Point and area sources;
Urban areas;
Flat terrain;
Transport distances less than 50 kilometers;
Long term averages over one month to one year or longer.

The following option should be selected for regulatory applications:

Set the regulatory "default option" (NDEF=1) which automatically selects stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), and the appropriate wind profile exponents.

Enter "0" for pollutant half-life for all pollutants except for SO_2 in an urban setting. This entry results in no decay (infinite half-life) being calculated. For SO_2 in an urban setting, the pollutant half-life (in hours) should be set to 4.0.

b. *Input Requirements*

Source data: Location, average emissions rates and heights of emissions for point and area sources. Point source data requirements also include stack gas temperature, stack gas exit velocity, and stack inside diameter for plume rise calculations for point sources.

Meteorological data: Stability wind rose (STAR deck day/night version), average mixing height and wind speed in each stability category, and average air temperature.

Receptor data: Cartesian coordinates of each receptor.

c. *Output*

Printed output includes:

Average concentrations for the period of the stability wind rose data (arithmetic mean only) at each receptor, and

Optional point and area concentration rose for each receptor.

d. *Type of Model*

CDM is a climatological Gaussian plume model.

e. *Pollutant Types*

CDM may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

CDM applies user-specified locations for all point sources and receptors.

Area sources are input as multiples of a user-defined unit area source grid size.

User specified release heights are applied for individual point sources and the area source grid.

Actual separation between each source-receptor pair is used.

The user may select a single height at or above ground level that applies to all receptors.

No terrain differences between source and receptor are treated.

g. *Plume Behavior*

CDM uses Briggs (1969, 1971, 1975) plume rise equations. Optionally a plume rise-wind speed product may be input for each point source.

Stack tip downwash equation from Briggs (1974) is preferred for regulatory use. The Bjorklund and Bowers (1982) equation is also included.

No plume rise is calculated for area sources.

Does not treat fumigation or building downwash.

h. *Horizontal Winds*

Wind data are input as a stability wind rose (joint frequency distribution of 16 wind directions, 6 wind classes, and 5 stability classes).

Wind speed profile exponents for the urban case (EPA, 1980) are used, assuming the anemometer height is at 10.0 meters.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Pollutants are assumed evenly distributed across a 22.5 or 10.0 degree sector.

k. *Vertical Dispersion*

There are seven vertical dispersion parameter schemes, but the following is recommended for regulatory applications:

- Briggs-urban (Gifford, 1976).

Mixing height has no effect until dispersion coefficient equals 0.8 times the mixing height; uniform vertical mixing is assumed beyond that point.

Buoyancy-induced dispersion (Pasquill, 1976) is included as an option. Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

Irwin, J. S., and T. M. Brown, 1985. A Sensitivity Analysis of the Treatment of Area Sources by the Climatological Dispersion Model. *Journal of Air Pollution Control Association*, 35: 359–364.

Londergan, R., D. Minott, D. Wachter and R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models, EPA Publication No. EPA–450/4–83–020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Busse, A. D. and J. R. Zimmerman, 1973. User's Guide for the Climatological Dispersion Model—Appendix B. EPA Publication No. EPA/R4–73–024. Office of Research and Development, Research Triangle Park, NC.

Zimmerman, J. R., 1971. Some Preliminary Results of Modeling from the Air Pollution Study of Ankara, Turkey, Proceedings of the Second Meeting of the Expert Panel on Air Pollution Modeling, NATO Committee on the Challenges of Modern Society, Paris, France.

Zimmerman, J. R., 1972. The NATO/CCMS Air Pollution Study of St. Louis, Missouri. Presented at the Third Meeting of the Expert Panel on Air Pollution Modeling, NATO Committee on the Challenges of Modern Society, Paris, France.

A.4 Gaussian-Plume Multiple Source Air Quality Algorithm (RAM)

Reference

Turner, D. B., and J. H. Novak, 1978. User's Guide for RAM. Publication No. EPA–600/8–78–016, Vol. a and b. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS Nos. PB 294791 and PB 294792)

Catalano, J. A., D. B. Turner, and H. Novak. 1987. User's Guide for RAM— Second Edition. U.S. Environmental Protection Agency, Research Triangle Park, NC. (Distributed as part of UNAMAP, Version 6). Documentation)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

RAM is a steady-state Gaussian plume model for estimating concentrations of relatively stable pollutants, for averaging times from an hour to a day, from point and area sources in a rural or urban setting. Level terrain is assumed. Calculations are performed for each hour.

a. *Recommendations for Regulatory Use*

RAM is appropriate for the following applications:

Point and area sources;
Urban areas;
Flat terrain;
Transport distances less than 50 kilometers; and
One hour to one year averaging times.

The following options should be selected for regulatory applications:

Set the regulatory "default option" to automatically select stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), the new treatment for calms, the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. *Input Requirements*

Source data: Point sources require location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter and stack gas temperature. Area sources require location, size, emission rate, and height of emissions.

Meteorological data: Hourly surface weather data from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: Coordinates of each receptor. Options for automatic placement of receptors near expected concentration maxima, and a gridded receptor array are included.

c. *Output*

Printed output optionally includes:

One to 24-hour and annual average concentrations at each receptor,

Limited individual source contribution list, and

Highest through fifth highest concentrations at each receptor for period, with the highest and high, second-high values flagged.

d. *Type of Model*

RAM is a Gaussian plume model.

e. *Pollutant Types*

RAM may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

RAM applies user-specified locations for all point sources and receptors.

Area sources are input as multiples of a user-defined unit area source grid size.

User specified stack heights are applied for individual point sources.

Up to 3 effective release heights may be specified for the area sources. Area source release heights are assumed to be appropriate for a 5 meter per second wind and to be inversely proportional to wind speed.

Actual separation between each source-receptor pair is used.

All receptors are assumed to be at the same height at or above ground level.

No terrain differences between source and receptor are accounted for.

g. *Plume Behavior*

RAM uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

A user supplied fraction of the area source height is treated as the physical height. The remainder is assumed to be plume rise for a 5 meter per second wind speed, and to be inversely proportional to wind speed.

Fumigation and building downwash are not treated.

h. *Horizontal Winds*

Constant, uniform (steady state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1980) for urban cases are used.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. *Vertical Dispersion*

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

Ellis, H., P. Lou, and G. Dalsell, 1980. Comparison Study of Measured and Predicted Concentrations with the RAM Model at Two Power Plants Along Lake Erie, Second Joint Conference on Applications of Air Pollution Meteorology, New Orleans, LA.

Environmental Research and Technology, 1980. SO_2 Monitoring and RAM (Urban) Model Comparison Study in Summit County, Ohio. Document P–3818–152, Environmental Research & Technology, Inc., Concord, MA.

Guldberg, P. H., and C. W. Kern, 1978. A Comparison Validation of the RAM and PTMTP Models for Short-Term Concentrations in Two Urban Areas. *Journal of Air Pollution Control Association*, 28: 907–910.

Hodanbosi, R. R., and L. K. Peters, 1981. Evaluation of RAM Model for Cleveland, Ohio. *Journal of Air Pollution Control Association*, 31: 253–255.

Kennedy, K. H., R. D. Siegel, and M. P. Steinberg, 1981. Case-Specific Evaluation of the RAM Atmospheric Dispersion Model in an Urban Area, 74th Annual Meeting of the American Institute of Chemical Engineers, New Orleans, LA.

Kummler, R. H., B. Cho, G. Roginski, R. Sinha and A. Greenburg, 1979. A Comparative Validation of the RAM and Modified SAI Models for Short-Term SO_2 Concentrations in Detroit. *Journal of Air Pollution Control Association*, 29: 720–723.

Londergan, R. J., N. R. Bowne, D. R. Murray, H. Borenstein, and J. Mangano, 1980. An Evaluation of Short-Term Air Quality Models Using Tracer Study Data, Report No. 4333, American Petroleum Institute, Washington, D.C.

Morgenstern, P., M. J. Geraghty, and A. McKnight, 1979. A Comparative Study of the RAM (Urban) and RAMR (Rural) Models for Short-term SO_2 Concentrations in Metropolitan Indianapolis. 72nd Annual Meeting of the Air Pollution Control Association, Cincinnati, OH.

Ruff, R. E., 1980. Evaluation of the RAM Using the RAPS Data Base, Contract 68–02–2770, SRI International, Menlo Park, CA.

Londergan, R., D. Minott, D. Wackter, and R. Fisz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

A.5 Industrial Source Complex Model (ISC2)

Reference

Environmental Protection Agency, 1992. User's Guide for the Industrial Source Complex (ISC2) Dispersion Models, Volumes 1, 2, and 3. EPA Publication Nos. EPA–450/4–92–008a–c. Environmental Protection Agency, Research Triangle Park, NC. (NTIS Nos. PB 92–232481, PB 92–232453, and PB 92–232479, respectively)

Availability

The model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (see page A–1).

Abstract

The ISC2 model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex. This model can account for the following: Settling and dry deposition of particles; downwash; area, line and volume sources; plume rise as a function of downwind distance; separation of point sources; and limited terrain adjustment. It operates in both long-term and short-term modes.

a. *Recommendations for Regulatory Use*

ISC2 is appropriate for the following applications:

- Industrial source complexes;
- Rural or urban areas;
- Flat or rolling terrain;
- Transport distances less than 50 kilometers;
- 1-hour to annual averaging times; and
- Continuous toxic air emissions.

The following options should be selected for regulatory applications:

For short term or long term modeling, set the regulatory "default option"; i.e., use the keyword *DFAULT*, which automatically selects stack tip downwash, final plume rise, buoyancy induced dispersion (BID), the vertical potential temperature gradient, a treatment for calms, the appropriate wind profile exponents, the appropriate value for pollutant half-life, and a revised building wake effects algorithm; set the "rural option" (use the keyword *RURAL*) or "urban option" (use the keyword *URBAN*); and set the "concentration option" (use the keyword *CONC*).

b. *Input Requirements*

Source data: Location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature. Optional inputs include source elevation, building dimensions, particle size distribution with corresponding settling velocities, and surface reflection coefficients.

Meteorological data: ISCST2 requires hourly surface weather data from the preprocessor program RAMMET, which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. For ISCLT2, input includes stability wind rose (STAR deck), average afternoon mixing height, average morning mixing height, and average air temperature.

Receptor data: coordinates and optional ground elevation for each receptor.

c. *Output*

Printed output options include:

- Program control parameters, source data, and receptor data;
- Tables of hourly meteorological data for each specified day;
- "N"-day average concentration or total deposition calculated at each receptor for any desired source combinations;
- Concentration or deposition values calculated for any desired source combinations at all receptors for any specified day or time period within the day;
- Tables of highest and second highest concentration or deposition values calculated at each receptor for each specified time period during a(n) "N"-day period for any desired source combinations, and tables of the maximum 50 concentration or deposition values calculated for any desired source combinations for each specified time period.

d. *Type of Model*

ISC2 is a Gaussian plume model.

e. *Pollutant Types*

ISC2 may be used to model primary pollutants and continuous releases of toxic and hazardous waste pollutants. Settling and deposition are treated.

f. *Source-Receptor Relationships*

ISC2 applies user-specified locations for point, line, area and volume sources, and user-specified receptor locations or receptor rings.

User input topographic evaluation for each receptor is used. Elevations above stack top are reduced to the stack top elevation, i.e., "terrain chopping".

User input height above ground level may be used when necessary to simulate impact at elevated or "flag pole" receptors, e.g., on buildings.

Actual separation between each source-receptor pair is used.

g. *Plume Behavior*

ISC2 uses Briggs (1969, 1971, 1975) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

Revised building wake effects algorithm is used. For stacks higher than building height plus one-half the lesser of the building height or building width, the building wake algorithm of Huber and Snyder (1976) is used. For lower stacks, the building wake algorithm of Schulman and Scire (Schulman and Hanna, 1986) is used, but stack tip downwash and BID are not used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above source.

Fumigation is not treated.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for each hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

An optional treatment for calm winds is included for short term modeling.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness or averaging time.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used, with no adjustments for surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. *Physical Removal*

Settling and dry deposition of particulates are treated.

n. *Evaluation Studies*

Bowers, J. F., and A. J. Anderson, 1981. An Evaluation Study for the Industrial Source Complex (ISC) Dispersion Model, EPA Publication No. EPA–450/4–81–002. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Bowers, J. F., A. J. Anderson, and W. R. Hargraves, 1982. Tests of the Industrial Source Complex (ISC) Dispersion Model at the Armco Middletown, Ohio Steel Mill, EPA Publication No. EPA–450/4–82–006. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Scire, J. S., and L. L. Schulman, 1981. Evaluation of the BLP and ISC Models with SF_6 Tracer Data and SO_2 Measurements at Aluminum Reduction Plants. Air Pollution Control Association Specialty Conference on Dispersion Modeling for Complex Sources, St. Louis, MO.

Schulman, L. L., and S. R. Hanna, 1986. Evaluation of Downwash Modification to the Industrial Source Complex Model. Journal of the Air Pollution Control Association, 36: 258–264.

A.6 Multiple Point Gaussian Dispersion Algorithm With Terrain Adjustment (MPTER)

Reference

Pierce, Thomas D. and D. Bruce Turner, 1980. User's Guide for MPTER. EPA Publication No. EPA–600/8–80–016. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 80–197361)

Chico, T. and J. A. Catalano, 1986. Addendum to the User's Guide for MPTER. U.S. Environmental Protection Agency. Research Triangle Park, NC 27711. (Distributed as part of UNAMAP. Version 6, Documentation)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

MPTER is a Multiple Point Source Algorithm. This algorithm is useful for estimating air quality concentrations of relatively non-reactive pollutants. Hourly estimates are made using the Gaussian steady state model.

a. *Recommendations for Regulatory Use*

MPTER is appropriate for the following applications:

Point sources;

Rural or urban areas;

Flat or rolling terrain (no terrain above stack height);

Transport distances less than 50 kilometers; and

One hour to one year averaging times.

The following options should be selected for regulatory applications:

Set the regulatory "default option" (IOPT(25)=1) to automatically select stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), the new treatment for calms, and the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. *Input Requirements*

Source data: Location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature, and optional ground level elevation.

Meteorological data: hourly surface weather data from the preprocessor program RAMMET which provides hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: coordinates and optional ground elevation for each receptor.

c. *Output*

Printed output includes:

One to 24-hour and annual average concentrations at each receptor;

Highest through fifth highest concentrations at each receptor for period, with the highest and high, second-high values flagged; and

Limited source contribution table.

d. *Type of Model*

MPTER is a Gaussian plume model.

e. *Pollutant Types*

MPTER may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

MPTER applies user-specified locations of point sources and receptors.

User input stack height and source characteristics for each source are used.

User input topographic elevation for each receptor is used.

g. *Plume Behavior*

MPTER uses Briggs (1969, 1971, 1975) plume rise equations for final rise. Stack tip downwash equation from Briggs (1974) is used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above the source.

Fumigation and building downwash are not treated.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

i. *Vertical Wind Speed*

Vertical speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for variations in surface roughness or averaging times.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used. Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used, with no adjustments made for variations in surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used.

Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

No specific studies for MPTER because regulatory editions of CRSTER and MPTER are equivalent. Studies for CRSTER are relevant to MPTER as well (See page A–32).

A.7 Single Source (CRSTER) Model

Reference

Environmental Protection Agency, 1977. User's Manual for Single Source (CRSTER) Model. EPA Publication No. EPA–450/277–013. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 271380)

Catalano, J.A., 1986. Single Source (CRSTER) Model. Addendum to the User's Manual. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. (Distributed as part of UNAMAP, Version 6, Documentation)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

CRSTER is a steady state, Gaussian dispersion model designed to calculate concentrations from point sources at a single location in either a rural or urban setting. Highest and high-second high concentrations are calculated at each receptor for 1-hour, 3-hour, 24-hour, and annual averaging time.

a. *Recommendations for Regulatory Use*

CRSTER is appropriate for the following applications:

Single point sources;

Rural or urban areas;

Transport distances less than 50 kilometers; and

Flat or rolling terrain (no terrain above stack height).

The following options should be selected for regulatory applications:

Set the regulatory "default option" which automatically selects stack tip downwash, final plume rise, buoyancy-induced dispersion (BID), the new treatment for calms, and the appropriate wind profile exponents, and the appropriate value for pollutant half-life.

b. *Input Requirements*

Source data: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature.

Meteorological data: Hourly surface weather data from the preprocessor program RAMMET. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required.

Receptor data: Require distance of each of the five receptor rings.

c. *Output*

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1-, 3-, and 24 hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours;

Annual arithmetic average at each receptor;

For each day, the highest 1-hour and 24-hour concentrations over the receptor field; and

Option for source contributions to concentrations at selected receptors.

d. *Type of Model*

CRSTER is a Gaussian plume model.

e. *Pollutant Types*

CRSTER may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

CRSTER treats up to 19 point sources, no area sources.

All point sources are assumed collocated.

User input stack height is used for each source.

User input topographic elevation is used for each receptor, but must be below top of stack or program will terminate execution.

Receptors are assumed at ground level.

g. *Plume Behavior*

CRSTER uses Briggs (1969, 1971, 1972) plume rise equations for final rise.

Stack tip downwash equation from Briggs (1974) is used.

For rolling terrain (terrain not above stack height), plume centerline is horizontal at height of final rise above the source.

Fumigation and building downwash are not treated.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Separate set of wind speed profile exponents (EPA, 1980) for both rural and urban cases are used.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used in CRSTER with no adjustments made for variations in surface roughness or averaging times.

Urban dispersion coefficients from Briggs (Gifford, 1976) are used. Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for surface roughness.

Urban dispersion coefficients from Briggs (Gifford, 1975) are used. Buoyancy-induced dispersion (Pasquill, 1976) is included.

Six stability classes are used.

Mixing height is accounted for with multiple reflections until the vertical plume standard deviation equals 1.6 times the mixing height; uniform mixing is assumed beyond that point.

Perfect reflection is assumed at the ground.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

Klug, W., 1974. Dispersion from Tall Stacks. Fifth NATO/CCMS International Technical Meeting on Air Pollution Modeling, Denmark.

Londergan, R. J., N. E. Bowne, D. R. Murray, H. Borenstein, and J. Mangano, 1980. An Evaluation of Short-Term Air Quality Models Using Tracer Study Data. Report No. 4333. American Petroleum Institute, Washington, DC.

Mills, M. T., R. Cataxza, D. D. Herget, and D. A. Lynn, 1981. Evaluation of Point Source Dispersion Models. EPA Publication No. EPA–450/4–81–032. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Mills, M. T., and F. A. Record, 1975. Comprehensive Analysis of Time Concentration Relationships and the Validation of a Single Source Dispersion Model. EPA Publication No. EPA–450/3–75–083. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Mills, M. T., and R. W. Stern, 1975. Model Validation and Time-Concentration Analysis of Three Power Plants. EPA Publication No. EPA–450/378–002. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Londergan, R., D. Minott, D. Wackter, T. Kincaid, and B. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–033. U.S. Environmental Protection Agency, Research Triangle Park, NC.

TRC-Environmental Consultants, Inc., 1983. Overview, Results, and Conclusions for the EPRI Plume Model Validation and Development Project: Plains Site, EPRI EA–3074. Electric Power Research Institute, Palo Alto, CA.

A.8 Urban Airshed Model (UAM)

References

Environmental Protection Agency, 1990. User's Guide for the Urban Airshed Model, Volumes I–VIII. EPA Publication Nos. EPA–450/4–90–007a–c, d(R), e–g; EPA–454/B–93–004, respectively. U.S. Environmental Protection Agency, Research Triangle Park, NC (NTIS Nos. PB 91–131227, PB 91–131235, PB 91–131243, PB 93–122380, PB 91–131268, PB 92–145382, and PB 92–224849, respectively, for Vols. I–VII).

Availability

The model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (see page A–1).

Abstract

UAM is an urban scale, three dimensional, grid type numerical simulation model. The model incorporates a condensed photochemical kinetics mechanism for urban atmospheres. The UAM is designed for computing ozone (O_3) concentrations under short-term, episodic conditions lasting one or two days resulting from emissions of oxides of nitrogen (NO_X), volatile organic compounds (VOC), and carbon monoxide (CO). The model treats urban VOC emissions as their carbon-bond surrogates.

a. *Recommendations for Regulatory Use*

UAM is appropriate for the following applications: Urban areas having significant ozone attainment problems and one hour averaging times.

UAM has many options but no specific recommendations can be made at this time on all options. The reviewing agency should be consulted on selection of options to be used in regulatory applications.

b. *Input Requirements*

Source data: Gridded, hourly emissions of PAR, OLE, ETH, XYL, TOL, ALD2, FORM, ISOR, ETOTH, MEOH, CO, NO, and NO_2 for low-level sources. For major elevated point sources, hourly emissions, stack height, stack diameter, exit velocity, and exit temperature.

Meteorological data: Hourly, gridded, divergence free, u and v wind components for each vertical level; hourly gridded mixing heights and surface temperatures; hourly exposure class; hourly vertical potential temperature gradient above and below the mixing height; hourly surface atmospheric pressure; hourly water mixing ratio; and gridded surface roughness lengths.

Air quality data: Concentration of all carbon bond 4 species at the beginning of the simulation for each grid cell; and hourly concentrations of each pollutant at each level along the inflow boundaries and top boundary of the modeling region.

Other data requirements are: Hourly mixed layer average, NO_2 photolysis rates; and ozone surface uptake resistance along with associated gridded vegetation (scaling) factors.

c. *Output*

Printed output includes:

- Gridded instantaneous concentration fields at user-specified time intervals for user-specified pollutants and grid levels;
- Gridded time-average concentration fields for user-specified time intervals, pollutants, and grid levels.

d. *Type of Model*

UAM is a three dimensional, numerical, photochemical grid model.

e. *Pollutant Types*

UAM may be used to model ozone (O_3) formation from oxides of nitrogen (NO_X) and volatile organic compound (VOC) emissions.

f. *Source-Receptor Relationship*

Low-level area and point source emissions are specified within each surface grid cell. Emissions from major point sources are placed within cells aloft in accordance with calculated effective plume heights.

Hourly average concentrations of each pollutant are calculated for all grid cells at each vertical level.

g. *Plume Behavior*

Plume rise is calculated for major point sources using relationships recommended by Briggs (1971).

h. *Horizontal Winds*

See Input Requirements.

i. *Vertical Wind Speed*

Calculated at each vertical grid cell interface from the mass continuity relationship using the input gridded horizontal wind field.

j. *Horizontal Dispersion*

Horizontal eddy diffusivity is set to a user-specified constant value (nominally 50 m^2/s).

k. *Vertical Dispersion*

Vertical eddy diffusivities for unstable and neutral conditions calculated using relationships of Lamb et al. (1977); for stable conditions, the relationship of Businger and Arya (1974) is employed. Stability class, friction velocity, and Monin-Obukhov length determined using procedure of Liu et al. (1978).

l. *Chemical Transformation*

UAM employs a simplified version of the Carbon-Bond IV Mechanism (CBM-IV) developed by Gery et al. (1988) employing various steady state approximations.

m. *Physical Removal*

Dry deposition of ozone and other pollutant species are calculated. Vegetation (scaling) factors are applied to the reference surface uptake resistance of each species depending on land use type.

n. *Evaluation Studies*

Builtjes, P.J.H., K.D. van der Hurt, and S.D. Reynolds, 1982. Evaluation of the Performance of a Photochemical Dispersion Model in Practical Applications, 13th International Technical Meeting on Air Pollution Modeling and Its Application, Ile des Embiez, France.

Cole, H.S., D.E. Layland, G.K. Moss, and C.F. Newberry, 1983. The St. Louis Ozone Modeling Project. EPA Publication No. EPA–450/4–83–019. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Dennis, R.L., M.W. Downton, and R.S. Keil, 1983. Evaluation of Performance Measures for an Urban Photochemical Model. EPA Publication No. EPA–450/4–83–021. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Haney, J.L. and T.N. Braverman, 1985. Evaluation and Application of the Urban Airshed Model in the Philadelphia Air Quality Control Region. EPA Publication No. EPA–450/4–85–003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Layland, D.E. and H.S. Cole, 1983. A Review of Recent Applications of the SAI Urban Airshed Model. EPA Publication No. EPA–450/4–84–004. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Layland, D.E., S.D. Reynolds, H. Hogo and W.R. Oliver, 1983. Demonstration of Photochemical Grid Model Usage for Ozone Control Assessment. 76th Annual Meeting of the Air Pollution Control Association, Atlanta, GA.

Morris, R.E. et al., 1990. Urban Airshed Model Study of Five Cities. EPA Publication No. EPA–450/4–90–006a–g. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Reynolds, S.D., H. Hogo, W.R. Oliver, L.E. Reid, 1982. Application of the SAI Airshed Model to the Tulsa Metropolitan Area, SAI No. 82004. Systems Applications, Inc., San Rafael, CA.

Schere, K.L. and J.H. Shreffler, 1982. Final Evaluation of Urban-Scale Photochemical Air Quality Simulation Models. EPA Publication No. EPA–600/3–82–094. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Seigneur C., T.W. Tesche, C.E. Reid, P.M. Roth, W.R. Oliver, and J.C. Cassmassi, 1981. The Sensitivity of Complex Photochemical Model Estimates to Detail in Input

Information, Appendix A—A Compilation of Simulation Results. EPA Publication No. EPA–450/4–81–031b. U.S. Environmental Protection Agency, Research Triangle Park, NC.

South Coast Air Quality Management District, 1989. Air Quality Management Plan—Appendix V-R (Urban Airshed Model Performance Evaluation). El Monte, CA.

Stern, R. and B. Scherer, 1982. Simulation of a Photochemical Smog Episode in the Rhine-Ruhr Area with a Three Dimensional Grid Model. 13th International Technical Meeting on Air Pollution Modeling and its Application, Ile des Embiez, France.

Tesche, T. W., C. Seigneur, L. E. Reid, P. M. Roth, W. R. Oliver, and J. C. Casmassi, 1981. The Sensitivity of Complex Photochemical Model Estimates to Detail in Input Information. EPA Publication No. EPA–450/4–81–031a. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Tesche, T. W., W. R. Oliver, H. Hogo, P. Saxsena and J. L. Haney, 1983. Volume IV—Assessment of NO_2 Emission Control Requirements in the South Coast Air Basin—Appendix A. Performance Evaluation of the Systems Applications Airshed Model for the 26–27 June 1974 O_3 Episode in the South Coast Air Basin, SYSAPP 83/037. Systems Applications, Inc., San Rafael, CA.

Tesche, T. W., W. R. Oliver, H. Hogo, P. Saxsena and J. L. Haney, 1983. Volume IV—Assessment of NO_2 Emission Control Requirements in the South Coast Air Basin—Appendix B. Performance Evaluation of the Systems Applications Airshed Model for the 7–8 November 1978 NO_2 Episode in the South Coast Air Basin, SYSAPP 83/038. Systems Applications, Inc., San Rafael, CA.

Tesche, T. W, 1988. Accuracy of Ozone Air Quality Models. Journal of Environmental Engineering, 114(4): 739–752.

A.9 Offshore and Coastal Dispersion Model (OCD)

Reference

DiCristofaro, D. C. and S. R. Hanna, 1989. OCD: The Offshore and Coastal Dispersion Model, Version 4. Volume I: User's Guide, and Volume II: Appendices. Sigma Research Corporation, Westford, MA. (NTIS Nos. PB 93–144384 and PB 93–144392)

Availability

This model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (see page A–1).

Technical

Contact: Minerals Management Service, Attn: Mr. Dirk Herkhoff, Parkway Atrium Building, 381 Elden Street, Herndon, VA 22070–4817, Phone: (703) 787–1735.

Abstract

OCD is a straight-line Gaussian model developed to determine the impact of offshore emissions from point, area or line sources on the air quality of coastal regions. OCD incorporates overwater plume transport and dispersion as well as changes that occur as the plume crosses the shoreline. Hourly meteorological data are needed from both offshore and onshore locations. These include water surface temperature, overwater air temperature, mixing height, and relative humidity.

Some of the key features include platform building downwash, partial plume penetration into elevated inversions, direct use of turbulence intensities for plume dispersion, interaction with the overland internal boundary layer, and continuous shoreline fumigation.

a. *Recommendations for Regulatory Use*

OCD has been recommended for use by the Minerals Management Service for emissions located on the Outer Continental Shelf (50 FR 12248; 28 March 1985). OCD is applicable for overwater sources where onshore receptors are below the lowest source height. Where onshore receptors are above the lowest source height, offshore plume transport and dispersion may be modeled on a case-by-case basis in consultation with the EPA Regional Office.

b. *Input Requirements*

Source data: Point, area or line source location, pollutant emission rate, building height, stack height, stack gas temperature, stack inside diameter, stack gas exit velocity, stack angle from vertical, elevation of stack base above water surface and gridded specification of the land/water surfaces. As an option, emission rate, stack gas exit velocity and temperature can be varied hourly.

Meteorological data (over water): Wind direction, wind speed, mixing height, relative humidity, air temperature, water surface temperature, vertical wind direction shear (optional), vertical temperature gradient (optional), turbulence intensities (optional).

Meteorological data (over land): Wind direction, wind speed, temperature, stability class, mixing height.

Receptor data: Location, height above local ground-level, ground-level elevation above the water surface.

c. *Output*

All input options, specification of sources, receptors and land/water map including locations of sources and receptors.

Summary tables of five highest concentrations at each receptor for each averaging period, and average concentration for entire run period at each receptor.

Optional case study printout with hourly plume and receptor characteristics. Optional table of annual impact assessment from non-permanent activities.

Concentration files written to disk or tape can be used by ANALYSIS postprocessor to produce the highest concentrations for each receptor, the cumulative frequency distributions for each receptor, the tabulation of all concentrations exceeding a given threshold, and the manipulation of hourly concentration files.

d. *Type of Model*

OCD is a Gaussian plume model constructed on the framework of the MPTER model.

e. *Pollutant Types*

OCD may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Up to 250 point sources, 5 area sources, or 1 line source and 180 receptors may be used.

Receptors and sources are allowed at any location.

The coastal configuration is determined by a grid of up to 3600 rectangles. Each element of the grid is designated as either land or water to identify the coastline.

g. *Plume Behavior*

As in MPTER, the basic plume rise algorithms are based on Briggs' recommendations.

Momentum rise includes consideration of the stack angle from the vertical.

The effect of drilling platforms, ships, or any overwater obstructions near the source are used to decrease plume rise using a revised platform downwash algorithm based on laboratory experiments.

Partial plume penetration of elevated inversions is included using the suggestions of Briggs (1975) and Weil and Brower (1984).

Continuous shoreline fumigation is parameterized using the Turner method where complete vertical mixing through the thermal internal boundary layer (TIBL) occurs as soon as the plume intercepts the TIBL.

h. *Horizontal Winds*

Constant, uniform wind is assumed for each hour.

Overwater wind speed can be estimated from overland wind speed using relationship of Hsu (1981).

Wind speed profiles are estimated using similarity theory (Businger 1973). Surface layer fluxes for these formulas are calculated from bulk aerodynamic methods.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Lateral turbulence intensity is recommended as a direct estimate of horizontal dispersion. If lateral turbulence intensity is not available, it is estimated from boundary layer theory. For wind speeds less than 6 m/s, lateral turbulence intensity is assumed inversely proportional to wind speed.

Horizontal dispersion may be enhanced because of obstructions near the source. A virtual source technique is used to simulate the initial plume dilution due to downwash.

Formulas recommended by Pasquill (1976) are used to calculate buoyant plume enhancement and wind direction shear enhancement.

At the water/land interface, the change to overland dispersion rates is modeled using a virtual source. The overland dispersion rates can be calculated from either lateral turbulence intensity or Pasquill-Gifford curves. The change is implemented where the plume intercepts the rising internal boundary layer.

k. Vertical Dispersion

Observed vertical turbulence intensity is not recommended as a direct estimate of vertical dispersion. Turbulence intensity should be estimated from boundary-layer theory as default in the model. For very stable conditions, vertical dispersion is also a function of lapse rate.

Vertical dispersion may be enhanced because of obstructions near the source. A virtual source technique is used to simulate the initial plume dilution due to downwash.

Formulas recommended by Pasquill (1976) are used to calculate buoyant plume enhancement.

At the water/land interface, the change to overland dispersion rates is modeled using a virtual source. The overland dispersion rates can be calculated from either vertical turbulence intensity or the Pasquill-Gifford coefficients. The change is implemented where the plume intercepts the rising internal boundary layer.

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Different rates can be specified by month and by day or night.

m. Physical Removal

Physical removal is also treated using exponential decay.

n. Evaluation Studies

DiCristofaro, D. C. and S. R. Hanna, 1989. OCD: The Offshore and Coastal Dispersion Model. Volume I: User's Guide. Sigma Research Corporation, Westford, MA.

Hanna, S. R. and D. C. DiCristofaro, 1988. Development and Evaluation of the OCD/API Model. Final Report, API Pub. 4461, American Petroleum Institute, Washington, DC.

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Hanna, S. R., L. L. Schulman, R. J. Paine, J. E. Pleim and M. Baer, 1985. Development and Evaluation of the Offshore and Coastal Dispersion (OCD) Model. Journal of the Air Pollution Control Association, 35: 1039–1047.

A.10 EMISSIONS AND DISPERSION MODELING SYSTEM (EDMS)

Reference

Segal, H. M., 1991. "EDMS—Microcomputer Pollution Model for Civilian Airports and Air Force Bases: User's Guide." FAA Report No. FAA–EE–91–3; USAF Report No. ESL–TR–91–31, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. (NTIS No. ADA 240528)

Segal, H. M., and Hamilton, P. L., 1988. "A Microcomputer Pollution Model for Civilian Airports and Air Force Bases—Model Description." FAA Report No. FAA–EE–88–4; USAF Report No. ESL–TR–88–53, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. (NTIS No. ADA 199003)

Segal, H. M., 1988. "A Microcomputer Pollution Model for Civilian Airports and Air Force Bases—Model Application and Background." FAA Report No. FAA–EE–88–5; USAF Report No. ESL–TR–88–55, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. (NTIS No. ADA 199794)

Availability

EDMS is available for $40 from the address listed below: Federal Aviation Administration, Attn: Mr. Howard Segal, AEE–120, 800 Independence Avenue, SW., Washington, DC 20591, Phone: (202) 267–3494.

Abstract

EDMS is a combined emissions/dispersion model for assessing pollution at civilian airports and military air bases. This model, which was jointly developed by the Federal Aviation Administration (FAA) and the United States Air Force (USAF), produces an emission inventory of all airport sources and calculates concentrations produced by these sources at specified receptors. The system stores emission factors for fixed sources such as fuel storage tanks and incinerators and also for mobile sources such as automobiles or aircraft. EDMS incorporates an emissions model to calculate an emission inventory for each airport source and a dispersion model, the Graphical Input Microcomputer Model (GIMM), (Segal, 1983) to calculate pollutant concentrations produced by these sources at specified receptors. The GIMM, which processes point, area, and line sources, also incorporates a special meteorological preprocessor for processing up to one year of National Climatic Data Center (NCDC) hourly data. The model operates in both a screening and refined mode, accepting up to 170 sources and 10 receptors.

a. Recommendations for Regulatory Use

EDMS is appropriate for the following applications:

- Cumulative effect of changes in aircraft operations, point source and mobile source emissions at airports or air bases;
- simple terrain;
- transport distances less than 50 kilometers; and
- 1-hour to annual averaging times.

b. Input Requirements

All data are entered through a "runtime" version of the Condor data base which is an integral part of EDMS. Typical entry items are source and receptor coordinates, percent cold starts, vehicles per hour, etc. Some point sources, such as heating plants, require stack height, stack diameter, and effluent temperature inputs.

Wind speed, wind direction, hourly temperature, and Pasquill-Gifford stability category (P–G) are the meteorological inputs. They can be entered manually through the EDMS data entry screens or automatically through the processing of previously loaded NCDC hourly data.

c. Output

Printed outputs consist of:

- A monthly and yearly emission inventory report for each source entered; and
- A concentration summing report for up to 8760 hours (one year) of data.

d. Type of Model

For its emissions inventory calculations, EDMS uses algorithms consistent with the EPA Compilation of Air Pollutant Emission Factors, AP–42. For its dispersion calculations, EDMS uses the GIMM model which is described in reports FAA–EE–88–4 and FAA–EE–88–5, referenced above. GIMM uses a Gaussian plume algorithm.

e. Pollutant Types

EDMS inventories and calculates the dispersion of carbon monoxide, nitrogen oxides, sulphur oxides, hydrocarbons, and suspended particles.

f. Source-Receptor Relationship

Up to 170 sources and 10 receptors can be treated simultaneously. Area sources are treated as a series of lines that are positioned perpendicular to the wind.

Line sources (roadways, runways) are modeled as a series of points. Terrain elevation differences between sources and receptors are neglected.

Receptors are assumed to be at ground level.

g. Plume Behavior

Plume rise is calculated for all point sources (heating plants, incinerators, etc.) using Briggs plume rise equations (Catalano, 1986; Briggs, 1969; Briggs, 1971; Briggs, 1972).

Building and stack tip downwash effects are not treated.

Roadway dispersion employs a modification to the Gaussian plume algorithms as suggested by Rao and Keenan (1980) to account for close-in vehicle-induced turbulence.

h. Horizontal Winds

Steady state winds are assumed for each hour. Winds are assumed to be constant with altitude.

Winds are entered manually by the user or automatically by reading previously loaded NCC annual data files.

i. Vertical Wind Speed

Vertical wind speed is assumed to be zero.

j. Horizontal Dispersion

Four stability classes are used (P–G classes B through E).

Horizontal dispersion coefficients are computed using a table lookup and linear interpolation scheme. Coefficients are based on Pasquill (1976) as adapted by Petersen (1980).

A modified coefficient table is used to account for traffic-enhanced turbulence near roadways. Coefficients are based upon data included in Rao and Keenan (1980).

k. Vertical Dispersion

Four stability classes are used (P-G classes B through E).

Vertical dispersion coefficients are computed using a table lookup and linear interpolation scheme. Coefficients are based on Pasquill (1976) as adapted by Petersen (1980).

A modified coefficient table is used to account for traffic-enhanced turbulence near roadways. Coefficients are based upon data from Rao and Keenan (1980).

l. Chemical Transformation

Chemical transformations are not accounted for.

m. *Physical Removal*

Deposition is not treated.

n. *Evaluation Studies*

Segal, H. M. and P. L. Hamilton, 1988. A Microcomputer Pollution Model for Civilian Airports and Air Force Bases—Model Description. FAA Report No. FAA–EE–88–4; USAF Report No. ESL–TR–88–53, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

Segal, H. M., 1988. A Microcomputer Pollution Model for Civilian Airports and Air Force Bases—Model Application and Background. FAA Report No. FAA–EE–88–5; USAF Report No. ESL–TR–88–55, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

A.11 Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS)

Reference

Perry, S. G., D. J. Burns, L. H. Adams, R. J. Paine, M. G. Dennis, M. T. Mills, D. G. Strimaitis, R. J. Yamartino and E. M. Insley, 1989. User's Guide to the Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS). Volume 1: Model Descriptions and User Instructions. EPA Publication No. EPA–600/8–89–041. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 89–181424)

Paine, R. J., D. G. Strimaitis, M. G. Dennis, R. J. Yamartino, M. T. Mills and E. M. Insley, 1987. User's Guide to the Complex Terrain Dispersion Model, Volume 1. EPA Publication No. EPA–600/8–87–058a. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 88–162169)

Availability

This model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (See page A–1).

Abstract

CTDMPLUS is a refined point source Gaussian air quality model for use in all stability conditions for complex terrain applications. It contains, in its entirety, the technology of CTDM for stable and neutral conditions. However, CTDMPLUS can also simulate daytime, unstable conditions, and has a number of additional capabilities for improved user friendliness. Its use of meteorological data and terrain information is different from other EPA models; considerable detail for both types of input data is required and is supplied by preprocessors specifically designed for CTDMPLUS. CTDMPLUS requires the parameterization of individual hill shapes using the terrain preprocessor and the association of each model receptor with a particular hill.

a. *Recommendation for Regulatory Use*

CTDMPLUS is appropriate for the following applications:

- Elevated point sources;
- Terrain elevations above stack top;
- Rural or urban areas;
- Transport distances less than 50 kilometers; and
- One hour to annual averaging times when used with a post-processor program such as CHAVG.

b. *Input Requirements*

Source data: For each source, user supplies source location, height, stack diameter, stack exit velocity, stack exit temperature, and emission rate; if variable emissions are appropriate, the user supplies hourly values for emission rate, stack exit velocity, and stack exit temperature.

Meteorological data: The user must supply hourly averaged values of wind, temperature and turbulence data for creation of the basic meteorological data file ("PROFILE"). Meteorological preprocessors then create a SURFACE data file (hourly values of mixed layer heights, surface friction velocity, Monin-Obukhov length and surface roughness length) and a RAWINsonde data file (upper air measurements of pressure, temperature, wind direction, and wind speed).

Receptor data: Receptor names (up to 400) and coordinates, and hill number (each receptor must have a hill number assigned).

Terrain data: User inputs digitized contour information to the terrain preprocessor which creates the TERRAIN data file (for up to 25 hills).

c. *Output*

When CTDMPLUS is run, it produces a concentration file, in either binary or text format (user's choice), and a list file containing a verification of model inputs, i.e.,

- Input meteorological data from "SURFACE" and "PROFILE"
- Stack data for each source
- Terrain information
- Receptor information
- Source-receptor location (line printer map).

In addition, if the case-study option is selected, the listing includes:

- Meteorological variables at plume height
- Geometrical relationships between the source and the hill
- Plume characteristics at each receptor, i.e.,
  - distance in along-flow and cross flow direction.
  - effective plume-receptor height difference.
  - effective σ_y & σ_z values, both flat terrain and hill induced (the difference shows the effect of the hill).
  - concentration components due to WRAP, LIFT and FLAT.

If the user selects the TOPN option, a summary table of the top 4 concentrations at each receptor is given. If the ISOR option is selected, a source contribution table for every hour will be printed.

A separate disk file of predicted (1-hour only) concentrations ("CONC") is written if the user chooses this option. Three forms of output are possible:

(1) A binary file of concentrations, one value for each receptor in the hourly sequence as run;

(2) A text file of concentrations, one value for each receptor in the hourly sequence as run; or

(3) A text file as described above, but with a listing of receptor information (names, positions, hill number) at the beginning of the file.

Hourly information provided to these files besides the concentrations themselves includes the year, month, day, and hour information as well as the receptor number with the highest concentration.

d. *Type of Model*

CTDMPLUS is a refined steady-state, point source plume model for use in all stability conditions for complex terrain applications.

e. *Pollutant Types*

CTDMPLUS may be used to model non-reactive, primary pollutants.

f. *Source-Receptor Relationship*

Up to 40 point sources, 400 receptors and 25 hills may be used. Receptors and sources are allowed at any location. Hill slopes are assumed not to exceed 15°, so that the linearized equation of motion for Boussinesq flow are applicable. Receptors upwind of the impingement point, or those associated with any of the hills in the modeling domain, require separate treatment.

g. *Plume Behavior*

As in CTDM, the basic plume rise algorithms are based on Briggs' (1975) recommendations.

A central feature of CTDMPLUS for neutral/stable conditions is its use of a critical dividing-streamline height (H_c) to separate the flow in the vicinity of a hill into two separate layers. The plume component in the upper layer has sufficient kinetic energy to pass over the top of the hill while streamlines in the lower portion are constrained to flow in a horizontal plane around the hill. Two separate components of CTDMPLUS compute ground-level concentrations resulting from plume material in each of these flows.

The model calculates on an hourly (or appropriate steady averaging period) basis how the plume trajectory (and, in stable/neutral conditions, the shape) is deformed by each hill. Hourly profiles of wind and temperature measurements are used by CTDMPLUS to compute plume rise, plume penetration (a formulation is included to handle penetration into elevated stable layers, based on Briggs (1984)), convective scaling parameters, the value of H_c, and the Froude number above H_c.

h. *Horizontal Winds*

CTDMPLUS does not simulate calm meteorological conditions. Both scalar and vector wind speed observations can be read by the model. If vector wind speed is unavailable, it is calculated from the scalar wind speed. The assignment of wind speed (either vector or scalar) at plume height is done by either:

- Interpolating between observations above and below the plume height, or
- Extrapolating (within the surface layer) from the nearest measurement height to the plume height.

i. *Vertical Wind Speed*

Vertical flow is treated for the plume component above the critical dividing streamline height (H_c); see "Plume Behavior".

j. *Horizontal Dispersion*

Horizontal dispersion for stable/neutral conditions is related to the turbulence velocity scale for lateral fluctuations, σ_v, for which a minimum value of 0.2 m/s is used. Convective scaling formulations are used to estimate horizontal dispersion for unstable conditions.

k. *Vertical Dispersion*

Direct estimates of vertical dispersion for stable/neutral conditions are based on observed vertical turbulence intensity, e.g., σ_w (standard deviation of the vertical velocity fluctuation). In simulating unstable (convective) conditions, CTDMPLUS relies on a skewed, bi-Gaussian probability density function (PDF) description of the vertical velocities to estimate the vertical distribution of pollutant concentration.

l. *Chemical Transformation*

Chemical transformation is not treated by CTDMPLUS.

m. *Physical Removal*

Physical removal is not treated by CTDMPLUS (complete reflection at the ground/hill surface is assumed).

n. *Evaluation Studies*

Burns, D. J., L. H. Adams and S. G. Perry, 1990. Testing and Evaluation of the CTDMPLUS Dispersion Model: Daytime Convective Conditions. Environmental Protection Agency, Research Triangle Park, NC.

Paumier, J. O., S. G. Perry and D. J. Burns, 1990. An Analysis of CTDMPLUS Model Predictions with the Lovett Power Plant Data Base. Environmental Protection Agency, Research Triangle Park, NC.

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Weil, J. C., and R. P. Brower, 1984. An Updated Gaussian Plume Model for Tall Stacks. Journal of the Air Pollution Control Association, 34: 818–827.

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B.0 Introduction and Availability

This appendix summarizes key features of refined air quality models that may be considered on a case-by-case basis for individual regulatory applications. For each model, information is provided on availability, approximate cost in 1990, regulatory use, data input, output format and options, simulation of atmospheric physics and accuracy. The models are listed by name in alphabetical order.

There are three separate conditions under which these models will normally be approved for use: First, if a demonstration can be made that the model produces concentration estimates equivalent to the estimates obtained using a preferred model (e.g., the maximum or high, second-high concentration is within 2% of the estimate using the comparable preferred model); second, if a statistical performance evaluation has been conducted using measured air quality data and the results of that evaluation indicate the model in Appendix B performs better for the application than a comparable model in Appendix A; and third, if there is no preferred model for the specific application but a refined model is needed to satisfy regulatory requirements. Any one of these three separate conditions may warrant use of these models. See section 3.2, Use of Alternative Models, for additional details.

Many of these models have been subject to a performance evaluation by comparison with observed air quality data. A summary of such comparisons for models contained in this appendix is included in "A Survey of Statistical Measures of Model Performance and Accuracy for Several Air Quality Models", EPA–450/4–83–001. Where possible, several of the models contained herein have been subjected to rigorous evaluation exercises, including (1) statistical performance measures recommended by the American Meteorological Society and (2) peer scientific reviews.

Any availability statement for models in this appendix that refers to the User's Network for Applied Modeling of Air Pollution (UNAMAP) should be ignored since the UNAMAP is no longer operational. However, a source for some of these models and user's documentation is: Computer Products, National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

A number of the model codes and selected, abridged user's guides are also available from the Support Center for Regulatory Air Models Bulletin Board System or (SCRAM BBS), Telephone (919) 541–5742. The SCRAM BBS is an electronic bulletin board system designed to be user friendly and accessible from anywhere in the country. Model users with personal computers are encouraged to use the SCRAM BBS to download current model codes and text files.

B.1 Air Quality Display Model (AQDM)

Reference

TRW Systems Group, 1969. Air Quality Display Model. Prepared for National Air Pollution Control Administration, DHEW. U.S. Public Health Service, Washington, DC (NTIS No. PB 189194)

Availability

The above User's Guide is available from NTIS at a cost of $18.95. This model is available at no cost in the form of a punched card deck from: Library Services, MD–35, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attn: Ann Ingram.

Abstract

AQDM is a climatological steady state Gaussian plume model that estimates annual arithmetic average sulfur dioxide and particulate concentrations at ground level in urban areas. A statistical model based on Larsen (1971) is used to transform the average concentration data from a limited number of receptors into expected geometric mean and maximum concentration values for several different averaging times.

a. *Recommendations for Regulatory Use*

AQDM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. AQDM must be executed in the equivalent mode.

AQDM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that AQDM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Average emissions rates and heights of emissions for point and area sources; stack gas temperature, stack gas exit velocity, and stack inside diameter for plume rise calculations for point sources.

Meteorological data requirements are: Stability wind rose (STAR deck), average afternoon mixing height, average morning mixing height, and average air temperature.

Receptor data requirements are: number and locations of receptors. If the Larsen transform option is to be used to estimate short averaging time concentrations, measured standard geometric deviation of concentrations is required.

c. *Output*

Printed output includes:

One month to one year average concentrations (arithmetic mean only) at each receptor;

Optional arbitrary averaging time by Larsen (1971) procedure (typically 1–24 hr); and

Optional individual point, area source culpability list for each receptor.

d. *Type of Model*

AQDM is a Gaussian plume model.

e. *Pollutant Types*

AQDM may be used to model non-reactive pollutants. Settling and deposition are not treated.

f. *Source Receptor Relationship*

AQDM applies user-specified locations and stack height for each point source.

AQDM uses any location and size for each area source.

Up to 225 receptors may be located on uniform rectangular grid.

Up to 12 user-specified receptor locations are permitted.

Unique release height is used for each point and area source. Receptors are assumed to be at ground level.

No terrain differences between source and receptor are treated.

g. *Plume Behavior*

AQDM uses Briggs (1969) plume rise formulas.

No plume rise is calculated for area sources.

Fumigation and downwash are not treated.

Zero concentration is assumed when plume height is greater than mixing height.

h. *Horizontal Winds*

Wind data are input as stability wind rose (joint frequency distribution) of 16 wind directions, six wind speed classes, and five stability classes.

No variation in wind speed with height is assumed.

Constant, uniform (steady-state) wind is assumed.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Pollutants are assumed evenly distributed across a 22.5 degree sector.

Frequency of occurrence of a meteorological state is interpolated between sector center lines.

Averaging times from 1 month to 1 year or longer are treated.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used.

Five stability classes are as defined by Turner (1964). Stability classes E and F are combined, and assigned dispersion values equivalent to stability class D.

Neutral stability is split internally into 60% day, 40% night, with the two differing only in the treatment of mixing height.

Mixing height is a function of a single input afternoon mixing height, a single input morning mixing height, modified by the stability class.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

McNider, R.R., 1977. Variability Analysis of Long-term Dispersion Models. Joint Conference on Applications of Air Pollution Meteorology, American Meteorology Society, 29 November–2 December, 1977, Salt Lake City, UT.

Turner, D.B., J.R. Zimmerman, and A.D. Busse, 1973. An Evaluation of Some Climatological Dispersion Models. In Appendix E, User's Guide to the Climatological Dispersion Model, EPA Publication No. EPA–R4–73–024, Environmental Protection Agency, Research Triangle Park, NC.

Londergan, R.J., D.H. Minott, D.J. Wachter and R.R. Pizz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

2.2 Air Resources Regional Pollution Assessment (ARRPA) Model

Reference

Mueller, S.F., R.J. Valente, T.L. Crawford, A.L. Sparks, and L.L. Gautney, Jr., 1983. Description of the Air Resources Regional Pollution Assessment (ARRPA) Model. TVA/ONR/AQB–83/14. Tennessee Valley Authority, Muscle Shoals, AL.

Availability

The computer code and sample input for this model on magnetic tape and a copy of the User's Guide are available from: Computer Services Development Branch, Office of Natural Resources and Economic Development, Tennessee Valley Authority, OSWHA, Muscle Shoals, AL 35660, Phone: (205) 386–2985.

A hard copy of the model output corresponding with the sample input is also available. The cost of copying model information to a buyer-supplied 2400-ft, high density tape is estimated to be about $100. The User's Guide is free of charge.

Abstract

The ARRPA model is a medium/long-range segmented-plume model. It is designed to compute air concentrations and surface dry mass deposition of sulfur dioxide and sulfate. A unique feature of the model is its use of prognostic meteorological output from the National Weather Service Boundary Layer Model (BLM). Boundary layer conditions are computed by the BLM on a grid with a spatial resolution of 80km, and are archived in intervals of 3 hours. BLM output used by this model includes three dimensional wind field components and potential temperature at 10 height levels from the surface through 2000m above the surface.

a. *Recommendations for Regulatory Use*

Use of the model for transport distances of less than 10km is not recommended. For 10km to beyond 50km, there is no specific recommendation at the present time. The model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements: Location (latitude and longitude), stack height, stack diameter, stack gas exit velocity, stack gas temperature, SO_2 emission rate, $SO_4^=$ emission rate, stack base elevation.

Meteorological data requirements: Hourly wind field components (u,v,w), potential temperature (Θ), Pasquill-Gifford stability class and mixing height. These data are obtained as output from the BLM output preprocessing program called MDPP (Mueller and Valente, 1983). Required input to MDPP is BLM output (in three-hour intervals) of u, v, w, and Θ, surface layer friction velocity (u_*) and surface layer values of the inverse Monin-Obukhov length (L^{-1}).

Receptor data requirements: Gridded receptor array coordinates (x and y) and receptor heights (z) from a receptor preprocessing program called HEIGHT. HEIGHT produces a user-designed array of points which may be skewed up to ±90 degrees relative to the model x axis. The elevation of each receptor is adjusted to give height above smoothed model terrain. Non-gridded receptors can be specified using latitude/longitude coordinates.

c. Output

Printed output includes:

Listings of input parameters (except for meteorological data);

Listing of hours processed and flags for missing data periods.

Disk output: Parameters for controlling analysis and printout options in the postprocessing program called ANALYSIS; hourly SO_2 and $SO_4^=$ air concentrations and dry deposition amounts at each receptor.

Optional printed output: Two programs are available for displaying model output—DISPLAY and ANALYSIS; DISPLAY prints out hourly gridded concentration and/or deposition fields for user-specified time periods; ANALYSIS prints out (1) the five highest concentrations of SO_2 and/or $SO_4^=$ at each receptor for 1-hour, 3-hour (optional) and 24-hour (optional) averaging periods, (2) average SO_2 and/or $SO_4^=$ concentrations at each receptor for the entire analysis period and (3) gridded SO_2 and/or $SO_4^=$ dry deposition amounts for the day having the greatest dry deposition and for the entire analysis period.

d. *Type of Model*

The ARRPA model is a Gaussian segmented-plume model.

e. *Pollutant Types*

SO_2 and $SO_4^=$ are treated.

f. *Source-Receptor Relationship*

One source is treated per model run, though results from several sources may be superimposed.

Either constant or variable emission rates may be used.

Receptors (up to 100) in gridded network may have different elevations. Height of receptors above ground is variable.

g. *Plume Behavior*

Plume rise is computed in a piecewise-continuous manner through discrete model layers (Mueller, et al., 1983).

Plume can be isolated from the ground (lofting).

Plume height varies in time and space.

h. *Horizontal Winds*

Hourly horizontal wind components, specified at 80km intervals across the model grid, are spatially interpolated and vertically averaged through the plume depth to get plume transport vectors. A model option is available that uses the wind vector near the vertical plume center instead of computing a vertically-averaged vector.

i. *Vertical Wind Speed*

The mass-conserving BLM wind field used in this model provides vertical wind components that vary horizontally and vertically, and are used to adjust plume height.

j. *Horizontal Dispersion*

Plume half-width (σ_y) growth goes through four stages:

(1) Growth follows Turner curves for $\sigma_y < 1000$m;

(2) A transition in growth behavior from Turner curves to dynamical-statistical (Langevin) theory occurs for $1000\text{m} \leq \sigma_y < 8000$m;

(3) Growth is based on dynamical-statistical theory for $\sigma_y > 8000$m; eddy diffusivity computed from Pasquill-Gifford stability class;

(4) Growth approaches that described by Taylor's statistical theory (limit of dynamical-statistical theory for time much larger than the Lagrangian time correlation) for $\sigma_y > 10{,}000$m.

k. *Vertical Dispersion*

Plume half-depth (σ_z) growth is based on combination of Brookhaven curves for elevated plumes and Turner curves for near-ground plumes.

Vertical plume structure is Gaussian, with superimposed reflection terms, until σ_z becomes sufficiently large that a vertically uniform plume assumption is appropriate.

Maximum depth of a plume is 2000m.

l. *Chemical Transformation*

SO_2 oxidation to $SO_4^=$ is treated using a first-order chemical reaction rate constant which is parameterized to vary hourly following diurnal and seasonal cycles.

m. *Physical Removal*

Dry deposition is computed using the source depletion equation. Dry deposition velocities vary according to the stability of the surface layer.

n. *Evaluation Studies*

Muller, S. F. and L. W. Reisinger, 1986. Evaluation of the Air Resources Regional Pollution Assessment (ARRPA) Model. (Report in Progress).

B.3 APRAC-3

Reference

Simmon, P. B., R. M. Patterson, F. L. Ludwig, and L. B. Jones, 1981. The APRAC-3/Mobile 1 Emissions and Diffusion Modeling Package. EPA Publication No. EPA-909/9-81-002. U.S. Environmental Protection Agency, Region IX, San Francisco, CA. (NTIS No. PB 82-103763)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487-4650.

Abstract

APRAC-3 is a model which computes hourly average carbon monoxide concentrations for any urban location. The model calculates contributions from dispersion on various scales: extraurban, mainly from sources upwind of the city of interest; intraurban, from freeway, arterial, and feeder street sources; and local, from dispersion within a street canyon. APRAC-3 requires an extensive traffic inventory for the city of interest. APRAC-3, as it exists on UNAMAP (Version 6), has been updated with Mobile 2 emission factors.

a. *Recommendations for Regulatory Use*

APRAC-3 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. APRAC-3 must be executed in the equivalent mode.

APRAC-3 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated using the criteria in Section 3.2, that APRAC-3 is more appropriate for the specific application. In this case the model options/mode which are most appropriate for the application should be used.

Although the user's manual for APRAC-3 contains Mobile 1 emission factors, it is recommended that those emission factors be updated with the latest version of Mobile (Mobile Source Emissions Model) for use in regulatory applications.

b. *Input Requirements*

Source data requirements are: Line source (traffic link) end points, road type and daily traffic volume.

Meteorological data requirements are: Hourly wind direction (nearest 10 degrees), hourly wind speed, and hourly cloud cover for stability calculations.

Receptor data requirements are: Coordinates for up to 10 receptors for any single day and up to 8 receptors for the intersection submodel.

c. *Output*

Printed ouput includes:

Hourly calculations at each receptor.

d. *Type of Model*

APRAC-3 is a Gaussian plume model.

e. *Pollutant Types*

APRAC-3 may be used to model primary pollutants.

f. *Source-Receptor Relationship*

Traffic links may have arbitrary length and orientation. Off-link traffic is allocated to two-mile square grids. Link traffic emissions are aggregated into a receptor oriented area source array.

The boundaries of the area sources actually treated are (1) arcs at radial distances from the receptor which increase in geometric progression, (2) the sides of a 22.5° sector oriented upwind for distances greater than 1000m, and (3) the sides of a 45° sector oriented upwind for distances less than 1000m.

A similar area source array is established for each receptor.

Sources are assumed to be at ground level.

Up to 10 receptors are accepted for any single day.

Up to 625 receptors are accepted for a single-hour.

Up to 8 receptors are accepted for the intersection submodel.

Receptors are at ground level.

Receptor locations are arbitrary.

Four internally defined receptor locations on each user-designated street are used in a special street canyon sub-model.

A box model is used to estimate contribution from upwind sources beyond 32km based on wind speed, mixing height, annual fuel consumption.

In street canyon sub-model, contribution from other streets is included in background.

g. *Plume Behavior*

Plume rise is not treated.

Fumigation and downwash are not treated except in street canyon sub-model. In street canyon sub-model, a helical circulation pattern is assumed.

h. *Horizontal Winds*

User input hourly wind speed and direction in tens of degrees are used.

No variation of wind speed or direction with height is assumed.

Constant, uniform (steady-state) wind is assumed within each hour.

The model can interpolate winds at receptors if more than one wind is provided.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero except in street canyon sub-model. Helical circulation assumed by street canyon sub-model.

j. *Horizontal Dispersion*

Sector averaging is used with uniform distribution within sectors. Sector size is 22.5 degrees beyond 1km and 45.0 degrees within 1km.

k. *Vertical Dispersion*

Six stability classes are used. Stability class is determined internally from user-supplied meteorological data modified from Turner (1964).

Dispersion coefficients are adapted from McElroy and Pooler (1968). No adjustments are made for variations in surface roughness.

Downwind distance variation of σ_z is assumed to be ax^b for purposes of doing analytical integration.

In street canyon sub-model, an empirical function of wind speed and street width and direction is used.

Perfect reflection at the surface is assumed.

Mixing height is ignored until concentration equals that calculated using box model. A box model (uniform vertical distribution) is used beyond that distance.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Ludwig, F. L. and W. F. Debberdt, 1972. Evaluation of the APRAC-1A Urban Dispersion Model for Carbon Dioxide, SRI Project 8563. Stanford Research Institute, Menlo Park, CA.

B.4 COMPTER

Reference

State of Alabama, 1980. COMPTER Model Users Guide. Alabama Department of Environmental Management, Air Division, Montgomery, AL.

Availability

This model is available to users for tape and reproduction charges. If a tape is sent, the reproduction is free. Send tape and desired format and specifications to: Mr. Richard E. Grusnick, Chief, Air Division, Alabama Department of Environmental Management, 1751 Federal Drive, Montgomery, AL 36109.

Abstract

COMPTER is based on the Gaussian steady-state technique applicable to both urban and rural areas. The model contains the following attributes: (a) Determines maximum 24-hour, 3-hour, 1-hour and variable hour concentrations for both block and running averages; (b) elevated terrain considered with the standard plume-chopping technique or stability dependent plume path trajectory; (c) uses annual hourly meteorological data in the CRSTER preprocessor format; (d) uses Pasquill-Gifford stability curves; (e) allows for stability class substitution in the stable categories. Typical model use is in rural areas with moderate to low terrain features.

a. *Recommendations for Regulatory Use*

COMPTER can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. COMPTER must be executed in the equivalent mode.

COMPTER can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that COMPTER is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Annual or hourly values of emission rate, exit velocity,

stack gas temperature, stack height, and stack diameter.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is optional.

Receptor data requirements are: Individual receptor coordinates; or a location and distance from the center of five rings of receptors; or a combination of individual receptors and either the rectangular grid or the rings of receptors. Elevations of all receptors may be input.

c. Output

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3 and 24-hours, a user-selected averaging time which may be 2–12 hours (variable hourly), and a 50 high table for 1, 3, variable hourly, and 24-hours;

Annual arithmetic average at each receptor; and the highest 1-hour and 24-hour concentrations over the receptor field for each day considered.

Computer readable output includes:

Hourly, 3-hourly, variable hourly, and 24-hourly concentrations for each receptor on magnetic storage device.

d. Type of Model

COMPTER is a Gaussian plume model.

e. Pollutant Types

COMPTER may be used to model primary pollutants. Settling and deposition are not treated.

f. Source-Receptor Relationship

A maximum 50 sources and 200 receptors are treated.

COMPTER applies user-specified locations of sources and receptors.

User input stack height and source characteristics for each source are applied.

User input topographic elevation for each receptor is applied.

Receptors are assumed to be at ground level.

g. Plume Behavior

Briggs' (1969, 1971, 1972) plume rise equations with limited mixing are used.

Plume height is adjustable according to stability with use of plume path coefficient.

h. Horizontal Winds

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

Power law wind profile exponents used are 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30, for stability classes A through F, respectively. Anemometer height is assumed to be 10 meters.

i. Vertical Wind Speed

Vertical wind speeds are assumed equal to zero.

j. Horizontal Dispersion

Dispersion coefficients are from Turner (1969), with no further adjustments made for variations in surface roughness or averaging time.

Optionally, stability class 7 may be treated as Class 6.

Other options for stable class substitution include changing stabilities F and G to E, and reducing E, F, and G to D, E, and F, respectively.

k. Vertical Dispersion

Dispersion coefficients are from Turner (1969), with no further adjustments made for variations in surface roughness.

Optionally, by source, buoyancy induced dispersion ($\Delta H^2/10$) is included.

Optionally, stability class 7 may be treated as class 6.

Other options for stable class substitution include changing stabilities F and G to E; and reducing E, F, and G to D, E, and F, respectively.

l. Chemical Transformation

Not treated.

m. Physical Removal

Not treated.

n. Evaluation Studies

Londergan, R., D. Minott, D. Wackter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.5 ERT Air Quality Model (ERTAQ)—[Deleted]

B.6 ERT Visibility Model

References:

ENSR Consulting and Engineering, 1990. ERT Visibility Model: Version 4; Technical Description and User's Guide. Document M2020–003. ENSR Consulting and Engineering, 35 Nagog Park, Acton, MA 01720.

Availability

The user's guide and model code are available from the National Technical Information Service (see page B–1).

Abstract:

The ERT Visibility Model is a Gaussian dispersion model designed to estimate visibility impairment for arbitrary lines of sight due to isolated point source emissions by simulating gas-to-particle conversion, dry deposition, NO to NO_2 conversion and linear radiative transfer.

a. Recommendations for Regulatory Use

There is no specific recommendation at the present time. The ERT Visibility Model may be used on a case-by-case basis.

b. Input Requirements

Source data requirements are: Stack height, stack temperature, emissions of SO_2, NO_x, TSP, fraction of NO_x as NO_2, fraction of TSP which is carbonaceous, exit velocity, and exit radius.

Meteorological data requirements are: Hourly ambient temperature, mixing depth, wind speed at stack height, stability class, potential temperature gradient, and wind direction.

Receptor data requirements are: Observer coordinates with respect to source, latitude, longitude, time zone, date, time of day, elevation, relative humidity, background visual range, line-of-sight azimuth and elevation angle, inclination angle of the observed object, distance from observer to object, object and surface reflectivity, number and spacing of integral receptor points along line of sight.

Other data requirements are: Ambient concentrations of O_3 and NO_x, deposition velocity of TSP, sulfate, nitrate, SO_2 and NO_x, first-order transformation rate for sulfate and nitrate.

c. Output

Printed output includes both summary and detailed results as follows: Summary output: Page 1—site, observer and object parameters; page 2—optical pollutants and associated extinction coefficients; page 3—plume model input parameters; page 4—total calculated visual range reduction, and each pollutant's contribution; page 5—calculated plume contrast, object contrast and object contrast degradation at the 550nm wavelength; page 6—calculated blue/red ratio and ΔE ($U^*V^*W^*$) values for both sky and object discoloration.

Detailed output: Phase functions for each pollutant in four wavelengths (400, 450, 550, 650nm), concentrations for each pollutant along sight path, solar geometry, contrast parameters at all wavelengths, intensities, tristimulus values and chromaticity coordinates for views of the object, sun, background sky and plume.

d. Type of Model

ERT Visibility model is a Gaussian plume model for estimating visibility impairment.

e. Pollutant Types

Optical activity of sulfate, nitrate (derived from SO_2 and NOx emissions), primary TSP and NO_2 is simulated.

f. Source Receptor Relationship

Single source and hour is simulated. Unlimited number of lines-of-sight (receptors) is permitted per model run.

g. Plume Behavior

Briggs (1971) plume rise equations for final rise are used.

h. Horizontal Wind Field

A single wind speed and direction is specified for each case study. The wind is assumed to be spatially uniform.

i. Vertical Wind Speed

Vertical wind speed is assumed equal to zero.

j. Horizontal Dispersion

Rural dispersion coefficients from Turner (1969) are used.

k. Vertical Dispersion

Rural dispersion coefficients from Turner (1969) are used. Mixing height is accounted for with multiple reflection handled by summation of series near the source, and Fourier representation farther downwind.

l. Chemical Transformation

First order transformations of sulfates and nitrates are used.

m. *Physical Removal*

Dry deposition is treated by the source depletion method.

n. *Evaluation Studies*

Seigneur, C., R. W. Bergstrom, and A. B. Hudischewskyj, 1982. Evaluation of the EPA PLUVUE Model and the ERT Visibility Model Based on the 1979 VISTTA Data Base, EPA Publication No. EPA–450/4–82–008. U.S. Environmental Protection Agency, Research Triangle Park, NC.

White, W. H., C. Seigneur, D. W. Heinold, M. W. Eltgroth, L. W. Richards, P. T. Roberts, P. S. Bhardwaja, W. D. Conner and W. E. Wilson, Jr., 1985. Predicting the Visibility of Chimney Plumes: An Inter-comparison of Four Models with Observations at a Well-Controlled Power Plant. Atmospheric Environment, 19: 515–528.

B.7 HIWAY–2

Reference

Petersen, W.B., 1980. User's Guide for HIWAY–2. EPA Publication No. EPA–600/8–80–018. U.S. Environmental Protection Agency, ESRL, Research Triangle Park, NC. (NTIS No. PB 80–227556)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

HIWAY–2 can be used to estimate the concentrations of non-reactive pollutants from highway traffic. This steady-state Gaussian model can be applied to determine air pollution concentrations at receptor locations downwind of "at-grade" and "cut section" highways located in relatively uncomplicated terrain. The model is applicable for any wind direction, highway orientation, and receptor location. The model was developed for situations where horizontal wind flow dominates. The model cannot consider complex terrain or large obstructions to the flow such as buildings or large trees.

a. *Recommendations for Regulatory Use*

HIWAY–2 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. HIWAY–2 must be executed in the equivalent mode.

HIWAY–2 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in Section 3.2, that HIWAY–2 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: A uniform emission rate by lane, roadway and points; height of emission; length, width, and number of lanes; and width of center strip.

Meteorological data requirements are: One set at a time of hourly averages of wind speed, wind direction, and mixing height and the Pasquill-Gifford stability class. Wind speed and direction are preferred to be at 2 meters above ground.

Receptor data requirements are: Coordinates of each receptor.

c. *Output*

Printed output includes:

One hourly average concentration at each specified receptor location.

d. *Type of Model*

HIWAY–2 is a Gaussian plume model.

e. *Pollutant Types*

HIWAY–2 may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

HIWAY–2 applies user-specified end points for a single roadway segment, and user-specified receptor locations.

Plume impact on receptor is calculated by finite difference integration of a point source along each lane of the roadway.

g. *Plume Behavior*

HIWAY–2 does not treat plume rise.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for an hour.

Straight line plume transport is assumed to all downwind distances.

An aerodynamic drag factor is applied when winds are parallel to the roadway and speeds are less than 2 m/sec.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

The total horizontal dispersion is that due to ambient turbulence plus the turbulence generated by the vehicles on the roadway.

Beyond 300m downwind total turbulence is considered to be dominated by atmospheric turbulence, with plume dispersion as described by Turner (1969).

Three stability classes are considered: Unstable, neutral and stable.

k. *Vertical Dispersion*

The total horizontal dispersion is that due to ambient turbulence plus the turbulence generated by the vehicles on the roadway.

Beyond 300m downwind total turbulence is considered to be dominated by atmospheric turbulence, with plume dispersion as described by Turner (1969).

Mixing height is accounted for with multiple reflections until the vertical plume size equals 1.6 times the mixing height; uniform vertical mixing is assumed beyond that point.

Three stability classes are considered: Unstable, neutral and stable.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Rao, S.T., and J.R. Visalli, 1981. On the Comparative Assessment of the Performance of Air Quality Models. *Journal of Air Pollution Control Association*, 31: 851–860.

B.8 Integrated Model for Plumes and Atmospheric Chemistry in Complex Terrain (IMPACT)

Reference

Fabrick, Allan J. and Peter J. Haas, 1980. User Guide to IMPACT: An Integrated Model for Plumes and Atmospheric Chemistry in Complex Terrain. DCN 80–241–403–01. Radian Corporation, 8501 Mo-Pac Blvd., Austin, TX.

Availability

A magnetic tape containing the IMPACT model, a set of test data and a copy of the IMPACT User's Guide are available for a cost of $500 from: Howard Balentine, Senior Meteorologist, Radian Corporation, Post Office Box 9948, Austin, TX 78766.

Abstract

IMPACT is an Eulerian, three-dimensional, finite difference grid model designed to calculate the impact of pollutants, either inert or reactive, in simple or complex terrain, emitted from either point or area sources. It automatically treats single or multiple point or area sources, the effects of vertical temperature stratifications on the wind and diffusion fields, shear flows caused by the atmospheric boundary layer or by terrain effects, and chemical transformations.

a. *Recommendations for Regulatory Use*

IMPACT can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. IMPACT must be executed in the equivalent mode.

IMPACT can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that IMPACT is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

There is no specific recommendation concerning the use of IMPACT for photochemical applications. IMPACT may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: For point sources—location (I, J), stack height, exit temperature, volume flow rate or stack diameter and exit velocity, hourly emission rates for all pollutants; for area sources location of corners, and hourly emission rates for each pollutant.

Meteorological data requirements are: Hourly wind speed and direction, surface and elevated, from meteorological stations within and surrounding the modeling area, temperature, pressure, humidity and insolation (the three last variables are optional).

Receptor data requirements are: None since concentrations are output for cells in the computational grid.

Air quality data (optional): One or more vertical concentration profiles for each pollutant.

Other data: 2–D array of terrain heights, 2–D array of surface roughness values (optional).

c. *Output*

Printed output options include:

Surface and elevated horizontal cross sections of pollutant concentrations (instantaneous, or averages over N hours where N=1, 2, 3, . . .);

Horizontal cross sections of diffusivities and wind velocities; and

Arbitrary vertical and horizontal cross sections of pollutant concentrations and diffusivities, and CALCOMP wind field vector plots are generated by the POST post-processor program.

Computer readable output includes:

Concentration, wind field and diffusivity data for each hour.

d. *Type of Model*

IMPACT is an Eulerian finite difference model.

e. *Pollutant Types*

IMPACT may be used to model any inert pollutant.

IMPACT may be used to model SO_2, $SO_4^=$, NO_x, NO_2, O_3, hydrocarbons (depends upon chemistry mechanism selected).

f. *Source-Receptor Relationship*

Up to 20 point sources and 20 area sources may be treated (greater number of sources may be treated by increasing common block storage allocation).

Concentrations are calculated at the center of each cell in the grid.

g. *Plume Behavior*

Briggs (1975) formulation for plume rise is used.

Elevated inversions are considered.

h. *Horizontal Winds*

A three dimensional stability and terrain dependent nondivergent wind field is interpolated from single or multiple wind data measurements using a Poisson technique.

i. *Vertical Wind Speed*

Vertical wind speed is treated at each wind site, user specified or extrapolated from surface data. Interpolated is accomplished as part of the three dimensional wind field interpolation.

j. *Horizontal Dispersion*

A three dimensional diffusivity field is calculated using either the technique of Myrup/Ranzieri or the DEPICT method (see User Guide, Fabrick and Hass, 1980).

k. *Vertical Dispersion*

A three dimensional diffusivity field is calculated using either the technique of Myrup/Ranzieri or the DEPICT method (see User Guide, Fabrick and Hass, 1980).

l. *Chemical Transformation*

Either 3-, 6-, 8- or 15-species mechanisms are currently available (see User Guide). Calculations are also performed for inert pollutants.

m. *Physical Removal*

Physical removal is treated using exponential decay. Half-life is input by the user.

n. *Evaluation Studies*

Fabrick, A. J., R. Sklarew, and J. Wilson, 1977. Point Source Model Evaluation and Development Study. Report prepared for the California Air Resources Board.

Fabrick, A. J., and P. J. Hass, 1980. Analysis of Dispersion Models used for Complex Terrain Simulation. Presented at the Symposium on Intermediate Range Transport Processes and Technology Assessment, Gatlinburg, TN.

Sklarew, R., and V. Mirabella, 1979. Experience in IMPACT Modeling of Complex Terrain Fourth Symposium on Turbulence, Diffusion and Air Pollution, Reno, NV.

Sklarew, R., J. Wilson, A. J. Fabrick and V. Mirabella, 1976. Rough Terrain Modeling. Presented at Geothermal Environmental Seminar '76, Clear Lake, CA.

Sklarew, R., and K. Tran, 1978. The NEWEST Wind Field Model with Applications to Thermally Driven Drainage Wind in Mountainous Terrain. Presented at the AMS Meeting, Lake Tahoe, NV.

Wackter, D., and R. Londergan, 1984. Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA-450/4-84-017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.9 LONGZ

Reference

Bjorklund, J. R., and J. F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II, EPA Publication No. EPA-903/9-82-004. U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

Availability

The model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, Phone: (703) 487-4650.

Abstract

LONGZ utilizes the steady-state univariate Gaussian plume formulation for both urban and rural areas in flat or complex terrain to calculate long-term (seasonal and/or annual) ground-level ambient air concentrations attributable to emissions from up to 14,000 arbitrarily placed sources (stacks, buildings and area sources). The output consists of the total concentration at each receptor due to emissions from each user-specified source or group of sources, including all sources. An option which considers losses due to deposition (see the description of SHORTZ) is deemed inappropriate by the authors for complex terrain, and is not discussed here.

a. *Recommendations for Regulatory Use*

LONGZ can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. LONGZ must be executed in the equivalent mode.

LONGZ can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that LONGZ is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: For point, building or area sources, location, elevation, total emission rate (optionally classified by gravitational settling velocity) and decay coefficient; for stack sources, stack height, effluent temperature, effluent exit velocity, stack radius (inner), emission rate, and ground elevation (optional);

For building sources, height, length and width, and orientation; for area sources, characteristic vertical dimension, and length, width and orientation.

Meteorological data requirements are: Wind speed and measurement height, wind profile exponents, wind direction standard deviations (turbulent intensities), mixing height, air temperature, vertical potential temperature gradient.

Receptor data requirements are: coordinates, ground elevation.

c. *Output*

Printed output includes:

Total concentration due to emissions from user-specified source groups, including the combined emissions from all sources (with optional allowance for depletion by deposition).

d. *Type of Model*

LONGZ is a climatological Gaussian plume model.

e. *Pollutant Types*

LONGZ may be used to model primary pollutants. Settling and deposition are treated.

f. *Source-Receptor Relationships*

LONGZ applies user specified locations for sources and receptors. Receptors are assumed to be at ground level.

g. *Plume Behavior*

Plume rise equations of Bjorklund and Bowers (1982) are used.

Stack tip downwash (Bjorklund and Bowers, 1982) is included.

All plumes move horizontally and will fully intercept elevated terrain.

Plumes above mixing height are ignored.

Perfect reflection at mixing height is assumed for plumes below the mixing height.

Plume rise is limited when the mean wind at stack height approaches or exceeds stack exit velocity.

Perfect reflection at ground is assumed for pollutants with no settling velocity.

Zero reflection at ground is assumed for pollutants with finite settling velocity.

LONGZ does not simulate fumigation.

Tilted plume is used for pollutants with settling velocity specified.

Buoyancy-induced dispersion is treated (Briggs, 1972).

h. *Horizontal Winds*

Wind field is homogeneous and steady-state.

Wind speed profile exponents are functions of both stability class and wind speed. Default values are specified in Bjorklund and Bowers (1982).

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Pollutants are initially uniformly distributed within each wind direction sector. A smoothing function is then used to remove discontinuities at sector boundaries.

k. *Vertical Dispersion*

Vertical dispersion is derived from input vertical turbulent intensities using adjustments to plume height and rate of plume growth with downwind distance specified in Bjorklund and Bowers (1982).

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. *Physical Removal*

Gravitational settling and dry deposition of particulates are treated.

n. *Evaluation Studies*

Bjorklund, J. R., and J. F. Bowers. 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volume I and II. EPA Publication No. EPA–903/9–82–004. U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

B.10 Maryland Power Plant Siting Program (PPSP) Model

References

Brower, R., 1982. The Maryland Power Plant Siting Program (PPSP) Air Quality Model User's Guide. Ref. No. PPSP–MP–38. Prepared for Maryland Department of Natural Resources, by Environmental Center, Martin Marietta Corporation, Baltimore, MD. (NTIS No. PB 82–238387)

Weil, J.C. and R.P. Brower, 1982. The Maryland PPSP Dispersion Model for Tall Stacks. Ref. No. PPSP–MP–36. Prepared for Maryland Department of Natural Resources, by Environmental Center, Martin Marietta Corporation, Baltimore, MD. (NTIS No. PB 82–219155)

Availability

Two reports referenced above are available from NTIS. The model code and test data are available on MDgnetic tape for a cost of $210 from:

Power Plant Siting Program, Department of Natural Resources, Tawes State Office Building, Annapolis, MD 21401, Attn: Dr. Michael Hirshfield

Abstract

PPSP is a Gaussian dispersion model applicable to tall stacks in either rural or urban areas, but in terrain that is essentially flat (on a scale large compared to the ground roughness elements). The PPSP model follows the same general formulation and computer coding as CRSTER, also a Gaussian model, but it differs in four MDjor ways. The differences are in the scientific formulation of specific ingredients or "sub-models" to the Gaussian model, and are based on recent theoretical improvements as well as supporting experimental data. The differences are: (1) Stability during daytime is based on convective scaling instead of the Turner criteria; (2) Briggs' dispersion curves for elevated sources are used; (3) Briggs' plume rise formulas for convective conditions are included; and (4) plume penetration of elevated stable layers is given by Briggs' (1984) model.

a. *Recommendations for Regulatory Use*

PPSP can be used if it can be demonstrated to estiMDte concentrations equivalent to those provided by the preferred model for a given application. PPSP must be executed in the equivalent mode.

PPSP can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PPSP is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Emission rate (monthly rates optional), physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor data requirements are: Distance of each of the five receptor rings.

c. *Output*

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3, and 24-hours, plus a user-selected averaging time which MDy be 2, 4, 6, 8, or 12 hours;

Annual arithmetic average at each receptor; and

For each day, the highest 1-hour and 24-hour concentrations over the receptor field.

d. *Type of Model*

PPSP is a Gaussian plume model.

e. *Pollutant Types*

PPSP may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Up to 19 point sources are treated.

All point sources are assumed at the same location.

Unique stack height and stack exit conditions are applied for each source.

Receptor locations are restricted to 36 azimuths (every 10 degrees) and five user-specified radial distances.

g. *Plume Behavior*

Briggs (1975) final rise formulas for buoyant plumes are used. Momentum rise is not considered.

Transitional or distance-dependent plume rise is not modeled.

Penetration (complete, partial, or zero) of elevated inversions is treated with Briggs' (1984) model; ground-level concentrations are dependent on degree of plume penetration.

h. *Horizontal Winds*

Wind speeds are corrected for release height based on power law variation, with different exponents for different stability classes and variable reference height (7 meters is default). Wind speed power law exponents are 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind assumed within each hour.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion parameters are Briggs (Gifford, 1975), with stability class defined by u/w^* during daytime, and by the method of Turner (1984) at night.

Urban dispersion is treated by changing all stable cases to stability class D.

Buoyancy-induced dispersion (Pasquill, 1976) is included (using $\Delta H/3.5$).

k. *Vertical Dispersion*

Rural dispersion parameters are Briggs (Gifford, 1975), with stability class defined by u/w^* during daytime, and by the method of Turner (1984).

Urban dispersion is treated by changing all stable cases to stability class D.

Buoyancy-induced dispersion (Pasquill, 1976) is included (using $\Delta H/3.5$).

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Weil, J.C. and R.P. Brower, 1982. The Maryland PPSP dispersion model for tall stacks. Ref. No. PPSP MP–36. Prepared for Maryland Department of Natural Resources. Prepared by Environmental Center, Martin Marietta Corporation, Baltimore, Maryland, (NTIS No. PB 82–219155)

Londergan, R., D. Minott, D. Wackter, T. Kincaid, and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models, Appendix G: Statistical Tables for PPSP EPA Publication No. EPA–450/4–83–003, Environmental Protection Agency, Research Triangle Park, NC.

B.11 Mesoscale Puff Model (MESOPUFF II)

Reference

Scire, J.S., F.W. Lurmann, A. Bass, S.R. Hanna, 1984. User's Guide to the Mesopuff II Model and Related Processor Programs. EPA Publication No. EPA–600/8–84–013. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 84–181775)

A Modeling Protocol for Applying MESOPUFF II to Long Range Transport Problems, 1992. EPA Publication No. EPA–454/R–92–021, U.S. Environmental Protection Agency, Research Triangle Park, NC.

Availability

This model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (see page B–1).

Abstract

MESOPUFF II is a short term, regional scale puff model designed to calculate concentrations of up to 5 pollutant species (SO_2, SO_4, NO_x, HNO_3, NO_3). Transport, puff growth, chemical transformation, and wet and dry deposition are accounted for in the model.

a. *Recommendations for Regulatory Use*

There is no specific recommendation at the present time. The model may be used on a case-by-case basis.

b. *Input Requirements*

Required input data include four types: (1) Input control parameters and selected technical options, (2) hourly surface meteorological data and twice daily upper air measurements, hourly precipitation data are optional, (3) surface land use classification information, (4) source and emissions data.

Data from up to 25 surface National Weather Service stations and up to 10 upper air stations may be considered. Spatially variable fields at hour intervals of winds, mixing height, stability class, and relevant turbulence parameters are derived by MESOPAC II, the meteorological preprocessor program described in the User Guide.

Source and emission data for up to 25 point sources and/or up to 5 area sources can be included. Required information are: location in grid coordinates, stack height, exit velocity and temperature, and emission rates for the pollutant to be modeled.

Receptor data requirements: Up to a 40 X 40 grid may be used and non-gridded receptor locations may be considered.

c. *Output*

Line printer output includes: All input parameters, optionally selected arrays of ground-level concentrations of pollutant species at specified time intervals.

Line printer contour plots output from MESOFILE II post-processor program. Computer readable output of concentration array to disk/tape for each hour.

d. *Type of Model*

MESOPUFF II is a Gaussian puff superposition model.

e. *Pollutant types modeled*

Up to five pollutant species may be modeled simultaneously and include: SO_2, SO_4, NO_x, HNO_3, NO_3.

f. *Source-Receptor Relationship*

Up to 25 point sources and/or up to 5 area sources are permitted.

g. *Plume Behavior*

Briggs (1975) plume rise equations are used, including plume penetration with buoyancy flux computed in the model.

Fumigation of puffs is considered and may produce immediate mixing or multiple reflection calculations at user option.

h. *Horizontal Winds*

Gridded wind fields are computed for 2 layers; boundary layer and above the mixed layer. Upper air rawinsonde data and hourly surface winds are used to obtain spatially variable u,v component fields at hourly intervals. The gridded fields are computed by interpolation between stations in the MESOPAC II preprocessor.

i. *Vertical Wind Speed*

Vertical winds are assumed to be zero.

j. *Horizontal Dispersion*

Incremental puff growth is computed over discrete time steps with horizontal growth parameters determined from power law equations fit to sigma y curves of Turner out to 100km. At distances greater than 100km, puff growth is determined by the rate given by Heffter (1965).

Puff growth is a function of stability class and changes in stability are treated. Optionally, user input plume growth coefficients may be considered.

k. *Vertical Dispersion*

For puffs emitted at an effective stack height which is less than the mixing height, uniform mixing of the pollutant within the mixed layer is performed. For puffs centered above the mixing height, no effect at the ground occurs.

l. *Chemical Transformation*

Hourly chemical rate constants are computed from empirical expressions derived from photochemical model simulations.

m. *Physical Removal*

Dry deposition is treated with a resistance method.

Wet removal may be considered if hourly precipitation data are input.

n. *Evaluation Studies*

Results of tests for some model parameters are discussed in:

Scire, J. S., F. W. Lurmann, A. Bass, S. R. Hanna, 1984. Development of the MESOPUFF II Dispersion Model. EPA Publication No. EPA–600/3–84–057. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.12 Mesoscale Transport Diffusion and Deposition Model for Industrial Sources (MTDDIS)

Reference

Wang, I.T. and T.L. Waldron, 1980. User's Guide for MTDDIS Mesoscale Transport, Diffusion, and Deposition Model for Industrial Sources. EMSC8082.1UR(R2). Combustion Engineering, Newbury Park, CA.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available for a cost of $100 from: Dr. I.T. Wang, Combustion Engineering, Environmental Monitoring and Services, Inc., 2421 West Hillcrest Drive, Newbury Park, CA 19320.

Abstract

MTDDIS is a variable-trajectory Gaussian puff model applicable to long-range transport of point source emissions over level or rolling terrain. It can be used to determine 3-hour maximum and 24-hour average concentrations of relatively nonreactive pollutants from up to 10 separate stacks.

a. *Recommendations for Regulatory Use*

There is no specific recommendation at the present time. The MTDDIS Model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature, and location.

Meteorological data requirements are: Hourly surface weather data, from up to 10 stations, including cloud ceiling, wind direction, wind speed, temperature, opaque cloud cover and precipitation. For long-range applications, user-analyzed daily mixing heights are recommended. If these are not available, the NWS daily mixing heights will be used by the program. A single upper air sounding station for the region is assumed. For each model run, air trajectories are generated for a 48-hour period, and therefore, the afternoon mixing height of the day before and the mixing heights of the day after are also required by the model as input, in order to generate hourly mixing heights for the modeled period.

Receptor data requirements are: Up to three user-specified rectangular grids.

c. *Output*

Printed output includes:

Tabulations of hourly meteorological parameters include both input surface observations and calculated hourly stability classes and mixing heights for each station;

Printed air trajectories for the two consecutive 24-hour periods for air parcels generated 4 hours apart starting at 0000 LST; and

3-hour maximum and 24-hour average grid concentrations over user-specified rectangular grids are output for the second 24-hour period.

d. *Type of Model*

MTDDIS is a Gaussian puff model.

e. *Pollutant Types*

MTDDIS can be used to model primary pollutants. Dry deposition is treated. Exponential decay can account for some reactions.

f. *Source-Receptor Relationship*

MTDDIS treats up to 10 point sources.

Up to three rectangular receptor grids may be specified by the user.

g. *Plume Behavior*

Briggs (1971, 1972) plume rise formulas are used.

If plume height exceeds mixing height, ground level concentration is assumed zero.

Fumigation and downwash are not treated.

h. *Horizontal Winds*

Wind speeds and wind directions at each station are first corrected for release height. Speed conversions are based on power law variation and direction conversions are based on linear height dependence as recommended by Irwin (1979).

Converted wind speeds and wind directions are then weighted according to the

algorithms of Heffter (1980) to calculate the effective transport wind speed and direction.

i. *Vertical Wind Field*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Transport-time-dependent dispersion coefficients from Heffter (1980) are used.

k. *Vertical Dispersion*

Transport-time-dependent dispersion coefficients from Heffter (1980) are used.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Dry deposition is treated. User input deposition velocity is required.

Wet deposition is treated. User input hourly precipitation rate and precipitation layer depth or cloud ceiling height are required.

n. *Evaluation Studies*

None cited.

B.13 Models 3141 and 4141

Reference

Enviroplan, Inc, 1981. User's Manual for Enviroplan's Model 3141 and Model 4141. Enviroplan, Inc., West Orange, NJ.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available for a cost of $1,900 from: Enviroplan, Inc., 59 Main Street, West Orange, NJ 07052.

Abstract

Models 3141 and 4141 are modifications of CRSTER (UNAMAP VERSION 3) and are applicable to complex terrain particularly where receptor elevation approximately equals or exceeds the stack top elevation. The model utilizes intermediate ground displacement procedures and dispersion enhancements developed from an aerial tracer study and ground level concentrations measured for a power plant located in complex terrain.

a. *Recommendations for Regulatory Use*

3141 or 4141 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. 3141 or 4141 must be executed in the equivalent mode.

3141 or 4141 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in Section 3.2, that 3141 or 4141 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas exit temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor data requirements are: Distance of each of five receptor rings, and receptor elevation.

c. *Output*

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1, 3, and 24 hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours.

Annual arithmetic average at each receptor.

For each day, the highest 1-hour and 24-hour concentrations over the receptor field.

d. *Type of Model*

3141 and 4141 are Gaussian plume models.

e. *Pollutant Types*

3141 and 4141 may be used to model non-reactive pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Up to 19 point sources are treated.

No area sources are treated.

All point sources are assumed to be collocated.

Unique stack height is used for each source.

Receptor locations are restricted to 36 azimuths (every 10 degrees) and 5 user-specified radial distances.

Unique topographic elevation is used for each receptor.

g. *Plume Behavior*

Briggs (1969, 1971, 1972) final plume rise formulas are used.

If plume height exceeds mixing height at a receptor location after terrain adjustment, concentration is assumed equal to zero.

h. *Horizontal Winds*

Wind speeds are corrected for release height based on power law variation exponents from DeMarrais (1959), different exponents for different stability classes, reference height=7 meters. Exponents used are 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind is assumed within each hour.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Dispersion coefficients are Pasquill-Gifford coefficients from Turner (1969).

Dispersion is adjusted to 60 minute averaging time by one-fifth power rule (Gifford, 1975).

Buoyancy-induced dispersion (Briggs, 1975) is included.

k. *Vertical Dispersion*

Dispersion coefficients are Pasquill-Gifford coefficients from Turner (1969).

Buoyancy-induced dispersion (Briggs, 1975) is included.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Ellis, H.M., P.C. Liu, and C. Runyon, 1979. "Comparison of Predicted and Measured Concentrations for 54 Alternative Models of Plume Transport in Complex Terrain, Presented in APCA Annual Conference, Cincinnati, OH.

Ellis, H.M., P.C. Liu, and C. Runyon, 1980. Comparison of Predicted and Measured Concentrations for 58 Alternative Models of Plume Transport in Complex Terrain. *Journal of the Air Pollution Control Association*, 30(6): 670–675.

Londergan, R., D. Minott, D. Wachter, T. Kincaid and D. Bonitata. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–003, Environmental Protection Agency, Research Triangle Park, NC.

Wackter, D., and R. Londergan, 1984. Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA–450/4–84–017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.14 MULTIMAX

Reference

Moser, J.H., 1979. MULTIMAX: An Air Dispersion Modeling Program for Multiple Sources, Receptors, and Concentration Averages. Shell Development Company, Westhollow Research Center, P.O. Box 1380, Houston, TX. (NTIS No. PB 80–170176).

Availability

The above report is available from NTIS ($16.95 for paper copy; $5.95 on microfiche). The accession number for the computer tape for MULTIMAX is PB 80–170160, and the cost is $370.00. Requests should be sent to: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, VA 22161, Phone: (703) 487–4650.

Abstract

MULTIMAX is a Gaussian plume model applicable to both urban and rural areas. It can be used to calculate highest and second-highest concentrations, for each of several averaging times due to up to 100 sources arbitrarily located.

a. *Recommendations for Regulatory Use*

MULTIMAX can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. MULTIMAX must be executed in the equivalent mode.

MULTIMAX can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that MULTIMAX is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, and stack gas temperature.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is also required. Wind speed profile exponents (one for each stability class) are required if on-site data are input.

Receptor requirements are: Individual receptor points, arcs and circles of receptors, or lines of receptors may be input, with receptor point locations, receptor line end points, and receptor circle center and radius defined in either cartesian or polar coordinates.

c. *Output*

Printed output includes: Highest and second-highest concentrations for the year at each receptor for averaging time of 1, 3, and 24 hours. Annual arithmetic average at each receptor.

Computer readable output includes: Input data and results.

d. *Type of Model*

MULTIMAX is a Gaussian plume model.

e. *Pollutant Types*

MULTIMAX may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Up to 100 point sources at any location may be input.

Area sources are not treated.

Point sources may be at any location.

Unique stack height is used for each source.

Unique topographic elevation is used for each receptor; must be below top of stack.

Receptors can be defined individually, or along lines or arcs.

g. *Plume Behavior*

MULTIMAX uses Briggs (1969, 1971, 1972) final plume rise formulas.

If plume height exceeds mixing height, concentrations downwind are assumed equal to zero.

h. *Horizontal Winds*

Wind speeds are corrected for release height based on power law variation exponents from DeMarrais (1959), different exponents for different stability classes, reference height=10 meters. The exponents are 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 for stability classes A through F, respectively.

Constant, uniform (steady-state) wind is assumed within each hour.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used in MULTIMAX with no adjustments made for variations in surface roughness.

Six stability classes are used, with Turner class 7 treated as Class 6. Averaging time adjustment is optional.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used in MULTIMAX with no adjustments made for variations in surface roughness.

Six stability classes are used, with Turner class 7 treated as Class 6.

Perfect reflection at the ground is assumed.

Mixing height is accounted for with multiple reflections until the vertical plume size equals 1.6 times the mixing height; uniform mixing is assumed beyond that point.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Londergan, R., D. Minott, D. Wackter, T. Kincaid, and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.15 Multiple Point Source Diffusion Model (MPSDM—[Deleted]

B.16 Multi-Source (SCSTER) Model

Reference

Malik, M.H. and B. Baldwin, 1990. Program Documentation for Multi-Source (SCSTER) Model. Program Documentation EN7406SS. Southern Company Services, Inc., Technical Engineering Systems, 64 Perimeter Center East, Atlanta, GA.

Availability

The SCSTER model and user's manual are available at no charge to a limited number of persons through Southern Company Services. A magnetic tape must be provided by those desiring the model. Requests should be directed to: Mr. Bryan Baldwin, Research Program Supervisor, Air Quality Program, Southern Company Services, Post Office Box 2625, Birmingham, AL 35202.

Abstract

SCSTER is a modified version of the EPA CRSTER model. The primary distinctions of SCSTER are its capability to consider multiple sources that are not necessarily collocated, its enhanced receptor specifications, its variable plume height terrain adjustment procedures and plume distortion from directional wind shear.

a. *Recommendations for Regulatory Use*

SCSTER can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. SCSTER must be executed in the equivalent mode.

SCSTER can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that SCSTER is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Emission rate, stack gas exit velocity, stack gas temperature, stack exit diameter, physical stack height, elevation of stack base, and coordinates of stack location. The variable emission data can be monthly or annual averages.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class wind direction, wind speed, temperature, and mixing height. Actual anemometer height (a single value) is optional. Wind speed profile exponents (one for each stability class) are optional.

Receptor data requirements are: Cartesian coordinates and elevations of individual receptors; distances of receptor rings, with elevation of each receptor; receptor grid networks, with elevation of each receptor.

Any combination of the three receptor input types may be used to consider up to 600 receptor locations.

c. *Output*

Printed output includes:

Highest and second highest concentrations for the year at each receptor for averaging times of 1-, 3-, and 24-hours, a user-selected averaging time which may be 2–12 hours, and a 20 high table for 1-, 3-, and 24-hours.

Annual arithmetic average at each receptor; and the highest 1-hour and 24-hour concentrations over the receptor field for each day considered.

Optional tables of source contributions of individual point sources at up to 20 receptor locations for each averaging period.

Optional magnetic tape output in either binary or fixed block format includes: All 1-hour concentrations.

Optional card/disk output includes for each receptor: Receptor coordinates; receptor elevation; highest and highest, second-highest, 1-, 3-, and 24-hour concentrations; and annual average concentration.

d. *Type of Model*

SCSTER is a Gaussian plume model.

e. *Pollutant Types*

SCSTER may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

SCSTER can handle up to 80 separate stacks at varying locations and up to 600 receptors, including up to 15 receptor rings.

User input topographic elevation for each receptor is used.

g. *Plume Behavior*

SCSTER uses Briggs (1969, 1971, 1972) final plume rise formulas. Transitional plume rise is optional.

SCSTER contains options to incorporate wind directional shear with a plume distortion method described in Appendix A of the User's Guide.

SCSTER provides four terrain adjustments including the CRSTER full terrain height adjustment and a user-input, stability-dependent plume path coefficient adjustment for receptors above stack height.

h. *Horizontal Winds*

Wind speeds are corrected for release height based on power law exponents from DeMarrais (1959), different exponents for different stability classes; default reference height of 7m. Default exponents are 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 for stability classes A through F, respectively.

Steady-state wind is assumed within a given hour.

Optional consideration of plume distortion due to user-input, stability-dependent wind-direction shear gradients.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used.

Six stability classes are used.

k. *Vertical Dispersion*

Rural dispersion coefficients from Turner (1969) are used.

Six stability classes are used.

An optional test for plume height above mixing height before terrain adjustment is included.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is treated using exponential decay. Half-life is input by the user.

n. *Evaluation Studies*

Londergan, R., D. Minott, D. Wackter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.17 Pacific Gas and Electric Plume5 Model

Reference

User's Manual for Pacific Gas and Electric PLUME5 Model, 1981. Pacific Gas and Electric Company, San Francisco, CA.

Availability

The User's Manual will be supplied for cost of reproduction. An IBM version of the model can be obtained on a user supplied tape free of charge from: Mr. Robert N. Swanson, Pacific Gas and Electric Company, 245 Market Street, Rm. 451, San Francisco, CA 94106.

Abstract

PLUME5 is a steady-state Gaussian plume model applicable to both rural and urban areas in uneven terrain. Pollutant concentrations at 500 receptors from up to 10 sources with up to 15 stacks each can be calculated using up to 5 meteorological inputs. The model in its "basic" mode is similar to CRSTER and MPTER. Several options are available that allow better simulation of atmospheric conditions and improved model outputs. These options allow plume rise into or through a stable layer and crosswind spread of the plume by wind directional shear with height, initial plume expansion, mean (advective) wind speed, terrain considerations, and chemical transformation of pollutants.

Differences that exist between PLUME5 and CRSTER are in the following areas: Stability class determination, hourly mixing height schemes, hourly stable layer data, randomization of wind direction, extent of data set required for preprocessing meteorological data inputs.

a. *Recommendations for Regulatory Use*

PLUME5 can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. PLUME5 must be executed in the equivalent mode.

PLUME5 can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PLUME5 is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Cartesian or polar coordinates of each source with stack height, diameter, gas temperature, and exit velocity for each stack.

Meteorological data requirements are: Surface data—hourly meteorological data including wind direction, wind speed, temperature, and either ceiling height and total sky cover or sigma A or Delta T depending on how stability is computed; stable layer data—either NCC data or site specific user supplied data.

Receptor data requirements are: Cartesian or polar coordinates of each receptor.

c. *Output*

Printed output includes:

Highest and second highest concentrations for the year printed out at each receptor for averaging times of 1, 3, and 24-hours, plus a user-selected averaging time which may be 2, 4, 6, 8, or 12 hours.

Annual arithmetic average at each receptor.

For each day, the highest 1-hour and 24-hour concentrations over the receptor field are printed.

Hourly effective stack height and effective stack height distributions.

Vertical profiles of maximum pollutant concentrations above a designated height (Z_m) for the data period processed.

Cumulative number of exceedances of 1 hour and 24-hour specified values for all receptors during the entire meteorological data period. These specified values will normally be National and State Ambient Air Quality Standards.

Computer readable output includes:

Hourly concentrations for each receptor on magnetic tape.

Computer file for input to plotting routine. The file stores the highest 1-hour (or other specified time period) concentration at each receptor for the entire meteorological data period for input into a user supplied plotting routine.

d. *Type of Model*

PLUME5 is a Gaussian plume model.

e. *Pollutant Types*

PLUME5 may be used to model primary pollutants. Chemical transformations of pollutants are treated by exponential decay and/or ozone limiting procedures.

f. *Source-Receptor Relationship*

Can input up to 10 separate sources with up to 15 stacks per source.

Unique stack height for each source. Rectangular or circular receptor locations (up to 500) can be either model generated or user input.

Terrain considerations:

When plume rise, H, is above the stable layer top concentration estimates will only be calculated for receptors at or above the stable layer top. If the receptor is below the stable layer top, then the concentration is zero.

When plume rise falls within the stable layer, concentration estimates will be only caluclated for receptors located within this region. If the receptor height is above or below the stable top, then the concentration is zero.

When plume rise falls below the stable layer and the receptor height is above the stable layer base, then the concentration is zero. If the receptor height is below the stable layer base, the receptor height is redefined.

g. *Plume Behavior*

PLUME5 uses Briggs (1975) final plume rise formulas.

Expansion of plumes within and above a stable layer is treated.

h. *Horizontal Winds*

User-supplied hourly wind directions are read to nearest 1, 5, 10, and 22.5 degrees. (The 5, 10 and 22.5 degree values are randomly modified to nearest whole degree within the intervals).

PLUME5 employs the extrapolated mean wind speed at stack height when the effective stack height is equal to or less than the height of the inversion base above ground. If the plume rises into a stable layer, a separate algorithm is used.

Constant, uniform (steady state) wind assumed within each hour.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

Six stability classes are defined by either radiation index and wind speed (STAR), wind direction fluctuation, or temperature lapse rate.

Nighttime stability class is based on wind direction fluctuations or temperature lapse rate and may be modified according to the method of Mitchell and Timbre (1979).

Dispersion curves are from Turner (1969).

k. *Vertical Dispersion*

Six stability classes are defined by either radiation index and wind speed (STAR), wind direction fluctuations, or temperature lapse rate.

Nighttime stability class is based on wind direction fluctuations or temperature lapse rate and modified according to the method of Mitchell-Timbre (1979).

Dispersion curves are from Turner (1969).

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay and/or ozone limiting procedures.

m. *Physical Removal*

Physical removal is treated using exponential decay. Half-life is input by the user.

n. *Evaluation Studies*

Londergan, R., D. Minott, D. Wackter, T. Kincaid and B. Bonitata. 1983. Evaluation of Rural Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–003. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Wackter, D., and R. Londergan, 1984. Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA–450/4–84–017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

3.16 PLMSTAR Air Quality Simulation Model

Reference

Lurmann, F. W., D. A. Godden, and H. Collins, 1986. User's Guide to the PLMSTAR Air Quality Simulation Model. ERT Document No. M–2206–100, Environmental Research & Technology, Inc., Newbury Park, CA.

Availability

The above report and a computer tape are available from: Computer Products, National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal Road, Springfield, VA 22161. Phone: (703) 487–4650.

Abstract:

PLMSTAR is a mesoscale Lagrangian photochemical model designed to predict atmospheric concentrations of O_3, NO_2, HNO_3, PAN, SO_2, and $SO_4^=$ from reactive hydrocarbons, NO_x and SO_x emissions. PLMSTAR is intended to simulate the behavior of pollutants in chemically reactive plumes resulting from major point source emissions. The model's Lagrangian air parcel is subdivided into a 5 layer/9 column domain of computational cells. The approach allows for realistic simulation of the combined effects of atmospheric chemical reactions and pollutant dispersion in the horizontal and vertical directions. Other key features of the model include: the capability for generation of trajectories at any level of a three-dimensional, divergence-free wind field; the capability for calculating and utilizing the time and space varying surface deposition of pollutants; an up-to-date O_3/RHC/NO_x/SO_x chemical mechanism that utilizes eight classes of reactive hydrocarbons; the capability for simultaneously handling both point and area source emissions; and the capability to simulate overwater conditions and land/water transitions.

a. *Recommendation for Regulatory Use*

There is no specific recommendation at the present time. The PLMSTAR Model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: Emission rates, stack parameters, diurnal emission profiles, and RHC, NO_x, and SO_x partitioning profiles.

Meteorological data requirements are: Station location, grid geometry, surface winds, surface roughness, surface temperature, temperature profiles, mixing heights (optional), cloud cover, solar radiation, and winds aloft.

Receptor data requirements are: Receptor locations and topography.

c. *Output*

Printed output includes: Computed concentrations at specified times and receptors along the trajectory.

d. *Type of Model*

PLMSTAR is a Lagrangian photochemical model.

e. *Pollutant Types*

The key chemical species included in the model are O_3, NO, NO_2, HNO_3, PAN, SO_2, $SO_4^=$, CO, and eight classes of reactive hydrocarbons. Twenty additional intermediate species are included in the chemical mechanism.

f. *Source-Receptor Relationships*

Source-receptor relationships for individual sources are calculated using a differencing technique. That is, simulations are made with and without an individual source (or group of collocated sources) in addition to the RHC/NO_x/SO_x emissions from all other sources in the region. The emission processors allow for up to 250 point sources and an unlimited number of area sources (allocated to a grid of 36 x 36 squares) to be included in the simulation.

g. *Plume Behavior*

Plume rise calculations are based on Briggs (1975).

h. *Horizontal Winds*

Gridded hourly multi-level horizontal wind fields are generated using techniques similar to those reported by Goodin et al. (1979). These involve wind data interpolation, divergence minimization, and terrain adjustment. Trajectory path segments are then generated by interpolation from the gridded horizontal wind fields in 15 minute steps at the user selected vertical level. Either source or receptor oriented trajectory may be generated.

i. *Vertical Wind speed*

Vertical speed is produced by WINDMOD, but is not utilized in the trajectory calculation or the pollutant advection algorithm.

j. *Vertical Dispersion*

Vertical eddy diffusivities (K_z) over land are calculated as a function of wind speed, stability, surface roughness, and boundary layer height. Over water, wind speed, air-to-sea temperature difference, humidity, and boundary layer height are the key parameters.

The effects of vertical dispersion on pollutant concentrations are calculated by numerically integrating finite difference approximations to the diffusion equation.

Mixing heights can be internally calculated or externally specified.

k. *Horizontal Dispersion*

Horizontal eddy diffusivities (K_y) are calculated either as a function of K_z and stability class or as a function of σ_y. The effects of horizontal dispersion on pollutant concentrations are calculated by numerically integrating finite difference approximations to the diffusion equation.

l. *Chemical Transformation*

PLMSTAR incorporates a slightly condensed version of the Atkinson et al. (1982) photochemical mechanism for O_3/RHC/NO_x/SO_x/air mixtures. The mechanism contains 62 reactions involving 38 species, including 8 classes of organic precursors. The effects of chemical transformations on pollutant concentrations are computed by numerically integrating the nonlinear kinetic rate equations.

m. *Physical Removal*

Dry deposition of O_3, NO_2, HNO_3, PAN, SO_2, and $SO_4^=$ is based on the model of Wesely and Hicks (1977).

n. *Evaluation Studies*

Lurmann, F. W., D. A. Godden and A. C. Lloyd, 1982. The Development and Selected Sensitivity Tests of the PLMSTAR Reactive Plume Model, Presented at the Third Joint Conference on Applications of Air Pollution Meteorology, San Antonio, TX.

Godden, D. and F. Lurmann, 1983. Development of the PLMSTAR Model and its Application to Ozone Episode Conditions in the South Coast Air Basin, ERT Document No. P–A702–200, Environmental Research & Technology, Inc., Newbury Park, CA.

Blumenthal, D. L., T. B. Smith, D. R. Lehrman, N. L. Alexander, F. Lurman, and D. Godden, 1985. Analysis of Asymmetric and Meteorological Data for the Ventura County Region, Ref. #90094–511–FR. Sonoma Technology, Inc., and Environmental Research and Technology, Inc., for the Western Oil and Gas Association, Los Angeles, CA.

3.18 Plume Visibility Model (PLUVUE II)

Reference

Environmental Protection Agency, 1992. User's Manual for the Plume Visibility Model, PLUVUE II (Revised). EPA Publication No. EPA–454/B–92–006. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Availability

This model code is available on the Support Center for Regulatory Air Models Bulletin Board System and also from the National Technical Information Service (see page B–1).

Abstract

The Plume Visibility Model (PLUVUE II) is a computerized model used for estimating visual-range reduction and atmospheric discoloration caused by plumes resulting from the emissions of particles, nitrogen oxides and sulfur oxides from a single emission source. PLUVUE II predicts the transport, dispersion, chemical reactions,

optical effects and surface deposition of point or area source emissions. Addenda to the User's Manual were prepared in February 1986 to allow execution of PLUVUE II and the test cases on the UNIVAC computer.

a. *Recommendations for Regulatory Use*

The Plume Visibility Model (PLUVUE II) may be used on a case-by-case basis. When applying PLUVUE II to assess the visual impact of a plume, the following precautions should be taken to avoid the possibility of error:

1. Treat the optical effects of NO_2 and particles separately as well as together to avoid cancellation of NO_2 absorption with particle scattering.

2. Examine the visual impact of the plume in 0.1 (or 0), 0.5, and 1.0 times the expected level of particulate matter in the background air.

3. Examine the visual impact of the plume over the full range of obser-ver - plume - sun angles.

b. *Input Requirements*

Source data requirements are: Location and elevation; emission rates of SO_2, NO_x, and particulates; flue gas flow rate, exit velocity, and exit temperature; flue gas oxygen content; properties (including density, mass median and standard geometric deviation of radius) of the emitted aerosols in the accumulation (0.1–1.0 μm) and coarse (1.0–10 μm) size modes; and deposition velocities for SO_2, NO_x, coarse mode aerosol, and accumulations mode aerosol.

Meteorological data requirements are: Stability class, wind direction (for an observer-based run), wind speed, lapse rate, air temperature, relative humidity, and mixing height.

Other data requirements are: Ambient background concentrations of NO_x, NO_2, O_3, and SO_2, background visual range or sulfate and nitrate concentrations.

Receptor (observer) data requirements are: Location, elevation, terrain which will be observed through the plume (for observer based run with white, gray, and black viewing backgrounds).

c. *Output*

Printed output includes; Plume concentrations and visual effects at specified downwind distances for calculated or specified lines of sight.

d. *Type of Model*

PLUVUE is a Gaussian plume model.

e. *Pollutant Types*

PLUVUE II treats NO, NO_2, SO_2, H_2SO_4, HNO_3, O_3, primary and secondary particles to calculate effects on visibility.

f. *Source Receptor Relationship*

PLUVUE treats a single point or area source.

Predicted concentrations and visual effects are obtained at user specified downwind distances.

g. *Plume Behavior*

PLUVUE uses Briggs (1968, 1971, 1972) final plume rise equations.

h. *Horizontal Winds*

User-specified wind speed (and direction for an observer-based run) are assumed constant for the calculation.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

User specified plume widths, or widths computed from either Pasquill-Gifford-Turner curves (Turner, 1969) or TVA curves (Carpenter, et al., 1971) are used in PLUVUE.

k. *Vertical Dispersion*

User specified plume depths, or computer from Pasquill-Gifford-Turner curves (Turner, 1969) or TVA curves (Carpenter, et al., 1971) are used in PLUVUE.

l. *Chemical Transformation*

PLUVUE II treats the chemistry of NO, NO_2, O_3, OH, $O(^1D)$, SO_2, HNO_3, and H_2SO_4, by means of nine reactions. Steady state approximations are used for radicals and for the $NO/NO_2/O_3$ reactions.

m. *Physical Removal*

Dry deposition of gaseous and particulate pollutants is treated using deposition velocities.

n. *Evaluation Studies*

Bergstrom, R. W., C. Seigneur, B. L. Babson, H. Y. Holman and M. A. Wojcik. 1981. Comparison of the Observed and Predicted Visual Effects Caused by Power Plant Plumes. Atmospheric Environment, 15: 2135–2150.

Bergstrom, R. W., Seigneur, C. D. Johnson, and L. W. Richards, 1984. Measurements and Simulations of the Visual Effects of Particulate Plumes. Atmospheric Environment, 18(10): 2231–2244.

Seigneur, C., R. W. Bergstrom, and A. B. Hudischewskyj, 1982. Evaluation of the EPA PLUVUE Model and the EKT Visibility Model Based on the 1979 VISTTA Data Base. EPA Publication No. EPA–450/4–82–008. U.S. Environmental Protection Agency, Research Triangle Park, NC.

White, W. H., C. Seigneur, D. W. Heinold, M. W. Eltgroth, L. W. Richards, P. T. Roberts, P. S. Bhardwaja, W. D. Conner and W. E. Wilson, Jr. 1985. Predicting the Visibility of Chimney Plumes: An Inter-comparison of Four Models with Observations at a Well-Controlled Power Plant. Atmospheric Environment, 19: 515–528.

3.20 Point, Area, Line Source Algorithm (PAL–DS)

Reference

Petersen, W. B. 1978. User's Guide for PAL—A Gaussian-Plume Algorithm for Point, Area, and Line Sources. EPA Publication No. EPA–600/4–78–013. Office of Research and Development, Research Triangle Park, NC. (NTIS No. PB-281308)

Rao, K. S. and H. F. Snodgrass, 1982. PAL–DS Model: The PAL Model including Deposition and Sedimentation. EPA Publication No. EPA–600/8–82–022. Office of Research and Development, Research Triangle Park, NC. (NTIS No. PB-82-117739)

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Phone: (703) 487–4650.

Abstract

PAL–DS is an acronym for this point, area, and line source algorithm and is a method of estimating short-term dispersion using Gaussian-plume steady-state assumptions. The algorithm can be used for estimating concentrations of non-reactive pollutants at 99 receptors for averaging times of 1 to 24 hours, and for a limited number of point, area, and line sources (99 of each type). This algorithm is not intended for application to entire urban areas but is intended, rather, to assess the impact on air quality, on scales of tens to hundreds of meters, of portions of urban areas such as shopping centers, large parking areas, and airports. Level terrain is assumed. The Gaussian point source equation estimates concentrations from point sources after determining the effective height of emission and the upwind and crosswind distance of the source from the receptor. Numerical integration of the Gaussian point source equation is used to determine concentrations from the four types of line sources. Subroutines are included that estimate concentrations for multiple lane line and curved path sources, special line sources (line sources with endpoints at different heights above ground), and special curved path sources. Integration over the area source, which includes edge effects from the source region, is done by considering finite line sources perpendicular to the wind at intervals upwind from the receptor. The crosswind integration is done analytically; integration upwind is done numerically by successive approximations.

The PAL–DS model utilizes Gaussian plume-type diffusion-deposition algorithms based on analytical solutions of a gradient-transfer model. The PAL–DS model can treat deposition of both gaseous and suspended particulate pollutants in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for. The analytical diffusion-deposition expressions listed in this report in the limit when pollutant settling and deposition velocities are zero, they reduce to the usual Gaussian plume diffusion algorithms in the PAL model.

a. *Recommendations for Regulatory Use*

PAL–DS can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. PAL–DS must be executed in the equivalent mode.

PAL–DS can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that PAL–DS is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data: Point-sources—emission rate, physical stack height, stack gas temperature, stack gas velocity, stack diameter, stack gas volume flow, coordinates of stack, initial σ_y and σ_z; area sources—source strength, size of area source, coordinates of S.W. corner, and height of area source; and line sources—source strength, number of lanes, height of source, coordinates of end points, initial σ_y and σ_z, width of line source, and width of median. Diurnal variations in emissions are permitted. When applicable, the settling velocity and deposition velocity are also permitted.

Meteorological data: Wind profile exponents, anemometer height, wind direction and speed, stability class, mixing height, air temperature, and hourly variations in emission rate.

Receptor data: Receptor coordinates.

c. *Output*

Printed output includes:

Hourly concentration and deposition flux for each source type at each receptor; and

Average concentration for up to 24 hrs for each source type at each receptor.

d. *Type of Model*

PAL–DS is a Gaussian plume model.

e. *Pollutant Types*

PAL–DS may be used to model non-reactive pollutants.

f. *Source-Receptor Relationships*

Up to 99 sources of each of 6 source types: Point, area, and 4 types of line sources.

Source and receptor coordinates are uniquely defined.

Unique stack height for each source.

Coordinates of receptor locations are user defined.

g. *Plume Behavior*

Briggs final plume rise equations are used.

Fumigation and downwash are not treated.

If plume height exceeds mixing height, concentrations are assumed equal to zero.

Surface concentrations are set to zero when the plume centerline exceeds mixing height.

h. *Horizontal Winds*

User-supplied hourly wind data are used.

Constant, uniform (steady-state) wind is assumed within each hour. Wind is assumed to increase with height.

i. *Vertical Wind Speeds*

Assumed equal to zero.

j. *Horizontal Dispersion*

Rural dispersion coefficients from Turner (1969) are used with no adjustments made for surface roughness.

Six stability classes are used.

Dispersion coefficients (Pasquill-Gifford) are assumed based on a 3 cm roughness height.

k. *Vertical Dispersion*

Six stability classes are used.

Rural dispersion coefficients from Turner (1969) are used; no further ajustments are made for variation in surface roughness, transport or averaging time.

Multiple reflection is handled by summation of series until the vertical standard-deviation equals 1.6 times mixing height. Uniform vertical mixing is assumed thereafter.

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

PAL–DS can treat deposition of both gaseous and suspended particulates in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for.

n. *Evaluation Studies*

None.

B.21 Random-Walk Advection and Dispersion Model (RADM)

References

Austin, D. I., A. W. Bealer, and W. R. Goodin, 1981. RandomWalk Advection and Dispersion Model (RADM), User's Manual. Dames & Moore, Los Angeles, CA.

Runchal, A. K., W. R. Goodin, A. W. Bealer, D. I. Austin, 1981. Technical Description of the Random-Walk Advection and Dispersion Model (RADM). Dames & Moore, Los Angeles, CA.

Availability

A magnetic tape of the computer code and the user's manual are available for a cost of $440.00 from: Mr. C. James Olsten, Dames & Moore, 445 South Figueroa Street, Suite 3500, Los Angeles, CA 90071–1665.

Abstract

RADM is a Lagrangian dispersion model which uses the randomwalk method to simulate atmospheric dispersion. The technical procedure involves tracking tracer particles having a given mass through advection by the mean wind and diffusion by the random motions of atmospheric turbulence. Turbulent movement is calculated by determining the probability distribution of particle movement for a user-defined time step. A random number between 0 and 1 is then computed to determine the distance of particle movement according to the probability distribution. A large number of particles is used to statistically represent the distribution of pollutant mass. Concentrations are calculated by summing the mass in a volume around the receptor of interest and dividing the total mass by the volume. Concentrations can be calculated for any averaging time. RADM is applicable to point and area sources.

a. *Recommendations for Regulatory Use*

There is no specific recommendation at the present time. The RADM model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: Emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature. Hourly rates may be specified.

Meteorological data requirements are: Gridded wind field including wind speed, wind direction, stability class, temperature and mixing height.

Receptor data requirements are: coordinates, ground elevation, and receptor cell dimensions.

c. *Output*

Printed output includes:

Average concentration by receptor for user-specified averaging time (concentrations are printed for each block of n hours).

Average concentrations for the entire period of the run.

d. *Type of Model*

RADM is a random-walk Lagrangian dispersion model.

e. *Pollutant Types*

RADM may be used to model inert gases and particles, and pollutants with exponential decay or formation rates.

f. *Source-Receptor Relationship*

Multiple point and area sources may be specified at independent locations.

Unique stack characteristics are used for each source.

No restriction is placed on receptor locations.

Perfect reflection at the surface is assumed for the portion not removed by dry deposition.

Particles leaving the gridded area are removed from simulation.

g. *Plume Behavior*

Briggs (1975) final plume rise equations are used.

Inversion penetration by the plume is allowed.

Fumigation may occur as mixing height rises above a plume which has penetrated an inversion.

h. *Horizontal Winds*

Wind speed, wind direction, stability class, temperature and mixing height are supplied on a gridded array.

Any wind field may be used as long as output is in correct format for RADM input.

Wind field is updated at user-specified intervals, which may be less than one hour if data are available.

Vertical wind speed profile is used based on surface roughness and stability using Monin-Obukhov length.

i. *Vertical Wind Speed*

Assumed equal to zero.

j. *Horizontal Dispersion*

Dispersion is based on diffusivity values calculated from surface roughness, stability class and Monin-Obukhov length.

Diffusivity is a function of height.

k. *Vertical Dispersion*

Dispersion is based on diffusivity values calculated from surface roughness, stability class and Monin-Obukhov length.

Diffusivity is a function of height.

l. *Chemical Transformations*

Simple exponential decay or formation is used.

m. *Physical Removal*

Dry deposition is treated.

n. *Evaluation Studies*

Runchal, A. K., A. W. Bealer, and G. S. Segal, 1978. A Completely Lagrangian Random-Walk Model for Atmospheric Dispersion. Proceedings of the Thirteenth International Colloquium on Atmospheric

Pollution. National Institute for Applications of Chemical Research, Paris; pp. 137–142.

Goodin, W. R., A. K. Runchal and G. Y. Lou. 1980. Evaluation and Application of the Random-Walk Advection and Dispersion Model (RADM). Symposium on Intermediate Range Atmospheric Transport Processes and Technology Assessment, DOE/NOAA/ORNL, Gatlinburg, TN.

Goodin, W. R., D. I. Austin and A. K. Runchal, 1980. A Model Verification and Prediction Study of $SO_2/SO_4^=$ Concentrations in the San Francisco Bay Area. Second Joint Conference on Applications of Air Pollution Meteorology, AMS/APCA, New Orleans, LA.

B.22 Reactive Plume Model (RPM–II)

Reference

D. Stewart, M. Yocke, and M–K Liu, 1981. Reactive Plume Model—RPM–II, User's Guide, EPA Publication No. EPA–600/8–81–021. U.S. Environmental Protection Agency, ESRL, Research Triangle Park, NC. (NTIS No. PB 82–230723)

Availability

The above report is available from NTIS ($16.95 for paper copy; $5.95 on microfiche). The accession number for the computer tape for RPM–II is PB83–154898, and the cost is $460.00. Requests should be sent to: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Phone: (703) 487–4650.

Abstract

The Reactive Plume Model, RPM-II, is a computerized model used for estimating short-term concentrations of primary and secondary pollutants resulting from point or area source emissions. The model is capable of simulating the complex interaction of plume dispersion and non-linear photochemistry. Two main features of the model are: (1) The horizontal resolution within the plume, which offers a more realistic treatment of the entrainment process, and (2) its flexibility with regard to choices of chemical kinetic mechanisms.

a. *Recommendations for Regulatory Use*

There is no specific recommendation at the present time. The RPM–II Model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: Emission rates, name, and molecular weight of each species of pollutant emitted; ambient pressure, ambient temperature, stack height, stack diameter, stack exit velocity, stack gas temperature, and location.

Meteorological data requirements are: Wind speeds, plume widths or stability classes, photolytic rate constants, and plume depths or stability classes.

Receptor data requirements are: Downwind distances or travel times at which calculations are to be made.

Initial concentration of all species is required, and the specification of downwind ambient concentrations to be entrained by the plume is optional.

c. *Output*

Short-term concentrations of primary and secondary pollutants at either user specified time increments, or user specified downwind distances.

d. *Type of Model*

Reactive plume model.

e. *Pollutant Types*

Currently, using the Carbon Bond Mechanism (CBM–II), 35 species are simulated (68 reactions), including NO, NO_2, O_3, SO_2, $SO_4^=$, five categories of reactive hydrocarbons, secondary nitrogen compounds, organic aerosols, and radical species.

f. *Source-Receptor Relationships*

Single point source.

Single area or volume source.

Multiple sources can be simulated if they are lined up along the wind trajectory.

Predicted concentrations are obtained at a user specified time increment, or at user specified downwind distances.

g. *Plume Behavior*

Briggs (1971) plume rise equations are used.

h. *Horizontal Winds*

User specifies wind speeds as a function of time.

i. *Vertical Wind Speed*

Not treated.

j. *Horizontal Dispersion*

User specified plume widths, or user may specify stability and widths will be computed using Turner (1969).

k. *Vertical Dispersion*

User specified plume depths, or user may specify stability in which case depths will be calculated using Turner (1969). Note that vertical uniformity in plume concentration is assumed.

l. *Chemical Transformation*

The RPM–II has the flexibility of using any user input chemical kinetic mechanism. Currently it is run using the chemistry of the Carbon Bond Mechanism, CBM–II (Whitten, Killus, and Hogo, 1980). The CBM–II, as incorporated in the RPM–II, contains 35 species and 68 reactions focusing primarily on hydrocarbon-nitrogen oxides-ozone photochemistry.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Stewart, D. A. and M–K Liu, 1981. Development and Application of a Reactive Plume Model. Atmospheric Environment, 15: 2377–2393.

B.23 Regional Transport Model (RTM–II)

Reference

Morris, R. E., D. A. Stewart, and M–K Liu, 1982. Revised User's Guide to the Regional Transport Model—Version II. Publication No. SYSAPP–82/022, Systems Applications Inc., San Rafael, CA.

Availability

The computer code is available on magnetic tape for a cost of $100 (which includes the User's Manual) from: Systems Applications, Inc., 101 Lucas Valley Road, San Raphael, CA 94903.

Abstract

The Regional Transport Model (RTM–II) is a computer based air quality grid model whose primary use is estimating the distribution of air pollution from multiple point sources and area sources at large distances (on the scale of several hundred to a thousand kilometers). RTM–II offers significant advantages over other long-range transport models because it is a quasi-three dimensional hybrid (grid plus Lagrangian puff) approach to the solution of the advection-diffusion equation. Furthermore, its formulation allows the treatment of spatially and temporally varying wind, mixing depths, diffusivity, and transformation rate fields. It is also capable of treating spatially varying surface depletion processes. While the modeling concept is capable of predicting concentration distributions of many pollutant species (e.g., NO_x, CO, TSP, etc.), the most notable applications of the model to date focus on the long-range transport and transformation of SO_2 and sulfates.

a. *Recommendations for Regulatory Use*

There is no specific recommendation at the present time. The RTM Model may be used on a case-by-case basis.

b. *Input Requirements*

Source data requirements are: Major point source SO_2 and primary sulfate emissions, including stack height, diameter, exit velocity, exit temperature, and hourly emission factors; area source SO_2 and primary $SO_4^=$ emissions in gridded format.

Meteorological data requirements are: Gridded u, v wind fields at user specified update interval (model configured for separate wind fields in each of two layers), derived from twice daily radiosonde data, time variation linear between a maximum convectively driven boundary layer and a minimum mechanically driven boundary layer, spatial interpolation by an inverse distance weighted objective scheme; gridded hourly precipitation fields determined either by averaging precipitation rate of all stations in grid (if high density), or by inverse distance weighted interpolation (if low density).

Other data requirements are: Parameter file, containing region definition, starting time, output and averaging time intervals, region top specifications, and various operational flags; horizontal diffusivity fields calculated from wind fields; land use type file; deposition velocities and roughness length determined internally from tabulated values associated with land use types; initial conditions and boundary conditions for both layers (boundary conditions may be time varying).

c. *Output*

Printed output includes:

Diagnostic information.

Instantaneous SO_2 and sulfate concentration fields for lower and upper layers at pre-specified time intervals.

Average SO_2 and sulfate concentration fields for upper and lower layer, over pre-specified time intervals. Accumulated dry

and wet deposition for each species over preselected time intervals.

d. Type of Model

RTM–II is a hybrid Eulerian grid and Lagrangian puff model.

e. Pollutant Types

RTM–II is configured for SO_2 and sulfate only. Primary sulfate emissions may be included.

f. Source Receptor Relationships

Area sources and minor point sources are specified at each grid within the modeling domain.

Up to 500 major point sources (modeled with the Gaussian puff submodel) are allowed.

Grid average concentration and deposition totals are provided at each grid within the modeling domain (dry deposition for lower layer grid only). All lower grid average concentration values are assumed to be representative of ground-level receptors.

g. Plume Behavior

Plume rise (Briggs, 1971) is calculated for all major point sources regardless of whether they are treated in the Gaussian puff submodel.

h. Horizontal Winds

Gridded u, v wind fields are used at a user specified update interval for each layer.

Gaussian puff submodel tracks puff centroids horizontally at user specified time intervals.

i. Vertical Wind Speed

Considered implicitly if convergent or divergent winds are provided.

j. Horizontal Dispersion

Plume dispersion is based on σ_y differentials derived from a power law fit to Turner (1969) dispersion curves. Variable stabilities within adjacent cells are considered.

Horizontal eddy diffusivities are proportional to the wind field deformation and are calculated from the gridded wind fields as ancilliary input. Maximum and minimum constraints are imposed on the magnitude of the diffusivities.

k. Vertical Dispersion

Plume dispersion is based on σ_z differentials derived from a power law fit to Turner (1969) dispersion curves. Variable stabilities within adjacent cells are considered.

Vertical dispersion across the mixed layer-surface layer interface is considered when calculating pollutant deposition.

l. Chemical Transformation

Linear SO_2 oxidation is treated. Rate constant is diurnally and latitudinally variable. A minimum oxidation rate constant is specified to account for heterogeneous oxidation during the nighttime.

m. Physical Removal

Dry deposition of SO_2 and sulfate is treated. Precipitation scavenging of SO_2 (reversible) and sulfate (irreversible) is treated.

n. Evaluation Studies

Stewart, D. A., R. E. Morris, M-K Liu, and D. Henderson, 1983. Evaluation of an Episodic Regional Transport Model for a Multiple Day Episode. *Atmospheric Environment*, 17: 1225–1252.

B.24 SHORTZ

Reference

Bjorklund, J. R., and J. F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs, Volumes I and II. EPA Publication No. EPA–903/9–82–004a and b. U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

Availability

This model is available as part of UNAMAP (Version 6). The computer code is available on magnetic tape from: Computer Products, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Phone: (703) 487–4650.

Abstract

SHORTZ utilizes the steady state bivariate Gaussian plume formulation for both urban and rural areas in flat or complex terrain to calculate ground-level ambient air concentrations. It can calculate 1-hour, 2-hour, 3-hour etc. average concentrations due to emissions from stacks, buildings and area sources for up to 300 arbitrarily placed sources. The output consists of total concentration at each receptor due to emissions from each userspecified source or group of sources, including all sources. If the option for gravitational settling is invoked, analysis cannot be accomplished in complex terrain without violating mass continuity.

a. Recommendations for Regulatory Use

SHORTZ can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. SHORTZ must be executed in the equivalent mode.

SHORTZ can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that SHORTZ is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. Input Requirements

Source data requirements are: For point, building or area sources, location, elevation, total emission rate (optionally classified by gravitational settling velocity) and decay coefficient; for stack sources, stack height, effluent temperature, effluent exit velocity, stack radius (inner), actual volumetric flow rate, and ground elevation (optional); for building sources, height, length and width, and orientation; for area sources, characteristic vertical dimension, and length, width and orientation.

Meteorological data requirements are: Wind speed and measurement height, wind profile exponents, wind direction, standard deviations of vertical and horizontal wind directions, (i.e., vertical and lateral turbulent intensities), mixing height, air temperature, and vertical potential temperature gradient.

Receptor data requirements are: coordinates, ground elevation.

c. Output

Printed output includes: Total concentration due to emissions from user-specified source groups, including the combined emissions from all sources (with optional allowance for depletion by deposition).

d. Type of Model

SHORTZ is a Gaussian plume model.

e. Pollutant Types

SHORTZ may be used to model primary pollutants. Settling and deposition of particulates are treated.

f. Source-Receptor Relationships

User specified locations for sources and receptors are used.

Receptors are assumed to be at ground level.

g. Plume Behavior

Plume rise equations of Bjorklund and Bowers (1982) are used.

Stack tip downwash (Bjorklund and Bowers, 1982) is included.

All plumes move horizontally and will fully intercept elevated terrain.

Plumes above mixing height are ignored.

Perfect reflection at mixing height is assumed for plumes below the mixing height.

Plume rise is limited when the mean wind at stack height approaches or exceeds stack exit velocity.

Perfect reflection at ground is assumed for pollutants with no settling velocity.

Zero reflection at ground is assumed for pollutants with finite settling velocity.

Tilted plume is used for pollutants with settling velocity specified. Buoyancy-induced dispersion (Briggs, 1972) is included.

h. Horizontal Winds

Winds are assumed homogeneous and steady-state.

Wind speed profile exponents are functions of both stability class and wind speed. Default values are specified in Bjorklund and Bowers (1982).

i. Vertical Wind Speed

Vertical winds are assumed equal to zero.

j. Horizontal Dispersion

Horizontal plume size is derived from input lateral turbulent intensities using adjustments to plume height, and rate of plume growth with downwind distance specified in Bjorklund and Bowers (1982).

k. Vertical Dispersion

Vertical plume size is derived from input vertical turbulent intensities using adjustments to plume height and rate of plume growth with downwind distance specified in Bjorklund and Bowers (1982).

l. Chemical Transformation

Chemical transformations are treated using exponential decay. Time constant is input by the user.

m. Physical Removal

Settling and deposition of particulates are treated.

n. *Evaluation Studies*

Bjorklund, J. R., and J. F. Bowers, 1982. User's Instructions for the SHORTZ and LONGZ Computer Programs. EPA Publication No. EPA–903/9–82004. EPA Environmental Protection Agency, Region III, Philadelphia, PA.

Wackter, D., and R. Londergan, 1984. Evaluation of Complex Terrain Air Quality Simulation Models. EPA Publication No. EPA–450/4–84–017. U.S. Environmental Protection Agency, Research Triangle Park, NC.

B.25 Simple Line-Source Model (GMLINE)

Reference

Chock, D. P., 1980. User's Guide for the Simple Line-Source Model for Vehicle Exhaust Dispersion Near a Road, Environmental Science Department, General Motors Research Laboratories, Warren, MI.

Availability

Copies of the above reference are available without charge from: Dr. D. P. Chock, Environmental Science Department, General Motors Research Laboratories, General Motors Technical Center, Warren, MI 48090.

The User's Guide contains the short algorithm of the model.

Abstract

GMLINE is a simple steady-state Gaussian plume model which can be used to determine hourly (or half-hourly) averages of exhaust concentrations within 100m from a roadway on a relatively flat terrain. The model allows for plume rise due to the heated exhaust, which can be important when the crossroad wind is very low. It also utilizes a new set of vertical dispersion parameters which reflects the influence of traffic-induced turbulence.

a. *Recommendations for Regulatory Use*

GMLINE can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. GMLINE must be executed in the equivalent mode.

GMLINE can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in Section 3.2, that GMLINE is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Emission rate per unit length per lane, the number of lanes on each road, distances from lane centers to the receptor, source and receptor heights.

Meteorological data requirements are: Buoyancy flux, ambient stability condition, ambient wind and its direction relative to the road.

Receptor data requirements are: Distance and height above ground.

c. *Output*

Printed output includes: Hourly or (half-hourly) concentrations at the receptor due to exhaust emission from a road (or a system of roads by summing the results from repeated model applications).

d. *Type of Model*

GMLINE is a Gaussian plume model.

e. *Pollutant Types*

GMLINE can be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

GMLINE treats arbitrary location of line sources and receptors.

g. *Plume Behavior*

Plume-rise formula adequate for a heated line source is used.

h. *Horizontal Winds*

GMLINE uses user-supplied hourly (or half-hourly) ambient wind speed and direction. The wind measurements are from a height of 5 to 10m.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Dispersion Parameters*

Horizontal dispersion parameter is not used.

k. *Vertical Dispersion*

A vertical dispersion parameter is used which is a function of stability and wind-road angle. Three stability classes are used: unstable, neutral and stable. The parameters take into account the effect of traffic-generated turbulence (Chock, 1980).

l. *Chemical Transformation*

Not treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Chock, D. P., 1978. A Simple Line-Source Model for Dispersion Near Roadways. *Atmospheric Environment*, 12: 823–829.

Sistla, G., P. Samson, M. Keenan, and S. T. Rao, 1979. A Study of Pollutant Dispersion Near Highways. *Atmospheric Environment*, 13: 669–685.

B.26 Texas Climatological Model (TCM–2)

Reference

Staff of the Texas Air Control Board, 1980. User's Guide to the TEXAS CLIMATOLOGICAL MODEL (TCM). Texas Air Control Board, Permits Section, 6330 Highway 290 East, Austin, TX.

Availability

The TCM–2 model is available from the Texas Air Control Board at the following cost:

User's Manual only—$20.00
User's Manual and Model (Magnetic Tape)—$80.00

Requests should be directed to: Data Processing Division, Texas Air Control Board, 6330 Highway 290 East, Austin, TX 78723.

Abstract

TCM is a climatological steady-state Gaussian plume model for determining long-term (seasonal or annual arithmetic) average pollutant concentrations of non-reactive pollutants.

a. *Recommendations for Regulatory Use*

TCM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. TCM must be executed in the equivalent mode.

TCM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that TCM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Point source coordinates emission rates (by pollutant), stack height, stack diameter, stack gas exit velocity, stack gas temperature; area source coordinates (southwest corner), size, emission rate.

Meteorological data requirements are: Stability wind rose and average temperature.

Receptor data requirements are: Size and spacing of the rectangular receptor grid.

c. *Output*

Printed output includes:

Period average concentrations listed, displayed in map format, or punched on cards at the user's option.

Culpability list option provides the contributions of the five highest contributors at each receptor.

Maximum concentration option provides the maximum concentration for each scenario (run).

d. *Type of Model*

TCM is a Gaussian plume model.

e. *Pollutant Types*

TCM may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Arbitrary location of point sources and area sources are treated.

Arbitrary location and spacing of rectangular grid of receptors are used. (Area source grid is best defined in terms of the receptor grid, so that the receptors fall in the center of the area source).

Receptors located in simple terrain may be modeled.

g. *Plume Behavior*

Briggs (1975) plume rise equations, including momentum rise, are used for point sources.

Two-thirds power law is used when transitional rise option is selected. Flares are treated.

h. *Horizontal Winds*

Characteristic wind speed is calculated for each direction-stability class combination.

This characteristic speed is the inverse of the average inverse speed for the stability-wind direction combination.

Wind speed is adjusted to stack height by a power law using exponents of 0.10, 0.15, 0.20, 0.25, 0.30, and 0.30 for stabilities A through F, respectively.

i. *Vertical Wind Speed*

Vertical wind speed is assumed to be zero.

j. *Horizontal Dispersion*

Uniform distribution within each 22.5 degree sector is assumed.

k. *Vertical Dispersion*

Dispersion parameters for point sources are fit to Turner (1969); for area sources in the urban mode the fit is to Gifford and Hanna (1970).

Seven stability classes are used.

Pasquill A through F are treated, with daytime "D" and nighttime "D" given separately.

In the urban mode, E and F stability classes are treated as D-night. Perfect reflection at the ground is assumed.

l. *Chemical Transformation*

Chemical transformations are treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is treated using exponential decay. Half-life is input by the user.

n. *Evaluation Studies*

Londergan, R. J., D. H. Minott, D. J. Wachter and R. R. Fizz, 1983. Evaluation of Urban Air Quality Simulation Models. EPA Publication No. EPA–450/4–83–020. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Durrenberger, C. S., B. A. Broberg, and K. Zimmermann, 1983. Development of a Protocol to be Used for Dispersion Model Comparison Studies. Presented at the 76th Annual Meeting of the Air Pollution Control Association, Atlanta, GA.

B.27 Texas Episodic Model (TEM–8)

Reference

Staff of the Texas Air Control Board, 1979. User's Guide to the TEXAS EPISODIC MODEL. Texas Air Control Board, Permits Section, 6330 Highway 290 East, Austin, TX.

Availibility

The TEM–8 model is available from the Texas Air Control Board at the following costs:

User's Manual only—$20.00
User's Manual and Model (Magnetic Tape)—$80.00

Requests should be directed to: Data Processing Division, Texas Air Control Board, 6330 Highway 290 East, Austin, TX 78723.

Abstract

TEM is a short-term, steady-state Gaussian plume model for determining short-term concentrations of non-reactive pollutants.

a. *Recommendations for Regulatory Use*

TEM can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. TEM must be executed in the equivalent mode.

TEM can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that TEM is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements*

Source data requirements are: Locations, average emission rates and heights of emissions for both point and area sources; stack gas temperature, stack gas exit velocity, and stack inside diameter for point sources for plume rise calculations.

Meteorological data requirements are: Hourly surface weather data from the EPA meteorological preprocessor program. Preprocessor output includes hourly stability class, wind direction, wind speed, temperature, and mixing height. Any combination of hourly meteorological data up to 24 hours may be used, (e.g., 1, 3, 5, 8, 24 hours).

Receptor requirements are: Size, spacing and location of rectangular grid of receptors.

c. *Output*

Printed output includes: concentration list;
Spatial array (concentrations displayed as on a map);
Punched cards of the concentration list;
Culpability list (percent contributions) of the five highest contributors to each receptor;
Maximum concentration; and
Point source list.

d. *Type of Model*

TEM is a Gaussian plume model.

e. *Pollutant Types*

TEM can be used to model non-reactive pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationship*

Arbitrary locations of point sources and area sources are treated.

Arbitrary location and spacing of rectangular grid of receptors is treated. Area source grid is best defined in terms of the receptor grid so that the receptors fall in the centers of the area sources.

Receptors located in simple terrain may be modeled.

g. *Plume Behavior*

Briggs (1975) plume rise equations are used, including momentum rise, for point sources.

Transitional rise is calculated.

Stack-tip downwash may be evaluated.

h. *Horizontal Winds*

Wind speeds are adjusted to release height by power law formula, using exponents of 0.10, 0.15, 0.20, 0.25, 0.30 and 0.35 for stabilities A through F, respectively.

Steady-state wind is assumed.

i. *Vertical Wind Speed*

Vertical wind is assumed equal to zero.

j. *Horizontal Dispersion*

Gaussian plume coefficients are fitted to Turner (1969). The Turner curves are treated as 10-minute averages and the coefficients are adjusted to represent 30-minute or hourly as appropriate.

In the urban mode, stable cases are shifted to neutral nighttime (D-night) conditions and urban mixing heights are used.

k. *Vertical Dispersion*

Dispersion parameters for point sources are fit to Turner (1969); for area sources, in the urban mode, the fit is to Gifford and Hanna (1970).

Total reflection of the plume at the ground is assumed.

In the urban mode, E and F stability classes are treated as D-nighttime.

l. *Chemical Transformation*

Chemical transformation is treated using exponential decay. Half-life is input by the user.

m. *Physical Removal*

Physical removal is treated using exponential decay. Half-life is input by the user.

n. *Evaluation Studies*

Londergan, R., D. Minott, D. Wachter, T. Kincaid and D. Bonitata, 1983. Evaluation of Rural Air Quality Simulation Models. EPA–450/4–83–003, Environmental Protection Agency, Research Triangle Park, NC.

Durrenberger, C. J., B. A. Broberg, and K. Zimmermann, 1983. Development of a Protocol to be Used for Dispersion Model Comparison Studies. Presented at the 76th Annual Meeting of the Air Pollution Control Association, Atlanta, GA.

B.28 AVACTA II

Reference

Zannetti, P., G. Carboni and R. Lewis, 1985. AVACTA II User's Guide (Release 3). AeroVironment, Inc., Technical Report AV–OM–85/520.

Availability

A magnetic tape copy of the FORTRAN coding and the user's guide are available at a cost of $2,500 (non-profit organization) or $3,500 (other organizations) from: AeroVironment, Inc., 825 Myrtle Avenue, Monrovia, CA 91016. Phone: (818) 357–9983.

Abstract

The AVACTA II model is a Gaussian model in which atmospheric dispersion phenomena are described by the evolution of plume elements, either segments or puffs. The model can be applied for short time (e.g., one day) simulations in both transport and calm conditions.

The user is given flexibility in defining the computational domain, the three-dimensional meteorological and emission input, the receptor locations, the plume rise formulas, the sigma formulas, etc. Without explicit user's specifications, standard default values are assumed.

AVACTA II provides both concentration fields on the user specified receptor points, and dry/wet deposition patterns throughout the domain. The model is particularly oriented to the simulation of the dynamics and transformation of sulfur species (SO_2 and $SO_4^=$), but can handle virtually any pair of primary-secondary pollutants.

a. *Recommendations for Regulatory Use*

AVACTA II can be used if it can be demonstrated to estimate concentrations equivalent to those provided by the preferred model for a given application. AVACTA II must be executed in the equivalent mode.

AVACTA II can be used on a case-by-case basis in lieu of a preferred model if it can be demonstrated, using the criteria in section 3.2, that AVACTA II is more appropriate for the specific application. In this case the model options/modes which are most appropriate for the application should be used.

b. *Input Requirements* (all time-varying)

A time-varying input is required at each computational step. Only those data which have changed need to be input by the user.

Source data requirements are: Coordinates, emission rates of primary and secondary pollutants, initial plume sigmas (for non-point sources), exit temperature, exit velocity, stack inside diameter.

Meteorological data requirements are: Surface wind measurements, wind profiles (if available), atmospheric stability profiles, mixing heights.

Receptor data requirements are: Receptor coordinates.

Other data requirements: Coordinates of the computational domain, grid cell specification, terrain elevations, user's computational and printing options.

c. *Output*

The model's output is provided according to user's printing flags. Hourly, 3-hour and 24-hour concentration averages are computed, together with highest and highest-second-highest concentration values. Both partial and total concentrations are provided.

d. *Type of Model*

AVACTA II is Gaussian segment/puff model.

e. *Pollutant Types*

AVACTA II can handle any couple of primary-secondary pollutants (e.g., SO_2 and SO_4=).

f. *Source Receptor Relationship*

The AVACTA II approach maintains the basic Gaussian formulation, but allows a numerical simulation of both nonstationary and nonhomogeneous meteorological conditions. The emitted pollutant material is divided into a sequence of "elements," either segments or puffs, which are connected together but whose dynamics are a function of the local meteorological conditions. Since the meteorological parameters vary with time and space, each element evolves according to the different meteorological conditions encountered along its trajectory.

AVACTA II calculates the partial contribution of each source in each receptor during each interval. The partial concentration is the sum of the contribution of all existing puffs, plus that of the closest segment.

g. *Plume Behavior*

The user can select the following plume rise formulas:

Briggs (1969, 1971, 1972)
CONCAWE (Briggs, 1975)
Lucas-Moore (Briggs, 1975)
User's function, i.e., a subroutine supplied by the user

With cold plumes, the program uses a special routine for the computation of the jet plume rise. The user can also select several computational options that control plume behavior in complex terrain and its total/partial reflections.

h. *Horizontal Winds*

A 3D mass-consistent wind field is optionally generated.

i. *Vertical Wind Speed*

A 3D mass-consistent wind field is optionally generated.

j. *Horizontal Dispersion*

During each step, the sigmas of each element are increased. The user can select the following sigma functions:

Pasquill-Gifford-Turner (in the functional form specified by Green et al., 1980)
Brookhaven (Gifford, 1975)
Briggs, open country (Gifford, 1975)
Briggs, urban, i.e., McElroy-Pooler, (Gifford, 1975)
Irwin (1979)
LO–LOCAT (MacCready et al., 1974)
User-specified function, by points
User-specified function, with a user's subroutine

The virtual distance/age concept is used for incrementing the sigmas at each time step.

k. *Vertical Dispersion*

During each step, the sigmas of each element are increased. The user can select the following sigma functions:

Pasquill-Gifford-Turner (in the functional form specified by Green et al., 1980)
Brookhaven (Gifford, 1975)
Briggs, open country (Gifford, 1975)
Briggs, urban, i.e., McElroy-Pooler, (Gifford, 1975)
LO–LOCAT (MacCready et al., 1974)
User-specified function, with a user's subroutine

The virtual distance/age concept is used for incrementing the sigmas at each time step.

l. *Chemical Transformation*

First order chemical reactions (primary-to-secondary pollutant).

m. *Physical Removal*

First order dry and wet deposition schemes.

n. *Evaluation Studies*

Zannetti P., G. Carboni and A. Ceriani, 1985. AVACTA II Model Simulations of Worst-Case Air Pollution Scenarios in Northern Italy. 15th International Technical Meeting on Air Pollution Modeling and Its Application, St. Louis, Missouri, April 15–19.

B.20 Shoreline Dispersion Model (SDM)

Reference

PEI Associates, 1988. User's Guide to SDM—A Shoreline Dispersion Model. EPA Publication No. EPA–450/4–88–017. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS No. PB 89–164305)

Availability

The user's guide is available from the National Technical Information Service. The model code is available on the Support Center for Regulatory Air Models Bulletin Board System (see page B–1).

Abstract

SDM is a hybrid multipoint Gaussian dispersion model that calculates source impact for those hours during the year when fumigation events are expected using a special fumigation algorithm and the MPTER regulatory model for the remaining hours (see Appendix A).

a. *Recommendations for Regulatory Use*

SDM may be used on a case-by-case basis for the following applications:

- Tall stationary point sources located at a shoreline of any large body of water;
- Rural or urban areas;
- Flat terrain;
- Transport distances less than 50 km;
- 1-hour to 1-year averaging times.

b. *Input Requirements*

Source data: Location, emission rate, physical stack height, stack gas exit velocity, stack inside diameter, stack gas temperature and shoreline coordinates.

Meteorological data: Hourly values of mean wind speed within the Thermal Internal Boundary Layer (TIBL) and at stack height; mean potential temperature over land and over water; over water lapse rate; and surface sensible heat flux. In addition to these meteorological data, SDM access standard NWS surface and upper air meteorological data through the RAMMET preprocessor.

Receptor data: coordinates for each receptor.

c. *Output*

Printed output includes the MPTER model output as well as: special shoreline fumigation applicability report for each day and source; high-five tables on the standard output with "F" designation next to the concentration if that averaging period includes a fumigation event.

d. *Type of Model*

SDM is hybrid Gaussian model.

e. *Pollutant Types*

SDM may be used to model primary pollutants. Settling and deposition are not treated.

f. *Source-Receptor Relationships*

SDM applies user-specified locations of stationary point sources and receptors. User input stack height, shoreline orientation and source characteristics for each source. No topographic elevation is input; flat terrain is assumed.

g. *Plume Behavior*

SDM uses Briggs (1975) plume rise for final rise. SDM does not treat stack tip or building downwash.

h. *Horizontal Winds*

Constant, uniform (steady-state) wind is assumed for an hour. Straight line plume transport is assumed to all downwind distances. Separate wind speed profile exponents (EPA, 1980) for both rural and urban cases are assumed.

i. *Vertical Wind Speed*

Vertical wind speed is assumed equal to zero.

j. *Horizontal Dispersion*

For the fumigation algorithm coefficients based on Misra (1980) and Misra and McMillan (1980) are used for plume transport in stable air above TIBL and based on Lamb (1978) for transport in the unstable air below the TIBL. An effective horizontal dispersion coefficient based on Misra and Onlock (1982) is used. For nonfumigation periods, algorithms contained in the MPTER model are used (see Appendix A).

k. *Vertical Dispersion*

For the fumigation algorithm, coefficients based on Misra (1980) and Misra and McMillan (1980) are used.

l. *Chemical Transformation*

Chemical transformation is not included in the fumigation algorithm.

m. *Physical Removal*

Physical removal is not explicitly treated.

n. *Evaluation Studies*

Environmental Protection Agency, 1987. Analysis and Evaluation of Statistical Coastal Fumigation Models. EPA Publication No. EPA–450/4–87–002. U.S. Environmental Protection Agency, Research Triangle Park, NC. (NTIS PB 87–175519)

B.20 WYNDvalley Model

Reference

Harrison, Halstead, 1992. "A User's Guide to WYNDvalley 3.11, an Eulerian-Grid Air-Quality Dispersion Model with Versatile Boundaries, Sources, and Winds," WYNDsoft Inc., Mercer Island, WA.

Availability

Copies of the user's guide and the executable model computer codes are available at a cost of $295.00 from: WYNDsoft, Incorporated, 6333 77th Avenue SE., Mercer Island, WA 98040. Phone: (206) 232–1819.

Abstract

WYNDvalley 3.11 is a multi-layer (up to five vertical layers) Eulerian grid dispersion model that permits users flexibility in defining borders around the areas to be modeled, the boundary conditions at these borders, the intensities and locations of emissions sources, and the winds and diffusivities that affect the dispersion of atmospheric pollutants. The model's output includes gridded contour plots of pollutant concentrations for the highest brief episodes (during any single time step), the highest and second-highest 24-hour averages, averaged dry and wet deposition fluxes, and a colored "movie" showing evolving dispersal of pollutant concentrations, together with temporal plots of the concentrations at specified receptor sites and statistical inference of the probabilities that standards will be exceeded at those sites. WYNDvalley is implemented on IBM® compatible microcomputers, with interactive data input and color graphics display.

a. *Recommendations for Regulatory Use*

WYNDvalley may be used on a case-by-case basis to estimate concentrations during valley stagnation periods of 24 hours or longer. Recommended inputs are listed below.

Variable Recommended Value

Horizontal cell dimension 250 to 500 meters
Vertical layers 3 to 5
Layer depth 50 to 100 meters
Background (internal to model)
Zero (background should be added externally to model estimates)
Lateral meander velocity default
Diffusivities default
Ventilation parameter (upper default boundary condition)
Dry deposition velocity zero (site-specific)
Washout ratio zero (site-specific)

b. *Input Requirements*

Input data, including model options, modeling domain boundaries, boundary conditions, receptor locations, source locations, and emission rates, may be entered interactively, or through existing template files from a previous run. Meteorological data, including wind speeds, wind directions, rain rates (optionally, for wet deposition calculations), and time of day and year, may be of arbitrary time increment (usually an hour) and are entered into the model through an external meteorological data file. Optionally, users may specify diffusivities and upper boundary conditions for each time increment. Source emission rates may be constant or modulated on a daily, weekly, and/or seasonal basis.

c. *Output*

Output from WYNDvalley includes gridded contour maps of the highest pollutant concentrations at each time step and the highest and second-highest 24-hour average concentrations. Output also includes the deposition patterns for wet, dry, and total fluxes of the pollutants to the surface, integrated over the simulation period. A running "movie" of the concentration patterns is displayed on the screen (with optional printout) as they evolve during the simulation. Output files include tables of daily-averaged pollutant concentrations at every modeled grid cell, and of hourly concentrations at up to eight specified receptors. Statistical analyses are performed on the hourly and daily data to estimate the probabilities that specified levels will be exceeded more than once during an arbitrary number of days with similar weather.

d. *Type of Model*

WYNDvalley is a three dimensional Eulerian grid model.

e. *Pollutant Types*

WYNDvalley may be used to model any inert pollutant.

f. *Source-Receptor Relationships*

Source and receptors may be located anywhere within the user-defined modeling domain. All point and area sources, or portions of an area source, within a given grid cell are summed to define a representative emission rate for that cell. Concentrations are calculated for each and every grid cell in the modeling domain. Up to eight grid cells may be selected as receptors, for which time histories of concentration and deposition fluxes are determined, and probabilities of exceedance are calculated.

g. *Plume Behavior*

Emissions for buoyant point sources are placed by the user in a grid cell which best reflects the expected effective plume height during stagnation conditions. Five vertical layers are available to the user.

h. *Horizontal Winds*

During each time step in the model, the winds are assumed to be uniform throughout the modeling domain. Numerical diffusion is minimized in the advection algorithm. To account for terrain effects on winds and dispersion, an ad hoc algorithm is employed in the model to distribute concentrations near boundaries.

i. *Vertical Wind Speed*

Winds are assumed to be constant with height.

j. *Horizontal Dispersion*

Horizontal eddy diffusion coefficients may be entered explicitly by the user at every time step. Alternatively, a default algorithm may be invoked to estimate these coefficients from the wind velocities and their variances.

k. *Vertical Dispersion*

Vertical eddy diffusion coefficients and a top-of-model boundary condition may be entered explicitly by the user at every time step. Alternatively, a default algorithm may be invoked to estimate these coefficients from the horizontal wind velocities and their variances, and from an empirical time-of-day correction derived from temperature gradient measurements and Monin-Obukhov similarities.

l. *Chemical Transformation*

Chemical transformation is not explicitly treated by WYNDvalley.

m. *Physical Removal*

WYNDvalley optionally simulates both wet and dry deposition. Dry deposition is proportional to concentration in the lowest layer, while wet deposition is proportional to rain rate and concentration in each layer. Appropriate coefficients (deposition velocities and washout ratios) are input by the user.

n. *Evaluation Studies*

Harrison, H., G. Pade, C. Bowman and R. Wilson, 1990. Air Quality During Stagnations: A Comparison of RAM and WYNDvalley with PM–10 Measurements at Five Sites. *Journal of the Air & Waste Management Association*, 40: 47–52.

Yoshida, C., 1990. A Comparison of WYNDvalley Versions 2.12 and 3.0 with PM–10 Measurements in Six Cities in the Pacific Northwest, Lane Regional Air Pollution Authority, Springfield, OR.

Maykut, N. et al., 1990. Evaluation of the Atmospheric Deposition of Toxic Contaminants to Puget Sound, State of Washington, Puget Sound Water Quality Authority, Seattle, WA.

B.21 Dense Gas Dispersion Model (DEGADIS)

Reference

Environmental Protection Agency, 1989. User's Guide for the DEGADIS 2.1—Dense Gas Dispersion Model. EPA Publication No. EPA–450/4–89–019. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. (NTIS No. PB 90–213893)

Availability

The model code is only available on the Support Center for Regulatory Air Models Bulletin Board System (see page B–1).

Abstract

DEGADIS 2.1 is a mathematical dispersion model that can be used to model the transport of toxic chemical releases into the atmosphere. Its range of applicability includes continuous, instantaneous, finite duration, and time-variant releases; negatively-buoyant and neutrally-buoyant releases; ground-level, low-momentum area releases; ground-level or elevated upwardly-directed stack releases of gases or aerosols. The model simulates only one set of meteorological conditions, and therefore should not be considered applicable over time periods much longer than 1 or 2 hours. The simulations are carried out over flat, level, unobstructed terrain for which the characteristic surface roughness is not a significant fraction of the depth of the dispersion layer. The model does not characterize the density of aerosol-type releases; rather, the user must assess that independently prior to the simulation.

a. *Recommendations for Regulatory Use*

DEGADIS can be used as a refined modeling approach to estimate short-term ambient concentrations (1-hour or less averaging times) and the expected area of exposure to concentrations above specified threshold values for toxic chemical releases. It is especially useful in situations where density effects are suspected to be important and where screening estimates of ambient concentrations are above levels of concern.

b. *Input Requirements*

Data may be input directly from an external input file or via keyboard using an interactive program module. The model is not set up to accept real-time meteorological data or convert units of input values. Chemical property data must be input by the user. Such data for a few selected species are available within the model. Additional data may be added to this data base by the user.

Source data requirements are: Emission rate and release duration; emission chemical and physical properties (molecular weight, density vs. concentration profile in the case of aerosol releases, and contaminant heat capacity in the case of a nonisothermal gas release; stack parameters (i.e., diameter, elevation above ground level, temperature at release point).

Meteorological data requirements are: Wind speed at designated height above ground, ambient temperature and pressure, surface roughness, relative humidity, and ground surface temperature (which in most cases can be adequately approximated by the ambient temperature).

Receptor data requirements are: Averaging time of interest, above-ground height of receptors, and maximum distance between receptors (since the model computes downwind receptor distances to optimize model performance, this parameter is used only for nominal control of the output listing, and is of secondary importance). No indoor concentrations are calculated by the model.

c. *Output*

Printed output includes in tabular form:

- Listing of model input data;
- Plume centerline elevation, mole fraction, concentration, density, and temperature at each downwind distance;
- σ_y and σ_z values at each downwind distance;
- Off-centerline distances to 2 specified concentration values at a specified receptor height at each downwind distance (these values can be used to draw concentration isopleths after model execution);
- Concentration vs. time histories for finite-duration releases (if specified by user).

The output print file is automatically saved and must be sent to the appropriate printer by the user after program execution.

No graphical output is generated by the current version of this program.

d. *Type of Model*

DEGADIS estimates plume rise and dispersion for vertically-upward jet releases using mass and momentum balances with air entrainment based on laboratory and field-scale data. These balances assume Gaussian similarity profiles for velocity, density, and concentration within the jet. Ground-level denser-than-air phenomena is treated using a power law concentration distribution profile in the vertical and a hybrid top hat-Gaussian concentration distribution profile in the horizontal. A power law specification is used for the vertical wind profile. Ground-level cloud slumping phenomena and air entrainment are based on laboratory measurements and field-scale observations.

e. *Pollutant Types*

Neutrally- or negatively-buoyant gases and aerosols. Pollutants are assumed to be non-reactive and non-depositing.

f. *Source-Receptor Relationships*

Only one source can be modeled at a time.

There is no limitation to the number of receptors; the downwind receptor distances are internally-calculated by the model. The DEGADIS calculation is carried out until the plume centerline concentration is 50% below the lowest concentration level specified by the user.

The model contains no modules for source calculations or release characterization.

g. *Plume Behavior*

Jet/plume trajectory is estimated from mass and momentum balance equations. Surrounding terrain is assumed to be flat, and stack tip downwash, building wake effects, and fumigation are not treated.

h. *Horizontal Winds*

Constant logarithmic velocity profile which accounts for stability and surface roughness is used.

The wind speed profile exponent is determined from a least squares fit of the logarithmic profile from ground level to the wind speed reference height. Calm winds can be simulated for ground-level low-momentum releases.

Along-wind dispersion of transient releases is treated using the methods of Colenbrander (1980) and Beals (1971).

i. *Vertical Wind Speed*

Not treated.

j. *Horizontal Dispersion*

When the plume centerline is above ground level, horizontal dispersion coefficients are based upon Turner (1969) and Slade (1968) with adjustments made for averaging time and plume density.

When the plume centerline is at ground level, horizontal dispersion also accounts for entrainment due to gravity currents as parameterized from laboratory experiments.

k. *Vertical Dispersion*

When the plume centerline is above ground level, vertical dispersion coefficients are based upon Turner (1969) and Slade (1968). Perfect ground reflection is applied.

In the ground-level dense-gas regime, vertical dispersion is also based upon results from laboratory experiments in density-stratified fluids.

l. *Chemical Transformation*

Not specifically treated.

m. *Physical Removal*

Not treated.

n. *Evaluation Studies*

Spicer, T. O. and J. A. Havens, 1986. Development of Vapor Dispersion Models for Nonneutrally Buoyant Gas Mixtures—Analysis of USAF/N_2O_4 Test Data. USAF Engineering and Services Laboratory, Final Report ESL–TR–86–24.

Spicer, T.O. and J.A. Havens, 1988. Development of Vapor Dispersion Models for Nonneutrally Buoyant Gas Mixtures—Analysis of TFI/NH_3 Test Data. USAF Engineering and Services Laboratory, Final Report.

o. *Operating Information*

The model requires either a VAX computer or an IBM®—compatible PC for its execution.

The model currently does not require supporting software. A FORTRAN compiler is required to generate program executables in the VAX computing environment. PC executables are provided within the source code; however, a PC FORTRAN compiler may be used to tailor a PC executable to the user's PC environment.

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Appendix C to Appendix W of Part 51—Example Air Quality Analysis Checklist

C.0 Introduction

This checklist recommends a standardized set of data and a standard basic level of analysis needed for PSD applications and SIP revisions. The checklist implies a level of detail required to assess both PSD increments and the NAAQS. Individual cases may require more or less information and the Regional Meteorologist should be consulted at an early stage in the development of a data base for a modeling analysis.

At pre-application meetings between source owner and reviewing authority, this checklist should prove useful in developing a concensus on the data base, modeling techniques and overall technical approach prior to the actual analyses. Such agreement will help avoid misunderstandings concerning the final results and may reduce the later need for additional analyses.

Example Air Quality Analysis Checklist [1]

1. Source location map(s) showing location with respect to:
- Urban areas.[2]
- PSD Class I areas
- Nonattainment areas [2]
- Topographic features (terrain, lakes, river valleys, etc.)[2]
- Other major existing sources [2]
- Other major sources subject to PSD requirements
- NWS meteorological observations (surface and upper air)
- On-site/local meteorological observations (surface and upper air)
- State/local/on-site air quality monitoring locations.[2]
- Plant layout on a topographic map covering a 1km radius of the source with information sufficient to determine GEP stack heights.

2. Information on urban/rural characteristics:
- Land use within 3km of source classified according to Auer (1978): Correlation of land use and cover with meteorological anomalies. Journal of Applied Meteorology, 17: 636–643.
- Population.
—>total
—>density
- Based on current guidance determination of whether the area should be addressed using urban or rural modeling methodology.

3. Emission inventory and operating/design parameters for major sources within region of significant impact of proposed site (same as required for applicant)
- Actual and allowable annual emission rates (g/s) and operating rates.[3]
- Maximum design load short-term emission rate (g/s).[3]
- Associated emissions/stack characteristics as a function of load for maximum, average, and nominal operating conditions if stack height is less than GEP or located in complex terrain. Screening analyses as footnoted on page 1 or detailed analyses, if necessary, must be employed to determine the constraining load condition (e.g., 50%, 75%, or 100% load) to be relied upon in the short-term modeling analysis.
—Location, Universal Transverse Mercators [UTM's)
—Height of stack (m) and grade level above Mean Sea Level (MSL)
—Stack exit diameter (m)
—Exit velocity (m/s)
—Exit temperature (°K)
- Area source emissions (rates, size of area, height of area source).[3]
- Location and dimensions of buildings (plant layout drawing).
—To determine GEP stack height
—To determine potential building downwash considerations for stack heights less than GEP
- Associated parameters.
—Boiler size (megawatts, pounds/hr. steam, fuel consumption, etc.)
—Boiler parameters (% excess air, boiler type, type of firing, etc.)
—Operating conditions (pollutant content in fuel, hours of operation, capacity factor, % load for winter, summer, etc.)
—Pollutant control equipment parameters (design efficiency, operation record, e.g., can it be bypassed?, etc.)
- Anticipated growth changes.

4. Air quality monitoring data:
- Summary of existing observations for latest five years (including any additional quality assured measured data which can be obtained from any state or local agency or company).[4]
- Comparison with standards.
- Discussion of background due to uninventoried sources and contributions from outside the inventoried area and description of the method used for determination of background (should be consistent with the Guideline on Air Quality Models).

5. Meteorological data:
- Five consecutive years of the most recent representative sequential hourly National Weather Service (NWS) data, or one or more years of hourly sequential on-site data.
- Discussion of meteorological conditions observed [as applied or modified for the site-specific area, i.e., identify possible variations due to difference between the monitoring site and the specific site of the source).
- Discussion of topographic/land use influences.

6. Air quality modeling analyses:
- Model each individual year for which data are available with a recommended model or model demonstrated to be acceptable on a case-by-case basis.
—Urban dispersion coefficients for urban areas
—Rural dispersion coefficients for rural areas
- Evaluate downwash if stack height is less than GEP.
- Define worst case meteorology.
- Determine background and document method.
—Long-term
—Short-term
- Provide topographic map(s) of receptor network with respect to location of all sources.
- Follow current guidance on selection of receptor sites for refined analyses.
- Include receptor terrain heights (if applicable) used in analyses.
- Compare model estimates with measurements considering the upper ends of the frequency distribution.
- Determine extent of significant impact; provide maps.
- Define areas of maximum and highest, second-highest impacts due to applicant source (refer to format suggested in Air Quality Summary Tables).
—>long-term
—>short-term

7. Comparison with acceptable air quality levels:
- NAAQS.
- PSD increments.
- Emission offset impacts if nonattainment.

8. Documentation and guidelines for modeling methodology:
- Follow guidance documents.
—>"Guideline on Air Quality Models, Revised" (EPA–450/2–78–027R)
—>"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised" (EPA–450/R–92–019), 1992
—>"Guideline for Determination of Good Engineering Practice Stack Height [Technical Support Document for the Stack Height Regulations]" (EPA–450/4–80–023R), 1985
—>"Ambient Monitoring Guidelines for PSD" (EPA–450/4–87–007), 1987
—>"Requirements for Preparation, Adoption and Submittal of Implementation Plans: Approval and Promulgation of Implementation Plans", 40 CFR Parts 40 and 51 (Prevention of Significant Deterioration), 1982

[1] The "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised", October 1992 (EPA–450/R–92–019), should be used as a screening tool to determine whether modeling analyses are required. Screening procedures should be refined by the user to be site/problem specific. (Available from NTIS as document EPA–450/R–92–019. NTIS number to be provided).

[2] Within 50km or distance to which source has a significant impact, whichever is less.

[3] Particulate emissions should be specified as a function of particulate diameter and density ranges.

[4] See footnote 2 of this checklist.

AIR QUALITY SUMMARY—FOR NEW SOURCE ALONE

[Pollutant: _____[1] _____[2] _____[2]]

	Highest	Highest 2nd high	Highest	Highest 2nd high	Annual
Concentration Due to Modeled Source (µg/m³)					
Background Concentration (µg/m³)					
Total Concentration (µg/m³)					
Receptor Distance (km) (or UTM Easting)					
Receptor Direction (°) (or UTM Northing)					
Receptor Elevation (m)					
Wind Speed (m/s)					
Wind Direction (°)					

[1] Use separate sheet for each pollutant (SO_2, TSP, CO, NO_2, HC, Pb, Hg, Asbestos, etc.)
[2] List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

Mixing Depth (m)
Temperature (°K)
Stability
Day/Month/Year of Occurrence

Surface Air Data From _____
Surface Station Elevation (m) _____
Anemometer Height Above Local Ground Level (m) _____

Upper Air Data From _____
Period of Record Analyzed _____
Model Used _____
Recommended Model _____

AIR QUALITY SUMMARY—FOR ALL NEW SOURCES

[Pollutant: _____[1] _____[2] _____[2]]

	Highest	Highest 2nd High	Highest	Highest 2nd High	Annual
Concentration Due to Modeled Source (µg/m³)					
Background Concentration (µg/m³)					
Total Concentration (µg/m³)					
Receptor Distance (km) (or UTM Easting)					
Receptor Direction (°) (or UTM Northing)					
ptor Elevation (m)					
Wind Speed (m/s)					
Wind Direction (°)					

[1] Use separate sheet for each pollutant (SO_2, TSP, CO, NO_2, HC, Pb, Hg, Asbestos, etc.)
[2] List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

Mixing Depth (m)
Temperature (°K)
Stability
Day/Month/Year of Occurrence

Surface Air Data From _____
Surface Station Elevation (m) _____
Anemometer Height Above Local Ground Level (m) _____

Upper Air Data From _____
Period of Record Analyzed _____
Model Used _____
Recommended Model

AIR QUALITY SUMMARY—FOR ALL SOURCES

Pollutant: [_____[1] _____[2] _____[2]]

	Highest	Highest 2nd high	Highest	Highest 2nd high	Annual
Concentration Due to Modeled Source (µg/m³)					
Background Concentration (µg/m³)					
Total Concentration (µg/m³)					
Receptor Distance (km) (or UTM Easting)					
Receptor Direction (°) (or UTM Northing)					
Receptor Elevation (m)					
Wind Speed (m/s)					
Wind Direction (°)					

[1] Use separate sheet for each pollutant (SO_2, TSP, CO, NO_2, HC, Pb, Hg, Asbestos, etc.)
[2] List all appropriate averaging periods (1-hr, 3-hr, 8-hr, 24-hr, 30-day, 90-day, etc.) for which an air quality standard exists.

Mixing Depth (m)
Temperature (°K)
Stability
Day/Month/Year of Occurrence

Surface Air Data From _____
Surface Station Elevation (m) _____
Anemometer Height Above Local Ground Level (m) _____
Upper Air Data From _____

Period of Record Analyzed _____
Model Used _____
Recommended Model _____

STACK PARAMETERS FOR ANNUAL MODELING

Stack (m) No. length	Serving emission rate for each pollutant (g/s)	Stack exit diameter (m)	Stack exit velocity (m/s)	Stack exit temperture (°K)	Physical stack height (m)	GEP stack ht. (m)	Stack base elevation (m)	Building dimensions	
								Height	Width

STACK PARAMETERS FOR SHORT-TERM MODELING[1]

Stack (m) No. length	Serving emission rate for each pollutant (g/s)	Stack exit diameter (m)	Stack exit velocity (m/s)	Stack exit temperture (°K)	Physical stack height (m)	GEP stack ht. (m)	Stack base elevation (m)	Building dimensions	
								Height	Width

[1] Separate tables for 50%, 75%, 100% of full operating condition (and any other operating conditions as determined by screening or detailed modeling analyses to represent constraining operating conditions) should be provided.

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for part 52 is revised to read as follows:

Authority: 42 U.S.C. 7401–7642.

§ 52.21 [Amended]

2. In § 52.21, paragraph (l)(1) is revised to read as follows; paragraph (l)(2) is amended by revising "the 'Guideline on Air Quality Models (Revised)' (1986) and Supplementary A (1987)" to read "appendix W of part 51 of this chapter ('Guideline on Air Quality Models (Revised)' (1986), supplement A (1987) and supplement B (1993))".

§ 52.21 Prevention of significant deterioration of air quality.

* * * * *

(l) * * *

(1) All estimates of ambient concentrations required under this paragraph shall be based on the applicable air quality models, data bases, and other requirements specified in appendix W of part 51 of this chapter ("Guideline on Air Quality Models (Revised)" (1986), supplement A (1987) and supplement B (1993)). The Guideline and its supplements (EPA Publication No. 450/2–78–027R) are also for sale from the U.S. Department of Commerce, National Technical Information Service, 5825 Port Royal Road, Springfield, VA, 22161.

* * * * *

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM, GENERAL

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

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

§ 260.11 [Amended]

2. Section 260.11 is amended by revising the last reference in paragraph (a) to read as follows:

§ 260.11 References.

* * * * *

"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised", October 1992, EPA Publication No. EPA–450/R–92–019, Environmental Protection Agency, Research Triangle Park, NC.

* * * * *

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

1. The authority citation for part 266 is revised to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6934.

Appendix X—[Removed]

2. Part 266 is amended by removing appendix X.

3. Section 266.104 is amended by revising paragraph (e)(3) to read as follows:

§ 266.104 Standards to control organic emissions.

* * * * *

(e) * * *

(3) Conduct dispersion modeling using methods recommended in appendix W of part 51 of this chapter ("Guideline on Air Quality Models (Revised)" (1986) and its supplements), the "Hazardous Waste Combustion Air Quality Screening Procedure", provided in appendix IX of this part, or in Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (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 concentration must be used when a person resides on-site; and

* * * * *

4. Section 266.106 is amended by revising paragraph (h) to read as follows:

§ 266.106 Standards to control metals emissions.

* * * * *

(h) *Dispersion Modeling.* Dispersion modeling required under this section shall be conducted according to methods recommended in appendix W of part 51 of this chapter ("Guideline on Air Quality Models (Revised)" (1986) and its supplements), the "Hazardous Waste Combustion Air Quality Screening Procedure", provided in appendix IX of this part, or in Screening Procedures for Estimating the Air

Quality Impact of Stationary Sources, Revised (incorporated by reference in § 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.

* * * * *

[FR Doc. 93–16867 Filed 7–19–93; 8:45 am]
BILLING CODE 6560–50–P

Revision Checklist 126 Summary

Rule 1 Title:	Testing and Monitoring Activities
Rule 2 Title:	Testing and Monitoring Activities, Land Disposal Restrictions Correction
Checklist Title:	Testing and Monitoring Activities
Reference:	58 FR 46040-46051 and 59 FR 47980-47982
Promulgation Date:	August 31, 1993 and September 19, 1994
Effective Date:	August 31, 1993 and August 31, 1993
Cluster:	RCRA Cluster IV
Provision Type:	HSWA/Non-HSWA
Linkage:	Revision Checklists 11, 35, 67 and 73
Optional:	No

Summary: The August 31 (58 FR 46040) rule replaces the current Second Edition (including Updates I and II) of the EPA-approved "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, by incorporating by reference the Third Edition (and its first update) in § 260.11. This rule also revises Part 261 Appendices II (Method 1311, Toxicity Characteristic Leaching Procedure) and III (Chemical Analysis Test Methods) to refer directly to SW-846; deletes Part 261 Appendix X (Method of Analysis for Chlorinated Dibenzo-p-dioxins and Dibenzofurans); and revises Part 268 Appendices I (Toxicity Characteristic Leaching Procedure) and IX (Extraction Procedure Toxicity Test) to refer to SW-846. In conjunction with these changes, various references to the methods formerly contained in these appendices are changed to refer directly to SW-846.

The September 19th (59 FR 47980) rule corrects the unintended removal of text from 40 CFR 268.7(a) by August rule. Paragraph 268.7(a) sets out the generator waste analysis and recordkeeping requirements of the land disposal restrictions under Subtitle C of RCRA. The August rule revised the reference to Appendix IX of Part 268 to refer to SW-846 Methods 1311 and 1310, instead. The Agency had intended to revise only the introductory text of 268.7(a) and to retain without changing the subparagraphs following the introductory text. Due to an inadvertent administrative error the subparagraphs following the introduction were removed. The September rule makes clear that it was not the Agency's intention to remove these paragraphs and that they remain in effect, and are regarded by the Agency, to have been in effect continuously in the form published in the CFR revised as of July 1, 1993. For this reason, the September rule was not made into a separate checklist.

State Authorization: These rules are placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). The changes for all provisions except 261.22, 261.24, and Appendix II, Part 261, do not go into effect until States become authorized for them because this rule was promulgated under pre-HSWA authorities. Only final authorization is available. The changes to 261.22, 261.24, Appendix II, Part 261 and 268.7(a) affect the Toxicity Characteristic and the TCLP, both of which were added due to HSWA authority. Thus, these changes are considered HSWA provisions and go into effect immediately. Both interim and final authorization are available, with interim authorization expiring on January 1, 2003. The State Revision Application must

Revision Checklist 126 Summary (cont'd)

include applicable regulations, AG statement addendum, Revision Checklist 126, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following new entry should be placed at Subsection I BB in the Model Revision Attorney General's Statement.

> BB. State statutes and regulations replace the current Second Edition (including Updates I and II) of the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, by incorporating by reference the Third Edition (and its first update) of this test methods manual. Throughout the State's code, references to test methods directly refer to the methods as they are found in SW-846, as indicated in Revision Checklist 126.
>
> Federal Authority: RCRA §§1006; 2002, 3001, 3002, 3004, 3005, 3006, 3010, and 3014; 40 CFR 260.11(a); 260.22(d)(1)(i); 261.22(a)(1)&(2); 261.24(a); 261 Appendices II, III, and X; 264.190(a); 264.314(c); 265.190(a); 265.314(d); 268.7(a); 268.40(a); 268.41(a); 268 Appendices I & IX; 270.6(a); 270.19(c)(1)(iii)&(iv); 270.62(b)(2)(i)(C)&(D); and 270.66(c)(2)(i)&(ii) as amended August 31, 1993 (58 FR 46040) and September 19, 1994 (59 FR 47980).
>
> Citation of Laws and Regulations: Date of Enactment and Adoption
>
> Remarks of the Attorney General

The following should replace the entry at Subsection I F in the Model Revision Attorney General's Statement:

> F. State statutes and regulations incorporate the second edition and updates to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) as indicated in Revision Checklists 11, 35, and 126.
>
> Federal Authority: RCRA §§2002, 3001; 40 CFR 260.11, 260.21 and 270.6(a) as amended December 4, 1984 (49 FR 47390), March 16, 1987 (52 FR 8072) and August 31, 1993 (58 FR 46040).
>
> Citation of Laws and Regulations: Date of Enactment and Adoption
>
> Remarks of the Attorney General

RCRA REVISION CHECKLIST 126

Testing and Monitoring Activities
58 FR 46040-46051
August 31, 1993
as amended September 19, 1994, at 59 FR 47980-47982
(RCRA Cluster IV, HSWA/Non-HSWA provisions)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL						
SUBPART B - DEFINITIONS						
REFERENCES						
revise reference to "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods" to refer to third edition; add ASTM Method E926-88 to the end of the list of publications incorporated by reference; remove unnumbered paragraph and list of analytical testing methods; remove footnote 1 following the list of publications incorporated by reference	260.11(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCO
SUBPART C - RULEMAKING PETITIONS						
PETITIONS TO AMEND PART 261 TO EXCLUDE A WASTE PRODUCED AT A PARTICULAR FACILITY						
add "of this chapter" after "part 261"; replace "appendix III" with reference to "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	260.22(d)(1)(i)					
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE						
SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE						
CHARACTERISTIC OF CORROSIVITY						
remove text after "using" and replace with reference to Method 9040 in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	261.22(a)(1)					
after "Test Methods for", replace "the Evaluation of" with "Evaluating"; change "(incorporated by reference, see § 260.11)" to ", as incorporated by reference in 260.11 of this chapter."; remove the rest of the paragraph	261.22(a)(2)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
TOXICITY CHARACTERISTIC						
replace "test methods described in appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21" with reference to the TCLP in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods" as incorporated by reference at 260.11; replace "Appendix II" with "Method 1311"	261.24(a)					
APPENDIX II TO PART 261						
METHOD 1311 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)						
replace TCLP with note referencing the TCLP in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	Appendix II					
APPENDIX III TO PART 261						
CHEMICAL ANALYSIS TEST METHODS						
replace introductory paragraphs and tables 1, 2, and 3 with note referencing Chapter 2 of "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	Appendix III					
APPENDIX X TO PART 261						
METHOD OF ANALYSIS FOR CHLORINATED DIBENZO-P-DIOXINS AND -DIBENZOFURANS						

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT *	BROADER IN SC
remove	Appendix X					
PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES						
SUBPART J - TANK SYSTEMS						
APPLICABILITY						
replace "EPA" with "the following test must be used:"; change "Wastes" to "Waste"; add comma after "Physical/ Chemical Methods"; remove parentheses from "(EPA Publication No. SW-846)"; remove "No."; replace "must be used" with ", as incorporated by reference in § 260.11 of this chapter"	264.190(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART N - LANDFILLS						
SPECIAL REQUIREMENTS FOR BULK AND CONTAINERIZED LIQUIDS						
change "Wastes" to "Waste"; change the period after "Physical/ Chemical Methods" to a comma; remove brackets from "[EPA Publication No. SW-846]"; remove "No."; add ", as incorporated by reference in § 260.11 of this chapter" at end of sentence	264.314(c)					
PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES						
SUBPART J - TANK SYSTEMS						
APPLICABILITY						
replace first occurrence of "EPA" with "the following test must be used:"; change "Wastes" to "Waste"; add comma after "Physical/ Chemical Methods"; remove parentheses from "(EPA Publication No. SW-846)"; remove "No."; replace "must be used" with ", as incorporated by reference in § 260.11 of this chapter"	265.190(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SC
SUBPART N - LANDFILLS						
SPECIAL REQUIREMENTS FOR BULK AND CONTAINERIZED LIQUIDS						
change "Wastes" to Waste"; after "Physical/Chemical Methods", change the period to a comma; remove brackets from "[EPA Publication No. SW-846]"; remove "No."; add ", as incorporated by reference in § 260.11 of this chapter" at end of sentence	265.314(d)					

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 268 - LAND DISPOSAL RESTRICTIONS						
	SUBPART A - GENERAL						
	WASTE ANALYSIS AND RECORDKEEPING						
1	add comma after first "§ 268.32"; replace "test method described in part 261, appendix II" with reference to the TCLP in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"; remove "of this chapter" after "subpart C"; replace "test method described in appendix IX of this part" with reference to the EP toxicity test in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"; change "his" to "this" before "waste displays"; remove "of this part" after "§ 268.2"	268.7(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SC
SUBPART D - TREATMENT STANDARDS						
APPLICABILITY OF TREATMENT STANDARDS						
replace "the test method in appendix II of part 261" with "Method 1311, the Toxicity Characteristic Leaching Procedure"; replace "the test method in 40 CFR part 261, appendix II, or the test method in appendix IX of this part" with reference to Methods 1310 and 1311; add sentence, at end of paragraph, regarding Methods 1310 and 1311 in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	268.40(a)					
TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT						
replace "the test method in appendix I of this part" with "Method 1311, the Toxicity Characteristic Leaching Procedure,"; add sentence regarding Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods" at end of paragraph	268.41(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
APPENDIX I TO PART 268						
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)						
replace note regarding TCLP in Appendix II of part 261 with note regarding TCLP in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	268 Appendix I					
APPENDIX IX TO PART 268						
EXTRACTION PROCEDURE (EP) TOXICITY TEST METHOD AND STRUCTURAL INTEGRITY TEST (METHOD 1310)						
replace EP Toxicity Test method with note regarding EP in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods"	268 Appendix IX					
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM						
SUBPART A - GENERAL INFORMATION						
REFERENCES						
replace information on "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods" with reference to 260.11	270.6(a)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCO
SUBPART B - PERMIT APPLICATION						
SPECIFIC PART B INFORMATION REQUIREMENTS FOR INCINERATORS						
in the last sentence, change "methods for the evaluation of" to "Methods for Evaluating"; add a comma after "Physical/Chemical Methods"; replace "(incorporated by reference, see § 270.6 and referenced in 40 CFR part 261, appendix III)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.19(c)(1)(iii)					
change "the Evaluation of" to "Evaluating"; add a comma after "Physical/Chemical Methods"; replace "(incorporated by reference, see § 270.6)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.19(c)(1)(iv)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART F - SPECIAL FORMS OF PERMITS						
HAZARDOUS WASTE INCINERATOR PERMITS						
in the last sentence, change "the Evaluation of" to "Evaluating"; add a comma after "Physical/Chemical Methods"; replace "(incorporated by reference, see § 270.6)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.62(b)(2)(i)(C)					
change "the Evaluation of" to "Evaluating"; replace "(incorporated by reference, see § 270.6)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.62(b)(2)(i)(D)					

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SC
PERMITS FOR BOILERS AND INDUSTRIAL FURNACES BURNING HAZARDOUS WASTE						
in the last sentence, insert "waste" before "analysis"; add opening quotation mark before "Test"; add comma and closing quotation mark after "Physical/ Chemical Methods"; replace "(incorporated by reference, see § 270.6)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.66(c)(2)(i)					
add opening quotation mark before "Test Methods"; add comma and closing quotation mark after "Physical/ Chemical Methods"; replace "(incorporated by reference, see § 270.6)" with "EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6"	270.66(c)(2)(ii)					

1/ The September 19 (59 FR 47980) rule indicates that it was not EPA's intention to remove the subparagraphs of 268.7(a) as the August 31, 1993 rule (58 FR 46040) implied. The provisions have remained in affect continuously in the form published in the CFR revised as of July 1, 1993.

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, 268, and 270

[FRL-3961-7]

RIN 2050-AC32

Hazardous Waste Management System; Testing and Monitoring Activities

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA or Agency) is amending its hazardous waste regulations under subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, for testing and monitoring activities. These amendments replace the current Second Edition, including Updates I and II, of the EPA approved test methods manual "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, by incorporating by reference the Third Edition (and its first update) into the RCRA regulations. These amendments also revise Appendices II—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP) and III—Chemical Analysis Test Methods to 40 CFR part 261, delete Appendix X—Method of Analysis for Chlorinated Dibenzo-p-dioxins and Dibenzofurans, Method 8280, to 40 CFR part 261, and revise Appendices I—Toxicity Characteristic Leaching Procedure (TCLP) and X—Extraction Procedure (EP) Toxicity Test, to 40 CFR part 268. This action is necessary to provide better and more complete analytical test methods for RCRA-related testing. The intent of this amendment is to provide up-to-date technologies in order to promote cost effectiveness and flexibility in choosing analytical test methods.

EFFECTIVE DATE: August 31, 1993. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of August 31, 1993.

ADDRESSES: The official record for this rulemaking (Docket No. F-93-WTMF-FFFFF) is located at the U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 (room M-2427), and is available for viewing 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) 260-9327. 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.

Copies of the Third Edition of SW-846 and of Update I to the Third Edition are part of the official docket for this rulemaking, and also are available from the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402, (202) 783-3238. The GPO document number is 955-001-00000-1. New subscriptions to SW-846 may be ordered from GPO at a cost of $319.00. Those persons who have copies of the Third Edition of SW-846 that were purchased from GPO and wish to receive the final version of Update I and future revisions can do so by renewing their subscriptions with GPO for $221.00. There is a 25% surcharge for foreign subscriptions and renewals.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline at (800) 424-9346 (toll free) or call (703) 920-9810; or, for hearing impaired, call TDD (800) 553-7672 or (703) 486-3323. For technical information, contact Kim Kirkland, Office of Solid Waste (OS-331), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 260-4761.

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I. Authority

These regulations are being promulgated under the authority of sections 1006, 2002, 3001, 3002, 3004, 3005, 3006, 3010, and 3014 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (commonly known as RCRA), as amended [42 U.S.C. 6905, 6912, 6921, 6922, 6924, 6925, 6926, 6930, and 6935].

II. Background Summary and Regulatory Framework

EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," contains the analytical and test methods that EPA has evaluated and found to be among those acceptable for testing under Subtitle C of the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. Use of some of these methods

is required by specific regulations, as discussed below. All of these methods are intended to promote accuracy, sensitivity, specificity, precision, and comparability of analyses and test results.

Several of the hazardous waste regulations under Subtitle C of RCRA require that specific testing methods described in SW–846 be employed for certain applications. Any reliable analytical method may be used to meet other requirements in 40 CFR Parts 260 through 270. For the convenience of the reader, the Agency lists below a number of sections found in 40 CFR parts 260 through 270 that require the use of a specific method for a particular application, or the use of appropriate SW–846 methods in general:

(1) Section 260.22(d)(1)(i)—Submission of data in support of petitions to exclude a waste produced at a particular facility (*i.e.*, delisting petitions);

(2) Section 261.22(a)(1) and (2)—Evaluation of waste against the corrosivity characteristic;

(3) Section 261.24(a)—Leaching procedure for evaluation of a waste against the toxicity characteristic;

(4) Sections 264.190(a), 264.314(c), 265.190(a), and 265.314(d)—Evaluation of a waste to determine if free liquid is a component of the waste;

(5) Section 266.112(b)(1)—Certain analysis in support of exclusion from the definition of a hazardous waste of a residue which was derived from burning hazardous waste in boilers and industrial furnaces;

(6) Section 268.32(i)—Evaluation of a waste to determine if it is a liquid for purposes of certain land disposal prohibitions;

(7) Sections 268.40(a), 268.41(a), and 268.43(a)—Leaching procedure for evaluation of waste extract to determine compliance with Land Disposal treatment standards;

(8) Sections 270.19(c)(1) (iii) and (iv), and 270.62(b)(2)(i) (C) and (D)—Analysis and approximate quantification of the hazardous constituents identified in the waste prior to conducting a trial burn in support of an application for a hazardous waste incineration permit; and

(9) Sections 270.22(a)(2)(ii)(B) and 270.66(c)(2) (i) and (ii)—Analysis conducted in support of a destruction and removal efficiency (DRE) trial burn waiver for boilers and industrial furnaces burning low risk wastes, and analysis and approximate quantitation conducted for a trial burn in support of an application for a permit to burn hazardous waste in a boiler and industrial furnace.

In other situations, this EPA publication functions as a guidance document setting forth acceptable, although not required, methods to be implemented by the user, as appropriate, in responding to RCRA-related sampling and analysis requirements.

SW–846 is a document that will change over time as new information and data are developed. Advances in analytical instrumentation and techniques are continually reviewed by the Agency's Office of Solid Waste (OSW) and periodically incorporated into SW–846 to support changes in the regulatory program and to improve method performance. Therefore, EPA solicits any available data and information that may affect the usefulness of SW–846.

III. Response to Comments From the January 23, 1989 NPRM

A. Overview of Proposed Rule

On January 23, 1989 (54 FR 3212–3229), the Agency proposed to amend its hazardous waste testing and monitoring regulations under subtitle C of RCRA by: (1) Adding new methods to SW–846; (2) revising existing methods in SW–846; (3) requiring the use of the Third Edition, as amended by Update I, for all testing for which SW–846 methods are specifically mandated in current Subtitle C regulations; and (4) requiring the use of minimum Quality Control procedures found in Chapter One of SW–846 for all testing pursuant to Subtitle C of RCRA. The proposal discussed in detail the advantages of the Third Edition over the Second Edition, including the Third Edition's use of a standard method format and the inclusion of a number of new and revised methods in the Third Edition.

The Agency solicited comments on each of these proposed changes. Items B through D of this section summarize the comments that were received and the actions taken by the Agency in response to those comments.[1]

B. Substitution of the Third Edition for the Second Edition Including Addition of New Methods and Revision of Existing Methods

The Agency proposed to replace the Second Edition of SW–846, including Updates I and II of the Second Edition, with methods contained in the Third Edition, as amended by Update I of the Third Edition. The Agency proposed this substitution because the methods contained in the Third Edition as amended by Update I expand the scope of the Second Edition or are improved versions of the methods in the Second Edition.

Except as discussed below and in the background document in the official record for this rulemaking, the Agency did not receive any significant negative comments on the proposal to replace the Second Edition of SW–846 methods with the versions contained in the Third Edition as amended by Update I. Therefore, the Agency has made this replacement by revising 40 CFR 260.11 to incorporate the Third Edition as amended by Update I by reference. Consistent with that change, a footnote in 40 CFR 260.11 discussing a distinction between the Second and Third Edition has been deleted. A listing of all parts found in the Third Edition of SW–846 as amended by Update I is provided below:[2]

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[1] Other comments, together with the Agency's response thereto, have been placed in the official record for this rulemaking. (Docket No. F–88–WTMP–FFFFF)

[2] A suffix of "A" in the method number indicates revision one (the method has been revised once).

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In compiling the Third Edition of SW–846, the Agency revised many methods in the Second Edition, reprinted some methods from the Second Edition unaltered (except for format), and added many new methods. The Agency requested comments specifically on the new and revised methods in its January 23, 1989 proposal.

The comments received by the Agency on the addition of new methods and revision of existing methods were technical in nature. Specific details on these comments and the Agency's response to significant comments may be found in the background document to this rulemaking. The Agency has incorporated the majority of the suggested changes into the final Update I package, as described in detail in the background document. Some of the comments raised issues that resulted in additional proposed technical clarifications set forth in the February 8, 1990, Notice of Data Availability and Reopening of Comment Period. A discussion of the comments received on the February 8 notice is provided in section IV of this preamble.

C. Methods Format

In response to earlier comments, the Agency proposed to adopt a standardized ten-part format for all of its methods. This format was developed by technical experts from within EPA to clarify the methods and ensure uniform application and consideration of technical details in its methods.

The Agency did not receive any substantial comments on this issue has therefore revised the SW–846 methods according to the proposed format.

D. Mandatory Use of Revised Chapter One

The Agency proposed to replace the existing Chapter One of the Third Edition with a revised version, and to make selected Quality Assurance and Quality Control procedures in the revised Chapter One mandatory for all RCRA testing. This proposal was made to ensure that any data used to make decisions regarding RCRA compliance would be of known and documented quality.

The Agency's proposal to replace Chapter One of SW–846 with a revised Chapter One and to require use of selected sections of Chapter One for all testing pursuant to Subtitle C of RCRA was commented on extensively. In evaluating these comments, the Agency further revised the proposed Chapter One and solicited comments on the revisions on February 8, 1990 (55 FR 4440–4445). At that time, the Agency declared its intention to make all of Chapter One mandatory for RCRA testing and requested comment on change. Comments received in res to the February 8, 1990 notice are discussed below in section IV. As stated in section IV, the Agency has decided not to finalize the mandatory use of Chapter One at this time.

IV. Response to Comments From the February 8, 1990 Notice

A. Overview of Notice

On February 8, 1990, a Notice of Data Availability and Reopening of Comment Period was published in the Federal Register (55 FR 4440–4445). Issued with this notice was a revised Chapter One of SW–846 entitled "Report on Minimum Criteria to Assure Data Quality" (document number EPA/530–SW–90–021). The revisions were, to a large extent, based on comments received on the January 23, 1989 proposal. The Agency requested comments on eleven topics generally related to quality control definitions and parameters which included the deletion of appendices III and X to 40 CFR part 261.

The notice stated that the Agency was considering making the revised Chapter One mandatory for all RCRA testing, with the exclusion of certain reasonable and legitimate exceptions noted w the notice. Items B through K of t section summarize the major comments that were received and the action taken by the Agency as a result of those

comments. A complete description of all significant comments and the Agency's responses may be found in the background document to this rulemaking.

B. Revised Chapter One

The Agency received many comments regarding the proposed revisions to Chapter One and the proposal to make all of Chapter One mandatory for RCRA testing. Comments were received regarding two major issues, which included: (1) The mandatory use of Chapter One for all RCRA analyses, and (2) the apparent discrepancy between Agency and regulated community requirements.

Several commenters, primarily analytical laboratories, objected to the mandatory use of Chapter One because they felt it could not be implemented in practical terms. They pointed out that, under Chapter One, each project would require individual Quality Assurance Project Plans (QAPjPs) and that a laboratory taking samples from many clients could not, in any practical way, attempt to meet the different QAPjPs for each client. Furthermore, one commenter argued that the laboratory performing the analyses should not be required to write different QAPjPs for each project.

The Agency has noted some confusion regarding whether it intended that the responsibility for producing the QAPjP lies with the laboratory or the member of the regulated community that provides the samples. The Agency believes that the member of the regulated community should be responsible for ensuring that a QAPjP is prepared because the burden of complying with the analytical requirements in the Agency's hazardous waste regulations is placed upon generators, transporters, and owners and operators of hazardous waste management facilities, not laboratories or consultants they may employ. In addition, the member of the regulated community is the only one in a position to know such things as how the data will be used, what decisions the data will support, and the required precision and accuracy of the measurements. The laboratory performing the measurements may not be in a position to know these details. Therefore, the Agency believes that the member of the regulated community should be responsible for the preparation of the QAPjP (*i.e.*, selection of the required methods, accuracy, precision, and sensitivity of the analysis). This is no different from the current situation that prevails in the laboratory services sector. The laboratory is responsible for meeting the requirements established by the client. This might require lower detection limits or better precision for some projects than for others. The Agency recognizes that, in a laboratory production environment, different samples with different analytical requests can present a management problem. The Agency believes, however, that laboratories already face such problems when meeting client needs, and are able to develop appropriate solutions.

Other commenters objected to the mandatory use of the Chapter One QA/QC procedures for all RCRA testing, since the Agency does not require the use of the methods contained in SW-846 for all RCRA testing. They argued that Chapter One of SW-846 should not apply when the methods in SW-846 are not being used.

In addressing this comment, the Agency notes the difference between the mandatory use of an analytical method and the proposed imposition of mandatory QC. These two items are distinct and different. The proposed QC requirements were designed to ensure that, no matter what method was used, the resulting data would be of known and documented quality. The Agency believes that the regulated community should be given as much flexibility as possible in selecting the most cost effective method for data gathering. However, no matter what method is used, the Agency believes that data must be of a quality sufficient to meet the requirements of the application. The proposed QC requirements were designed to achieve that end.

Based upon the above comments, as well as others received concerning whether Chapter One should be mandatory for all testing, the Agency has determined that requiring minimum quality control procedures for all RCRA testing requires further study. Thus, the Agency has decided to finalize the revised Chapter One only as guidance.

In addition, Chapter One provides guidance as to how data generated using QA/QC procedures can be assured through one document, the QAPjP. However, the Agency believes that existing documents (Standard Operating Procedures (SOPs), procedure manuals or other comparable plans) which fulfill the Agency's QA/QC recommendations may be appropriate and more cost-effective to members of the regulated community. Therefore, the Agency does not believe it is necessary for a separate QAPjP to be prepared for routine sampling analyses or activities if comparable documents are available and referenced.

C. Trace Analysis vs. Macroanalysis

The comments on the Agency's proposal to include language in SW-846 allowing the analyst latitude regarding sample size, dilution, concentration and choice of analytical methodology when macroanalysis (*i.e.*, analysis of high concentration samples) is performed were supportive of the Agency's position.

Therefore, the Agency has provided latitude for the sample size and/or sample dilution when macroanalysis is performed, as discussed in the notice. Macroanalysis refers to the analysis of samples in which the amount of the constituent being tested for exceeds the normal range covered by the analysis method. The methods contained in SW-846 may be used for macroanalysis if the sample size and/or dilution is adjusted such that the concentration of the final sample is in the range covered by the method. When a smaller sample is used or when a sample is diluted, the detection limit for the method will increase by a corresponding factor. If an instrumental detection limit for a particular compound is 10 nanograms (ng) (*i.e.*, the instrument making the measurement can measure 10 ng of material) and the amount of sample used for the measurement is 1 milliliter (mL), then the corresponding detection limit, for that sample, is 10 ng/mL or 0.01 parts per million (ppm). If the sample is diluted to 100 mL and 1 mL of the diluted material is used for the measurement, the detection limit will correspond to 100 times the original detection limit or 1 ppm. Dilution, therefore, affects detection limits. Likewise, if a larger amount of sample is used for the analysis, the detection limit is lowered by that factor. However, the instrumental detection limit remains at 10 ng regardless of the sample size used. In the case of macroanalysis, however, this increase in detection limit is of no consequence as long as the concentration of the sample is adjusted to the concentration range covered by the method. Thus, the following paragraphs have been added to Chapter Two, "Choosing the Correct Procedure," to provide guidance in this area and explain the limits to which the analyst must adhere when exercising this latitude:

The methods presented in SW-846 were designed through sample sizing and concentration procedures to address the problem of "trace" analyses (<1000 ppm), and have been developed for an optimized working range. These methods are also applicable to "minor" (1000 ppm—10,000 ppm) and "major" (>10,000 ppm) analyses as well as to "trace" analyses, through use of appropriate sample preparation techniques

that result in analyte concentration within that optimized range. Such sample preparation techniques include;

(1) Adjustment of size of sample prepared for analysis,

(2) Adjustment of injection volumes,

(3) Dilution or concentration of sample,

(4) Elimination of concentration steps prescribed for "trace" analyses,

(5) Direct injection (of samples to be analyzed for volatile constituents).

The performance data presented in each of these methods were generated from "trace" analyses, and may not be applicable to "minor" and "major" analyses. Generally, extraction efficiency improves as concentration increases. Caution: Care should be taken when analyzing samples for trace analyses subsequent to analysis of concentrated samples due to the possibility of cross-contamination.

D. Equipment, Standards and Reagent Preparation

The comments on the Agency's proposal to include language in SW–846 explicitly permitting the analyst latitude regarding the choice of glassware, equipment, and preparation of standards and reagents for use in SW–846 test methods were supportive of the Agency's position. Therefore, the Agency has added the following statement to the Disclaimer, at the beginning of SW–846, and to Chapter Two allowing this latitude:

Since many types and sizes of glassware and supplies are commercially available, and since it is possible to prepare reagents and standards in many different ways, those specified in these methods may be replaced by any similar types as long as this substitution does not affect the overall quality of the analyses.

E. Holding Times

The Agency proposed making changes to SW–846 that will also permit the analyst latitude in the implementation of holding times and to consider the results of samples not analyzed within the specified holding times to be minimum values.

Although most comments indicated agreement with the proposal to allow flexibility for the holding times given in SW–846, several commenters believed that applying the proposed change to the varied matrices and levels of contaminants encountered in environmental samples is inappropriate. Two primary concerns raised by these commenters regarded: (1) Accurately answering the question of whether the threshold was exceeded if the "minimum value" is applied in situations where the measured concentration was just below the regulatory threshold, and (2) abuse of the program if the implementation of holding times was left to the discretion of the analyst.

The Agency agrees with the first comment that one cannot conclude a waste concentration is below a specified level when the holding time for a sample of that waste is exceeded, and the data show the sample concentration is below the regulatory threshold. The data can be viewed as providing a minimum concentration only. If these data show, however, that the minimum concentration is above the regulatory threshold, then one can conclude that the waste is hazardous. Data generated after holding times are exceeded may only be used to prove a waste is hazardous, not that the waste is non-hazardous.

The Agency disagrees with the second comment that, by adopting this approach, the analyst is given too much discretion regarding implementing holding times, since the data can only be used as discussed above.

Based on these comments, the Agency has included in Chapter Two of SW–846 a provision for the use of data from samples after their holding time has been exceeded for the purpose of showing a waste has exceeded a regulatory limit. The Agency emphasizes that analyses performed after holding times expire will represent minimum values and will not be appropriate for demonstrating that a waste is below a regulatory limit. Holding times must be met whenever one is demonstrating that the concentration is less than a regulatory limit. Specifically, the following paragraph has been added to Chapter Two:

Samples must be extracted/analyzed within the specified holding times for the results to be considered reflective of total concentrations. Analytical data generated outside of the specified holding times must be considered to be minimum values only. Such data may be used to demonstrate that a waste is hazardous where it shows the concentration of a constituent to be above the regulatory threshold but cannot be used to demonstrate that a waste is not hazardous.

F. Representative Sampling

The Agency received several comments regarding representative sampling. Specifically, commenters expressed concern that the Agency was redefining representative sampling, that the Agency approach does not take special sampling problems (*i.e.*, mixed radioactive and hazardous waste) into account, and that more guidance is needed concerning sampling of high-volume wastes.

The comments raised by the public are still under consideration by the Agency. In order to address these comments the Agency will need to issue additional guidance. The Agency intends to issue extensive guidance covering all aspects of sampling, including representative sampling. This guidance will replace Chapter Nine of SW–846 and will be proposed and available for public comment in the future.

This effort includes consideration of sampling strategies that can minimize costs without sacrificing acceptable data quality for making RCRA decisions. The on-going work includes identifying approaches and valid statistical tools for data evaluation and interpretation. Until this guidance is available, appropriate sampling strategies should be decided on a case-by-case basis utilizing as guidance Chapter Nine of SW–846 and the comment responses found in the background document for this rulemaking.

G. Analysis of Nonaqueous Liquids for Elemental Species

Two commenters urged EPA not to adopt Method C—Bomb, Acid Digestion, as found in American Society for Testing and Materials (ASTM) Method E926–88, "Methods of Preparing Refuse-Derived Fuel (RDF) Samples for Analyses of Metals," until data are available on its applicability [illegible] request has been made that, before [illegible] proposed or recommended, the me[illegible] should be tested for all of the matri[illegible] types. One commenter, on the other hand, indicated that he or she had evaluated this method for its ability to digest oils for metals and found that "[t]his work demonstrated that the method was appropriate for metals of environmental concern, even though it is not a complete digestion."

In recommending this method the Agency relies, to some extent, on the acceptance procedures used by ASTM. Before ASTM recommends a method for a particular use, it is evaluated by a committee composed of experts in that testing area. If the committee accepts the method, it is adopted and published by ASTM. This review process is scientifically rigorous and ensures the method is suitable for its intended use. While ASTM method recommendations are not binding on the Agency, the Agency may recognize an ASTM method as satisfactory.

Since this method is generally accepted for hydrocarbon materials, the Agency believes that recommending it without a reevaluation or soliciting information on its applicability is proper, given Agency concurrence regarding the respective ASTM recommendation and review procedures. In response to public comment, however, the Agency

evaluated this method, and others, for determining metals in a limited number of waste oils. The results of this study indicate that the method is adequate for this purpose. A copy of this study is contained in a background document accompanying this rule. This study supports the conclusion of the third commenter regarding the applicability of the method for metals in oil analysis.

Furthermore, since waste oil is generally considered one of the most difficult matrices, the Agency believes this method will be applicable to a very wide range of matrices. No substantive data was submitted showing that the method does not work for its intended application. As a result, the Agency has chosen to promulgate the method. As more information becomes available, the Agency will update the method to include performance data for additional, or more specific, matrices.

The Agency maintains that methods used for RCRA-related testing should be applicable to the specific matrix and analytes of concern. The Agency disagrees with the commenters, however, that testing of the method for additional nonaqueous matrices is necessary before the method is recommended. It is not possible to validate any method for all matrices of potential interest. The method has been found to produce acceptable results for metals in oil. Users of this method may wish to validate its use for other matrices using the QC guidance set forth in Chapter One of SW–846. (See SW–846, Chapter One, section 4.4.3 "Laboratory Control Procedures.")

Therefore, the Agency is incorporating by reference "ASTM Standard Test Methods for Preparing Refuse-Derived Fuel (RDF) Samples for Analyses of Metals," ASTM Standard E926–88, Test Method C—Bomb, Acid Digestion Method in § 260.11(a) of the RCRA regulations.

H. Method of Standard Additions and Matrix Spikes

The Agency received comments supportive of the Agency's position that the method of standard additions (MSA) be applied when matrix interferences are suspected. The Agency has and continues to require MSA for certain determinations of elemental species in EP Toxicity and TCLP leachates, for certain data provided in support of delisting petitions, for analysis of new matrices, and for analysis when matrix interferences are present. Directions for applying MSA are found in Method 7000, and have been retained in the Third Edition of SW–846 and Update I.

The Agency believes that matrix spikes can be useful in detecting bias and therefore has retained guidance related to matrix spikes in Chapter One and in some methods contained in SW–846.

I. Spike Recovery Correction

In the February 8, 1990 notice, the Agency set out its intent to require that reported values be adjusted for analytical bias using matrix spike recovery as one of the minimum Quality Control procedures required for all RCRA testing. The purpose of this requirement was to provide more accurate data in those situations where there was a significant analytical bias in the data due to low recoveries of the analytes of interest. Many of the commenters to the February 8, 1990 notice indicated that the requirement for spike recovery correction should not be mandatory. In particular, a number of commenters raised questions relative to the practical aspects of implementation of the requirement (e.g., how to add the spike, how many compounds must be spiked, how many samples must be spiked) as well as the burdensome nature of implementation for wastes with matrix interference problems. Wastes with matrix interferences often require dilution in an attempt to reduce or eliminate the interferences. As a result, detection limits could be elevated and one might not be able to determine if a compound of interest is present below the regulatory threshold. In addition, interferences may not equally affect the sample and the spike. Commenters also expressed concern about bias correction when applied to a constituent that is poorly recovered from a sample matrix. In the case of zero percent recovery, one may not be sure that the laboratory could have detected the presence of the analyte if it were present.

The Agency already has recognized that spike recovery correction is a complex issue and that there is a need for further evaluation and more detailed guidance on the specific implementation procedures. Therefore, in response to public comment received on the February 8, 1990, Federal Register notice, in a Federal Register notice published on November 24, 1992 (57 FR 55114), the Agency has already announced its decision not to proceed with the proposed spike recovery correction requirement in its Subtitle C analytical procedures, and has withdrawn the requirement for bias correction of analytical spiked samples from the TCLP. The November 24, 1992 rule withdrew the spike recovery correction requirement from the TCLP and, except for technical and format changes made in a June 29, 1990, final rule revising the TCLP (55 FR 26986), returned the QA provisions of the TCLP to those promulgated on March 29, 1990 (55 FR 11796). As a result, matrix spike recoveries must be calculated (as set forth in revised section 8.2 of the TCLP) and the method of standard additions must be employed as the quantitation method for metallic contaminants when appropriate as specified in the method (as set forth in revised section 8.4 of the TCLP). In addition, the Agency made a technical correction to the regulatory language in section 8.4 to specify the use of initial calibration quantitation methods for metallic contaminants. The Agency felt this technical correction was appropriate because, at present, the method of standard additions is inapplicable to organic contaminants. Wastes identified as hazardous through TCLP testing utilizing matrix spike recovery correction must be managed as hazardous wastes, unless and until such wastes are reevaluated using recalculations of existing data or the TCLP test procedure as described in November 24, 1992 rule or otherwise reevaluated and found to be non-hazardous.

J. Reagent Grade Water

Several commenters asked that the Agency's definition of Reagent Grade Water be clarified. Specifically, they requested that the Agency adopt objective limits for defining "reagent grade water." In response to these comments the Agency has added definitions of reagent water and organic-free reagent water to Chapter One. Specific details on these definitions may be found in the revised Chapter One which provided that for a method blank to be acceptable, the concentration in the blank of any analyte of concern should be no higher than the highest of the following:

(1) The method detection limit,

(2) Five percent of the regulatory limit for that analyte, or

(3) Five percent of the measured concentration in the sample.

Reagent water and organic-free reagent water will generally provide acceptable method blanks.

K. Appendices III and X to 40 CFR Part 261

The Agency received few comments on the proposal to delete Appendices III and X of 40 CFR part 261. All were in favor of deleting Appendix X, but several found Appendix III useful as a reference.

The Agency has chosen to proceed with removal of Appendix X of Part 261 as proposed in the Notice. The Agency has also decided to proceed with

revising Appendix III of part 261 whereby Tables 1 through 3 are removed and a note is added referencing the reader to SW–846. The information contained in the tables of Appendix III, "Chemical Analysis Test Methods", is provided in SW–846 Third Edition, Chapter Two, "Choosing the Correct Procedure." This chapter can be used in place of the tables of Appendix III. Removal of the appendix tables does not change the methods that are to be used in a given situation.

Since Appendix III of part 261 is being revised to refer to SW–846 and since §§ 260.22(d)(1)(i) and 270.19(c)(1)(iii) reference that appendix, those sections are also being revised to instead reference SW–846.

V. Technical Changes

The Agency is taking this opportunity to make several technical changes resulting from adoption of the Third Edition of SW–846 and correcting minor technical errors. These changes include:

- Revising appendix II of part 261 by deleting the Toxicity Characteristic Leaching Procedure (TCLP), and adding a note referencing the TCLP, Method 1311 found in SW–846; and revising § 261.24 by removing the reference to the TCLP found in appendix II, and adding in its place a reference to SW–846 Method 1311.
- Revising appendices I and IX of part 268 by deleting the reference to the TCLP found in appendix II, part 261 from appendix I of part 268 and deleting the EP Toxicity Test, Method 1310 from appendix IX of part 268 and adding notes respectively referencing the TCLP, Method 1311 and the EP, Method 1310 found in SW–846; and revising references to appendix II of part 261 and appendix IX of part 268 in §§ 268.7(a), 268.40(a) and 268.41(a) to instead reference SW–486 Methods 1311 and 1310.
- Deleting the Liquid Release Test, Method 9096 from SW–846 Third Edition and First Update.
- Removing the 47 analytical test methods incorporated by reference in § 260.11(a).
- Deleting references to equivalent methods in §§ 261.22(a) (1) and (2) and 261.24(a).
- Deleting the reference to Method 5.2 in § 261.22(a)(1) and adding in its place the reference to Method 9040.
- Adding clarification that references to SW–846 in §§ 264.190(a), 264.314(c), 265.190(a), 265.314(d), 270.19(c)(1)(iii) and (iv), 270.62(b)(2)(i)(C) and (D), and 270.66(c)(2)(i) and (ii) are to SW–846 as incorporated by reference in § 260.11
- Revising § 270.6 to cross reference § 260.11

Since these are technical changes that do not affect the implementation of the regulations, the Agency is simply providing notice of the changes without opportunity for comment. These changes are discussed in detail below.

A. Revising Appendix II of Part 261 by Deleting the Toxicity Characteristic Leaching Procedure (TCLP), and Adding Reference to the TCLP, SW–846 Method 1311 to Appendix II and § 261.24.

The TCLP is being removed from appendix II of part 261 and replaced with a note referencing SW–846 because this method is contained in the Third Edition of SW–846 (*i.e.*, Method 1311) and there is no need to maintain multiple copies of this method (one in appendix II of part 261 and one incorporated by reference) in the regulations. This technical change is being undertaken to eliminate redundancy and to remove the possibility that a discrepancy might exist between two versions of the method. This revision only changes where the method is found. It does not change the content or intended use of the method. Since this is clearly a technical change, the Agency is making this change without notice and comment.

Since the TCLP is being removed from appendix II and replaced with a note referencing SW–846, and § 261.24 refers to appendix II, § 261.24 is being revised to also refer to Method 1311 in SW–846.

B. Revising Appendices I and IX of Part 268 by Deleting the Reference to the TCLP Found in Appendix II, Part 261, From Appendix I of Part 268 and Deleting the EP Toxicity Test From Appendix IX of Part 268; and Adding References to the TCLP, SW–846 Method 1311 and the EP, SW–846 Method 1310 in the Respective Appendices and in §§ 268.7(a), 268.40(a) and 268.41(a).

Since the TCLP is being removed from appendix II, part 261 and replaced with a note referencing SW–846 Method 1311, and since appendix I of part 268 and §§ 268.7(a), 268.40(a) and 268.41(a) refer to appendix II of part 261, appendix I, part 268 and §§ 268.7(a), 268.40(a) and 268.41(a) are being revised to also refer to Method 1311 in SW–846.

The Extraction Procedure (EP) Toxicity Test is also being removed from appendix IX of part 268 and replaced with a note referencing SW–846 because the method is contained in the Third Edition of SW–846 (*i.e.*, Method 1310), and there is no need to maintain multiple copies of this method (one in appendix IX of part 268 and one incorporated by Reference) in the regulations. This revision only changes where the method is found. It does not change the content or intended use of the method.

Since the EP is being removed from appendix IX of part 268 and replaced with a note referencing SW–846 Method 1310, and since §§ 268.7(a) and 268.40(a) refer to this appendix, §§ 268.7(a) and 268.40(a) are also being revised to refer to Method 1310 in SW–846.

C. Deleting the Liquid Release Test, Method 9096 From SW–846 Third Edition and Update I

The Liquid Release Test, SW–846 Method 9096, was included in SW–846 Third Edition and Update I inadvertently. It was not EPA's intention to include the Liquid Release Test in that publication, since Method 9096 has not yet been proposed. EPA is, therefore, deleting Method 9096 from SW–846 Third Edition and Update I. It is the Agency's intention to propose Method 9096 as part of Update II to SW–846.

D. Removing the 47 Analytical Test Methods Incorporated by Reference in § 260.11(a)

The Agency is today removing the methods incorporated by reference in § 260.11(a). This action is being taken since the 47 methods are contained in the Third Edition of SW–846, which is being incorporated by reference today in its entirety. Therefore, specific reference to the 47 methods is redundant and is being removed.

E. Deleting References to Equivalent Methods in §§ 261.22(a)(1) and (2) and 261.24(a)

The Agency notes that anyone may petition to add an equivalent testing or analytical method to SW–846 for use in the RCRA program under provisions of §§ 260.20 and 260.21 of these regulations. Because these provisions have always been available to the public, in today's rule the Agency is removing references to equivalent methods in §§ 261.24(a).

F. Deleting the Reference to Method 5.2 in § 261.22(a)(1) and Adding in its Place the Reference to Method 9040

The EPA method number for pH is incorrectly referenced in § 261.22(a)(1) as Method 5.2. Therefore, the Agency is deleting the reference to Method 5.2 in that section and replacing it with the correct reference to Method 9040.

G. Adding Clarification that References to SW–846 in §§ 264.190(a), 264.314(c), 265.190(a), 265.314(d), 270.19(c)(1) (iii) and (iv), 270.62(b)(2)(i) (C) and (D), and 270.66(c)(2) (i) and (ii) are to SW–846 as Incorporated by Reference in § 260.11

Finally, the Agency is today clarifying for the reader references to SW–846 and its methods in §§ 264.190(a), 264.314(c), 265.190(a), 265.314(d), 270.19(c)(1) (iii) and (iv), 270.62(b)(2)(i) (C) and (D), and 270.66(c)(2) (i) and (ii) by adding the phrase "as incorporated by reference in § 260.11" after "SW–846" in those sections.

H. Revising § 270.6 to cross reference § 260.11

The Agency is modifying § 270.6 to refer to § 260.11. Since § 260.11 applies to 40 CFR parts 260 through 270, revising § 270.6 References is repetitious and unnecessary.

VI. 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, and EPA could not issue permits for any facilities in the State that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out those requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, the HSWA applies in authorized States in the interim.

B. Effect on State Authorizations

Today's rule promulgates standards that are not effective in authorized States since the requirements are being imposed pursuant to pre-HSWA authority. Therefore, the rule is not immediately effective in authorized States. The requirements will be applicable only in those States that do not have interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

As required by 40 CFR 271.21(e)(2), States that have final authorization must modify their programs to reflect Federal program changes and subsequently must submit the modifications to EPA for approval. The deadline by which the State must modify its program to adopt today's rule is determined based on the date of final rule promulgation in accordance with 40 CFR 271.21(e). 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 requirements 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 carry out these requirements in fulfillment of the Federal regulations promulgated today until the State program modification is submitted to EPA and approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law.

States that submit their official applications for final authorization within 12 months after the effective date of today's rule are not required to include in their applications requirements equivalent to the requirements in today's rule. However, the State must modify its program by the deadlines set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months or more after the effective dates of today's rule must include requirements at least as stringent as the requirements in the final rule in their applications. 40 CFR 271.3 sets forth the requirements a State must meet when submitting its final authorization application.

VII. Effective Date

Section 3010 of RCRA provides that regulations promulgated pursuant to Subtitle C of RCRA shall take effect six months after the date of promulgation. However, HSWA amended section 3010 of RCRA to allow rules to become effective in less than six months when the regulated community does not need six months to come into compliance. Since today's rule provides greater flexibility to the regulated community in testing and monitoring solid waste, the Agency believes the regulated community does not need six months to come into compliance. For that same reason, the Agency believes that good cause exists under the Administrative Procedures Act, 5 U.S.C. section 553(d), for not delaying the effective date of this rule under 30 days after its publication in the Federal Register. Therefore, this rule is effective August 31, 1993.

VIII. Regulatory Analyses

A. Regulatory Impact Analysis

Under Executive Order 12291, EPA must determine whether a regulation is "major" and, therefore, subject to the requirement of a Regulatory Impact Analysis. This rule does not increase the number of situations in which SW–846 test methods are required, but rather provides greater flexibility to the regulated community in testing and monitoring solid waste. The rule entails no additional testing or recordkeeping burden. The effects on the economy for incorporating technical corrections and adding new test methods are essentially zero.

For the same reasons, EPA has also determined that this final rule will not cause a major increase in prices and will not have a significant adverse effect on competition or the ability of U.S. enterprises to compete with foreign enterprises. There is no additional economic impact, therefore, due to today's rule. The Agency has determined that today's rule is not a major regulation; thus, no Regulatory Impact Analysis is required.

B. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. sections 601–612, Pub. L. 96–354, September 19, 1980), whenever an agency publishes a General Notice of Rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis (RFA) 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.

This rule will not require the purchase of new instruments or equipment. The regulation requires no new reports beyond those now required. This rule will not have an adverse economic impact on small entities since its effect will be to provide greater flexibility to all of the regulated community, including small entities. Therefore, in accordance with 5 U.S.C. section 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities (as defined by the Regulatory Flexibility Act). Thus, the regulation does not require an RFA.

C. Paperwork Reduction Act

There are no additional reporting, notification, or recordkeeping provisions in this rule. Such provisions, were they included, would be submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

List of Subjects in 40 CFR Parts 260, 261, 264, 265, 268, and 270.

Administrative practice and procedure, Hazardous waste, Incorporation by reference, Reporting and recordkeeping requirements.

Dated: August 24, 1993.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as set forth below:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

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

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

Subpart B—Definitions

2. Section 260.11(a) is amended by revising the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" reference; by adding ASTM Method D926–88 to the end of the list of incorporation by reference publications; by removing the undesignated paragraph following the list of incorporation by reference publications, which refers to the 47 analytical testing methods and its footnote 1, to read as follows:

§ 260.11 References.

(a) * * *

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 [Third Edition (September, 1986), as amended by Update I (July 1992)]. The Third Edition of SW–846 and Update I (document number 955–001–00000–1) are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 783–3238. Copies may be inspected at the Library and RCRA Docket No. F–93–WTMF–FFFFF, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

* * * * *

"ASTM Standard Test Methods for Preparing Refuse-Derived Fuel (RDF) Samples for Analyses of Metals," ASTM Standard E926–88, Test Method C—Bomb, Acid Digestion Method, available from American Society for Testing Materials, 1916 Race Street, Philadelphia, PA 19103.

* * * * *

Subpart C—Rulemaking Petitions

3. Section 260.22(d)(1)(i) is revised to read as follows:

§ 260.22 Petitions to amend part 261 to exclude a waste produced at a particular facility.

* * * * *

(d) * * *

(1) * * *

(i) Does not contain the constituent or constituents (as defined in Appendix VII of part 261 of this chapter) that caused the Administrator to list the waste, using the appropriate test methods prescribed in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11; or

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

4. 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

5. Section 261.22 is amended by revising paragraphs (a)(1) and paragraph (a)(2) to read as follows:

§ 261.22 Characteristic of corrosivity.

(a) * * *

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM–01–69 as standardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

6. Section 261.24(a) is revised to read as follows:

§ 261.24 Toxicity characteristic.

(a) A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered to be the extract for the purpose of this section.

* * * * *

7. Appendix II to part 261 is revised to read as follows:

Appendix II to Part 261—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)

Note: The TCLP (Method 1311) is published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

8. Appendix III to part 261 is revised to read as follows:

Appendix III to Part 261—Chemical Analysis Test Methods

Note: Appropriate analytical procedures to determine whether a sample contains a given toxic constituent are specified in Chapter Two, "Choosing the Correct Procedure," found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter. Prior to final sampling and analysis method selection, the individual should consult the specific section or method described in SW–846 for additional guidance on which of the approved methods should be employed for a specific sample analysis situation.

9. Appendix X to part 261 is removed.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

10. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

Subpart J—Tank Systems

11. Section 264.190 is amended by revising the last sentence of paragraph (a) to read as follows:

§ 264.190 Applicability.

* * * * *

(a) * * * To demonstrate the absence or presence of free liquids in the stored/treated waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

Subpart N—Landfills

12. Section 264.314 is amended by revising paragraph (c) to read as follows:

§ 264.314 Special requirements for bulk and containerized liquids.

* * * * *

(c) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

13. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, 6935, and 6936.

Subpart J—Tank Systems

14. Section 265.190 is amended by revising the last sentence of paragraph (a) to read as follows:

§ 265.190 Applicability.

* * * * *

(a) * * * To demonstrate the absence or presence of free liquids in the stored/treated waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

Subpart N—Landfills

15. Section 265.314 is amended by revising paragraph (d) to read as follows:

§ 265.314 Special requirements for bulk and containerized liquids.

* * * * *

(d) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

PART 268—LAND DISPOSAL RESTRICTIONS

16. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

Subpart A—General

17. Section 268.7 is amended by revising paragraph (a) to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) Except as specified in § 268.32, 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 Toxicity Characteristic Leaching Procedure, Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter, 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, 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 Extraction Procedure Toxicity Test, Method 1310 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part. If the generator determines that this waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by INCIN, FSUBS, or RORGS of § 268.42, Table 1), or the characteristic of corrosivity (D002), and is prohibited under § 268.37, the generator must determine what underlying hazardous constituents (as defined in § 268.2) are reasonably expected to be present in the D001 or D002 waste.

* * * * *

Subpart D—Treatment Standards

18. 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 Method 1311, the Toxicity Characteristic Leaching Procedure 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 Method 1310, the Extraction Procedure Toxicity Test, or Method 1311, the Toxicity Characteristic Leaching Procedure, does not exceed the concentrations shown in Table CCWE of § 268.41 for any hazardous constituent listed in Table CCWE for that waste. Methods 1310 and 1311 are both found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

19. Section 268.41 is amended by revising paragraph (a) introductory text to read as follows:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) Table CCWE identifies the restricted wastes and the concentrations of their associated constituents which may not be exceeded in the extract of a waste or waste treatment residual extracted using Method 1311, the Toxicity Characteristic Leaching Procedure, for the allowable land disposal of such wastes. Compliance

with these concentrations is required based upon grab samples. Method 1311 is found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter.

* * * * *

20. Appendix I to part 268 is revised to read as follows:

Appendix I to Part 268—Toxicity Characteristic Leaching Procedure (TCLP)

Note: The TCLP (Method 1311) is published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter.

21. Appendix IX to part 268 is revised to read as follows:

Appendix IX to Part 268—Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test (Method 1310)

Note: The EP (Method 1310) is published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter.

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

22. 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 A—General Information

23. Section 270.6(a) is revised to read as follows:

§ 270.6 References.

(a) When used in part 270 of this chapter, the following publications are incorporated by reference: (See 40 CFR 260.11 References)

* * * * *

Subpart B—Permit Application

24. Section 270.19 is amended by revising the last sentence of paragraph (c)(1)(iii), and by revising paragraph (c)(1)(iv) to read as follows:

§ 270.19 Specific part B information requirements for incinerators.

* * * * *

(c) * * *

(1) * * *

(iii) * * * The waste analysis must rely on analytical techniques specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6, or their equivalent.

(iv) An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6, or their equivalent.

* * * * *

Subpart F—Special Forms of Permits

25. Section 270.62 is amended by revising the last sentence of paragraph (b)(2)(i)(C), and by revising paragraph (b)(2)(i)(D) to read as follows:

§ 270.62 Hazardous waste incinerator permits.

* * * * *

(b) * * *

(2) * * *

(i) * * *

(C) * * * The waste analysis must rely on analytical techniques specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6, or other equivalent.

(D) An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6, or their equivalent.

* * * * *

26. Section 270.66 is amended by revising the last sentence of paragraph (c)(2)(i), and by revising paragraph (c)(2)(ii) to read as follows:

§ 270.66 Permits for boilers and industrial furnaces burning hazardous waste.

* * * * *

(c) * * *

(2) * * *

(i) * * * The waste analysis must be conducted in accordance with analytical techniques specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 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 Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter and § 270.6, or other equivalent.

* * * * *

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federal register

Monday
September 19, 1994

Part II

Environmental Protection Agency

40 CFR Part 268

Hazardous Waste Management System; Testing and Monitoring Activities, Land Disposal Restrictions Correction; Final Rule

40 CFR Parts 148, et al.

Land Disposal Restrictions Phase II—Universal Treatment Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Newly Listed Wastes; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 268

[FRL-5070-2]

Hazardous Waste Management System; Testing and Monitoring Activities, Land Disposal Restrictions Correction

AGENCY: Environmental Protection Agency.

ACTION: Final rule; correction.

SUMMARY: This action corrects the final regulations which were published Tuesday, August 31, 1993 ("Hazardous Waste Management System; Testing and Monitoring Activities; Final Rule", 58 FR 46040). This action corrects the unintended removal of text from 40 CFR 268.7(a), which sets out the generator waste analysis and recordkeeping requirements of the land disposal restrictions under Subtitle C of the Resource Conservation and Recovery Act of 1976 (RCRA), as amended.

EFFECTIVE DATE: This action is effective as of August 31, 1993.

FOR FURTHER INFORMATION CONTACT: For further information about this correction contact Kim Kirkland at (202) 260-4761, Office of Solid Waste (Mailcode 5304), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. For information about 40 CFR 268.7(a) requirements, contact the RCRA Hotline on (800) 424-9346 (toll-free) or, in the Washington, DC metropolitan area, (703) 412-9810.

SUPPLEMENTARY INFORMATION:

Background

The final regulations that are the subject of this correction (August 31, 1993, 58 FR 46040) amended the hazardous waste regulations for testing and monitoring activities by replacing the Second Edition, Updates I and II, of the EPA approved test methods manual "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, by incorporating by reference the Third Edition of SW-846 and its Update I into § 260.11(a) of the RCRA regulations. In addition, the final rule also made a technical amendment to § 268.7(a) (concerning waste analysis and recordkeeping requirements) whereby the reference to the appendix IX of Part 268 was revised to reference SW-846 Methods 1311 and 1310. The Agency intended to revise only the introductory text of § 268.7(a) and to retain without change all of the subparagraphs following the introductory text. However, due to an inadvertent administrative error in incorporating the August 31, 1993 rule into the 1994 edition of the Code of Federal Regulations (CFR), the subparagraphs following the introductory text were unintentionally removed. This action clarifies that subparagraphs 40 CFR 268.7(a)(1)-268.7(a)(10), as set forth in this action, remain in effect, and are regarded by EPA to have been in effect continuously in the form published in the Code of Federal Regulations revised as of July 1, 1993.

It should be noted that 40 CFR 268.7(a) as published in this action, as well as other regulations implementing the land disposal restriction (LDR) program, have been amended in a final rule that is published elsewhere in today's Federal Register. The regulatory text set forth in this action does not include the amendments to § 268.7(a) made by that LDR final rule. The purpose of this action is to make clear that the August 31, 1993 rule was intended only to modify the introductory text of § 268.7(a), and was not intended to delete paragraphs (a)(1)-(a)(10). Therefore, the complete version of § 268.7(a) as it *should have appeared* since the August 31, 1994 Federal Register is set forth in this action. Readers are urged to refer to the LDR final rule, published elsewhere in today's Federal Register, for the full and current text of § 268.7(a).

List of Subjects in 40 CFR Part 268

Environmental protection, Hazardous waste, Reporting and recordkeeping requirements.

Dated: August 30, 1994.

Peter Robertson,

Acting Assistant Administrator, Office of Solid Waste and Emergency Response.

Therefore, for the reasons set forth in the preamble, 40 CFR part 268 is corrected by making the following correcting amendments:

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 268.7(a) is revised to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) Except as specified in § 268.32, 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 Toxicity Characteristic Leaching Procedure, Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter, 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 Extraction Procedure Toxicity Test, Method 1310 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this Part. If the generator determines that his waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by INCIN, FSUBS, or RORGS of § 268.42, Table 1), or the characteristic of corrosivity (D002), and is prohibited under § 268.37 of this Part, the generator must determine what underlying hazardous constituents (as defined in § 268.2), are reasonably expected to be present in the D001 or D002 waste.

(1) If a generator determines that he is managing a restricted waste under this part and the waste does not meet the applicable treatment standards set forth in Subpart D of this part or exceeds the applicable prohibition levels set forth in § 268.32 or RCRA section 3004(d), with each shipment of waste the generator must notify the treatment or storage facility in writing of the appropriate treatment standards set forth in Subpart D of this part and any applicable prohibition levels set forth in § 268.32 or RCRA section 3004(d). The notice must include the following information.

(i) EPA Hazardous Waste Number;

(ii) The corresponding treatment standards for wastes F001-F005, F039, wastes prohibited pursuant to § 268.32 or RCRA section 3004(d), and for underlying hazardous constituents (as defined in § 268.2), in D001 and D002 wastes if those wastes are prohibited under § 268.37. 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;

(iii) The manifest number associated with the shipment of waste;

(iv) For hazardous debris, the contaminants subject to treatment as provided by § 268.45(b) and the following statement: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"; and

(v) Waste analysis data, where available.

(2) If a generator determines that he is managing a restricted waste under this Part, and determines that the waste can be land disposed without further treatment, with each shipment of waste he must submit, to the treatment, storage, or land disposal facility, a notice and a certification stating that the waste meets the applicable treatment standards set forth in subpart D of this part and the applicable prohibition levels set forth in § 268.32 or RCRA section 3004(d). Generators of hazardous debris that is excluded from the definition of hazardous waste under § 261.3(e)(2) of this chapter (i.e., debris that the Director has determined does not contain hazardous waste), however, are not subject to these notification and certification requirements.

(i) The notice must include the following information:

(A) EPA Hazardous Waste Number;

(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.

(C) The manifest number associated with the shipment of waste;

(D) Waste analysis data, where available.

(ii) The certification must be signed by an authorized representative and must state the following:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

(3) If a generator's waste is subject to an exemption from a prohibition on the type of land disposal method utilized for the waste (such as, but not limited to, a case-by-case extension under § 268.5, an exemption under § 268.6, or a nationwide capacity variance under subpart C of this part), with each shipment of waste he must submit a notice to the facility receiving his waste stating that the waste is not prohibited from land disposal. The notice must include the following information:

(i) EPA Hazardous Waste Number;

(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;

(iii) The manifest number associated with the shipment of waste;

(iv) Waste analysis data, where available;

(v) For hazardous debris, the contaminants subject to treatment as provided by § 268.45(b) and the following statement: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"; and

(vi) The date the waste is subject to the prohibitions.

(4) If a generator is managing prohibited waste in tanks, containers, or containment buildings regulated under 40 CFR 262.34, and is treating such waste in such tanks, containers, or containment buildings to meet applicable treatment standards under subpart D of this part, the generator must develop and follow a written waste analysis plan which describes the procedures the generator will carry out to comply with the treatment standards. (Generators treating hazardous debris under the alternative treatment standards of Table 1, § 268.45, however, are not subject to these waste analysis requirements.) The plan must be kept on site in the generator's records, and the following requirements must be met:

(i) The waste analysis plan must be based on a detailed chemical and physical analysis of a representative sample of the prohibited waste(s) being treated, and contain all information necessary to treat the waste(s) in accordance with the requirements of this Part, including the selected testing frequency.

(ii) Such plan must be filed with the EPA Regional Administrator (or his designated representative) or State authorized to implement Part 268 requirements a minimum of 30 days prior to the treatment activity, with delivery verified.

(iii) Wastes shipped off-site pursuant to this paragraph must comply with the notification requirements of § 268.7(a)(2).

(5) If a generator determines whether the waste is restricted based solely on his knowledge of the waste, all supporting data used to make this determination must be retained on-site in the generator's files. If a generator determines whether the waste is restricted based on testing this waste or an extract developed using the test method described in Appendix I of this part, all waste analysis data must be retained on-site in the generator's files.

(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 through 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 RCRA, 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.

(8) If a generator is managing a lab pack that contains wastes identified in Appendix IV of this part and wishes to use the alternative treatment standard under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator must also comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification, which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(9) If a generator is managing a lab pack that contains organic wastes specified in Appendix V of this Part and wishes to use the alternate treatment standards under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator also must comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification which must be signed by an authorized representative: I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to Part 268 or solid wastes not subject to regulation under 40 CFR Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(10) Small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e) must comply with the applicable notification and certification requirements of paragraph (a) of this section for the initial shipment of the waste subject to the agreement. Such generators must retain on-site a copy of the notification and certification, together with the tolling agreement, for at least three years after termination or expiration of the agreement. The three-year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

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[FR Doc. 94–22492 Filed 9–16–94; 8:45 am]
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40 CFR Parts 148, 260, 261, 264, 265, 266, 268 and 271

[FRL–5028–9]

RIN 2050–AD69

Land Disposal Restrictions Phase II—Universal Treatment Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Newly Listed Wastes

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: As part of the Agency's Land Disposal Restrictions (LDR) program, EPA is today promulgating treatment standards for the newly identified organic toxicity characteristic (TC) wastes (except those managed in Clean Water Act (CWA) systems, CWA-equivalent systems, or Class I Safe Drinking Water Act (SDWA) injection wells), and for all newly listed coke by-product and chlorotoluene production wastes. The required treatment standards for these wastes must be met before they are land disposed. EPA is also requiring ignitable characteristic wastes with a high total organic carbon (TOC) content and toxic characteristic pesticide wastes, that are being disposed in Class I nonhazardous waste injection wells, to either be injected into a well that is subject to a no-migration determination, or be treated by the designated LDR treatment method. Promulgation of these treatment standards for the newly identified and listed wastes and promulgation of the dilution prohibitions for high TOC ignitables and pesticides fulfills requirements of a proposed consent decree between EPA and the Environmental Defense Fund, and a settlement agreement between EPA, the Hazardous Waste Treatment Council, and a number of environmental groups including the Natural Resources Defense Council.

EPA is also making a major improvement in the Land Disposal Restrictions program in order to simplify and provide consistency in the requirements. EPA is establishing a single set of requirements, referred to as universal treatment standards, that apply to most hazardous wastes. EPA is also simplifying the Land Disposal Restrictions program by reducing paperwork for the regulated community, and improving guidance to make compliance easier. EPA is also publishing clarifying guidance regarding treatability variances, which largely restates previous Agency statements. Finally, EPA is modifying the hazardous waste recycling regulations which will allow streamlined regulatory decisions to be made regarding the regulation of certain types of recycling activities.

DATES: *Effective date:* The final rule is effective on December 19, 1994. Section 268.100 and Appendix VIII are effective September 19, 1994.

Applicability dates: For high TOC D001 (40 CFR 148.17) and halogenated pesticides wastes (40 CFR 148.17) disposed in Class I nonhazardous injection deep wells, the compliance date is September 19, 1995. For radioactive waste mixed with the newly listed or identified wastes, or soil and debris contaminated with such mixed wastes (40 CFR 268.38), the compliance date is September 19, 1996. Although the effective date of today's rule is December 19, 1994, facilities will be in compliance if they meet the universal treatment standards (UTS) before the 90-day period ends.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F–94–CS2F–FFFFF, and is located in the EPA RCRA Docket, U.S. Environmental Protection Agency, Room 2616, 401 M Street, SW., Washington, DC 20460. The RCRA Docket is open from 9 am to 4 pm Monday through Friday, except for Federal holidays. The public must make an appointment to review docket materials by calling (202) 260–9327. The public may copy a maximum of 100 pages from any regulatory document at no cost. Additional copies cost $.15 per page. The mailing address is EPA RCRA Docket (5305), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424–9346 (toll-free) or (703) 412–9810 locally. For technical information about mercury and radioactive mixed waste, contact Shaun McGarvey on (703) 308–8603; for technical information about lab packs and metal Universal Treatment Standards, contact Anita Cummings on (703) 308–8303; for technical information about organic Universal Treatment Standards, contact Lisa Jones

Revision Checklist 127 Summary

Rule Title:	Burning of Hazardous Waste in Boilers and Industrial Furnaces
Checklist Title:	Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues
Reference:	58 FR 59598-59603
Promulgation Date:	November 9, 1993
Effective Date:	October 15, 1993
Cluster:	RCRA Cluster IV
Provision Type:	HSWA
Linkage:	Revision Checklists 85, 94, and 111
Optional:	Yes

Summary: On February 21, 1991, EPA promulgated regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA) that would expand controls on hazardous waste combustion to regulate the burning of hazardous waste in boilers and industrial furnaces (BIFs). Among other things, the regulations provide two tests for determining whether residues derived from Bevill devices (e.g., cement kilns, light-weight aggregate kilns, primary smelters, coal-fired boilers) co-processing hazardous waste and raw materials are exempt from hazardous waste control: (1) if levels of the toxic constituents in the waste-derived residue are not significantly higher than in normal residue; or (2) if levels of the toxic constituents in the waste-derived residue do not exceed specified health-based levels. This November 9, 1993 interim final rule announces an administrative stay on the previously-published health-based limits for nonmetals that are used to determine whether Bevill residues are exempt from the definition of hazardous waste under test number 2, provided that other limits are met on an interim basis (in order to prevent a situation where nonmetal constituents in these residues go unmonitored). The effect of this rule is to replace the current limits needed to qualify for the Bevill exemption (under test number 2) with the land disposal restriction limits for underlying constituents in nonwastewaters pending further administrative action to establish health-based levels.

State Authorization: This rule is placed in RCRA Cluster IV. Because the regulations promulgated in this rule reduce the regulatory requirements for certain wastes, States are not required to adopt the changes addressed by this rule; they may 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. However, EPA strongly recommends that States adopt this administrative stay as soon as possible because the nonmetal limits affected by the stay are extremely conservative and were based on unintended, mistaken assumptions. For States that choose to adopt the checklist, the State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). All changes go into effect immediately because this rule was promulgated under HSWA authorities. Both interim and final authorization are available. Interim authorization expires January 1, 2003.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 127, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Revision Checklist 127 Summary (cont'd)

Attorney General's Statement Entry: The following entry should be placed at Subsection XX G in the Model Revision Attorney General's Statement.

G. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain an administrative stay, until further administrative action is taken, that replaces the current limits needed to qualify for the Bevill exemption under test number 2 with the land disposal restriction limits for underlying constituents as indicated in Revision Checklist 127.

Federal Authority: 5 U.S.C. 705; RCRA §§2002(a), and 3001(b)&(e)(1); 40 CFR 266.112(b)(2)(i) and Part 266 Appendix VII, as amended November 9, 1993 (58 FR 59598).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

RCRA REVISION CHECKLIST 127

Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues

58 FR 59598-59603
November 9, 1993
(RCRA Cluster IV, HSWA provisions)

Notes: 1) Although this Revision Checklist is designated as optional, EPA strongly recommends that States adopt the less stringent requirements of this administrative stay because the nonmetal limits affected by the stay are extremely conservative and were based on unintended mistaken assumptions. This rule replaces the current nonmetal limits needed to qualify for the Bevill exemption, as specified in the February 21, 1991 rule (Revision Checklist 85), with the land disposal restriction (LDR) limits for underlying constituents in nonwastewaters pending further administrative action to establish appropriate health-based levels.

2) Note that the administrative stay is conditioned on compliance with the interim LDR exemption values. Noncompliance with those values would mean that the owner or operator of the Bevill device is no longer meeting the conditions of the administrative stay and, therefore, must comply with the comparison test in § 266.112(b)(1), in order to qualify for the exclusion in § 266.112. If the owner or operator meets neither the conditions of the stay nor the comparison test, then the residue would be subject to regulation as hazardous waste. Additionally, the stay does not affect the application of the procedural requirements in 266.112(b)(2) except as outlined in 58 FR 59600, column 3, sections V. A-D.

RCRA REVISION CHECKLIST 127: Boilers and Industrial Furnaces;
Administrative Stay and Interim Standards for Bevill Residues (cont'd)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES						
	SUBPART H - HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES						
	REGULATION OF RESIDUES						
†,1	at the end of the paragraph, before "; and", add new text addressing administrative stay for levels specified in appendix VII and default level of 0.002 micrograms/kg or level of detection as identified in Note 1; owner or operator must comply with alternative levels defined as land disposal restriction limits specified in § 268.43 for F039 nonwastewaters; compliance based on good-faith effort to detect constituents; demonstration of good-faith efforts; stay in effect until further administrative action is taken	266.112(b)(2)(i)					

RCRA REVISION CHECKLIST 127: Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
APPENDIX VII TO PART 266						
HEALTH-BASED LIMITS FOR EXCLUSION OF WASTE-DERIVED RESIDUES						
†,1 redesignate "Note" as "Note 1" after tables; add new "Note 2" regarding administrative stay of specified and default levels for constituents specified in § 266.112(b)(1) provided owner or operator complies with alternative levels defined in 266.112(b)(2)(i)	266, Appendix VII, notes					

1 Note the typographical error in the Federal Register: "FO39" should be "F039" (i.e., should be a zero not an upper case "O").

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 266 and 271

[FRL-4792-7]

Burning of Hazardous Waste in Boilers and Industrial Furnaces

AGENCY: Environmental Protection Agency (EPA).

ACTION: Interim final rule.

SUMMARY: On February 21, 1991, EPA promulgated regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA) that would expand controls on hazardous waste combustion to regulate the burning of hazardous waste in boilers and industrial furnaces (BIFs). Among other things, the regulations provide two tests for determining whether residues derived from Bevill devices (e.g., cement kilns, light-weight aggregate kilns, primary smelters, coal-fired boilers) co-processing hazardous waste and raw materials are exempt from hazardous waste control: if levels of the toxic constituents in the waste-derived residue are not significantly higher than in normal residue; or if levels of the toxic constituents in the waste-derived residue do not exceed specified health-based levels. EPA is today announcing an interim final rule on the health-based limits for nonmetals that are used to determine whether Bevill residues are exempt from the definition of hazardous waste under test number 2, provided that other limits are met on an interim basis (in order to prevent a situation where nonmetal constituents in these residues go unmonitored). The effect of this rule is to replace the current limits needed to qualify for the Bevill exemption (under test number 2) with the land disposal restriction limits for underlying constituents in nonwastewaters pending further administrative action to establish health-based levels.

EFFECTIVE DATE: October 15, 1993.

ADDRESSES: The official record for this document is identified as Docket Number F-93-BBAS-FFFFF, and is located in the RCRA Information Center located at: EPA/RCRA Information Center, room M2616, 401 M Street SW., Washington, DC 20460.

The RCRA Information Center 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) 260-9327 for appointments. Copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at: (800) 424-9346 (toll free) or (703) 920-9810.

For technical information concerning this notice, contact Shiva Garg, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (703) 308-8459.

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

I. Overview of Agency Action
II. Background
III. Inaccuracy of the Existing Limits
IV. Basis for Using Land Disposal Restriction Standards as Interim Limits
  A. LDR Limits
  B. Consideration of Using TC Limits
  C. Which Hazardous Constituents are Affected
V. Implementation of the Revised Limits
  A. Default Value is Stayed
  B. Procedures for Handling Nondetects
  C. Analytical Methods
  D. Immediate Effective Date
VI. State Authority
  A. Applicability of Rules in Authorized States
  B. Effect on State Authorization
VII. Paperwork Reduction Act

I. Overview of Agency Action

On January 22, 1993, the Cement Kiln Recycling Coalition (CKRC) submitted a petition to EPA to modify § 266.112 of the Boiler and Industrial Furnace (BIF) Rule to amend the health-based limits for nonmetal constituents in waste-derived residues that must be met in order to qualify for the Bevill exemption (under the test in § 266.112(b)(2)). The Agency agrees that the nonmetal limits established in appendix VII, part 266, are extremely conservative to the point that they replicate an unrealistic scenario. The values, moreover, were based on unintended, mistaken assumptions on EPA's part. Therefore, the Agency is today staying those limits provided that owners and operators of such Bevill devices comply with land disposal restriction standards for the hazardous constituents that are reasonably expected to be present in these residues. The Agency believes that these technology-based land disposal restriction limits identify residues that have the "low toxicity" attribute that is one of the key bases for the temporary exemption of Bevill residues from the definition of hazardous waste. 56 FR 7197 (Feb. 21, 1991); *Environmental Defense Fund* v. *EPA*, 852 F.2d 1309, 1329 (D.C. Cir. 1988), cert. denied, 489 U.S. 1011 (1989). Thus, the limits serve as interim regulatory levels. Nonetheless, EPA views these land disposal restriction limits as a temporary measure pending future rulemaking to consider whether more appropriate health-based limits should be established.

This stay does not affect the application of procedural requirements of § 266.112(b)(2), except that the following provisions of paragraph (b)(2)(i) are also stayed: (1) The default limit of 0.002 micrograms per kilogram; and (2) the procedure for handling nondetect values. Under the conditioned stay, a default value does not apply given that EPA has established detectable limits for virtually every hazardous constituent for which analytical methods are readily available. Further, detection limits under the stay will be handled as they are for compliance with the land disposal restrictions. As provided by § 268.43(c)(3), the Agency considers that the limit for an organic constituent has been met if the facility used a combustion process to treat the waste, and has been unable to detect the constituent despite using its best efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are developed, the facility may demonstrate best efforts by achieving detection limits for the constituent that do not exceed the limit by an order of magnitude.

EPA is making this stay immediately effective. The Agency is taking this action after making a good-faith effort to provide advance notice and opportunity for comment on the conditioned stay. The Agency provided notice and requested comment from the approximately 80 commenters on the Bevill provision of the BIF rule during the previous rulemaking process.[1] EPA received comments from 18 respondents representing regulated BIFs and associated organizations, and from the incineration industry (e.g., the National Waste Management Association and the Hazardous Waste Treatment Council). These comments are addressed in this document.

II. Background

Under § 266.112 of the BIF rule, EPA codified procedures for owners and operators of Bevill devices (e.g., cement kilns, light-weight aggregate kilns, coal-fired boilers, and primary smelters) to determine whether their residues retain the Bevill exemption when the facilities co-fire or co-process hazardous wastes along with fossil fuels or normal raw materials. See 56 FR 7196-7200

[1] Letter from Matthew Straus, Director, Waste Management Division, EPA, to Commenters on Proposed Bevill Provisions of the BIF Rule, dated March 24, 1993.

(February 21, 1991). Those procedures implement the principle that, if burning hazardous waste does not affect the character of the residue (i.e., the residue would be essentially the same whether or not hazardous wastes were burned or co-processed), the waste-derived residue retains the Bevill exemption. The procedures require facilities that claim the Bevill exemption when burning listed hazardous waste to conduct sampling and analysis of their residues to document that either: (1) Levels of toxic constituents in waste-derived residue are not significantly higher than in normal (i.e., when not burning hazardous waste) residues; or (2) levels of toxic constituents in waste-derived residue do not exceed health-based levels specified in the rule. If the residue passes either test, the Bevill exemption is retained.

The rule requires sampling and analysis as often as necessary to characterize the residue, provided that the compositing period does not exceed 24 hours. For example, if a facility analyzes its residue less frequently than daily, the sample analyzed cannot represent residue that has been generated during a period exceeding 24 hours.

The constituents that must be analyzed for are: (1) Appendix VIII, part 261, hazardous constituents that could reasonably be expected to be in the hazardous waste burned; and (2) compounds that the Agency has determined are common products of incomplete combustion (i.e., they may be formed during combustion of the waste) and has listed in appendix VIII, part 266.

III. Inaccuracy of the Existing Limits

The health-based limits (HBLs) for nonmetals established in appendix VII, part 266, are based on the total concentration of the nonmetal in the residue, not an extract concentration. This is because combustion processes should destroy nonmetal compounds, and limits on the total concentration of the compound in the residue would better ensure effective destruction. The health-based limits on the total concentration of toxic compounds address exposure via ingestion of the residue.

To establish the HBLs for nonmetals, the Agency converted drinking water limits (i.e., maximum concentration limits (MCLs), and limits based on reference doses (RfDs) for noncarcinogens and unit risk values for carcinogens assuming the exposed individual drunk two liters of water per day for a lifetime) to total concentrations simply by mathematically converting the milligram per liter drinking water limits to milligram per kilogram units. In the rush to promulgate the BIF rules under a stringent court-ordered deadline, the Agency failed to note that this approach continues to assume that the hypothetical exposed individual is ingesting two liters (two kilograms) per day of the media—that is, two kilograms or 4.4 pounds of residue. Clearly, this was not the Agency's intent. In previous risk assessments, the Agency has often assumed that an individual ingests 0.2 grams of soil per day. If a residue ingestion rate of 0.2 grams per day was assumed, then the appendix VII, part 266, nonmetal limits may be orders of magnitude too stringent.

What is certain is that the existing regulatory values are mistaken. The Agency thus believes that the nonmetal health-based limits must be corrected immediately.

CKRC also petitioned to alter the HBL value for thallium, likewise arguing that the regulatory value is inappropriately low (stringent) due to improper conversion of values and initial misclassification of thallium as a nonmetal. EPA is not acting on this part of the petition. Since the rule was promulgated, EPA has new health information on thallium that indicates that the RfD for this hazardous constituent is significantly lower than originally determined. Based on these new data, the Agency's Office of Drinking Water (after notice and comment rulemaking) has lowered the maximum concentration limit (MCL) for thallium to 0.002 mg/l. See 57 FR 31776 (July 17, 1992). Based on this new information, if anything, the existing regulatory value is not stringent enough, given that the Bevill limits were based on applying a 100 fold dilution factor to the MCLs. See 56 FR 7190. The Agency thus is not staying that value, and may issue guidance to permit writers regarding the possible use of omnibus permit authority to include thallium values in the § 266.112 demonstration that reflect the most recent health information.

IV. Basis for Using Land Disposal Restriction Standards as Interim Limits

This section discusses the basis for selecting the land disposal restriction [LDR] limits for the underlying hazardous constituents in nonwastewaters as interim limits as well as the rationale for not selecting an alternative approach based on drinking water limits times a dilution and attenuation factor (DAF). (It should be noted that the LDR limits established in today's stay are based on total concentrations in the residue: the alternative of establishing limits based on drinking water limits times a DAF would apply to the Toxicity Characteristic Leachate Procedure (TCLP) extract.)

A. LDR Limits

The Agency has established land disposal treatment standards for the underlying hazardous constituents in FO39 (multisource leachate) that are essentially a compilation of all earlier treatment standards and include virtually every RCRA hazardous constituent that can be routinely analyzed by gas chromatography/mass spectrometry (GC/MS).[2] The Agency believes that these limits are achievable for most RCRA hazardous wastes. See generally 58 FR 29867 (May 24, 1993) for an explanation of why EPA believes these treatment standards are achievable for most hazardous wastes.

The Agency believes that it is reasonable to exempt Bevill residues at these LDR levels on an interim basis (pending rulemaking to establish more appropriate limits) because: (1) Technology-based treatment limits should identify residues that have the "low toxicity" property that is one of the bases for the temporary exclusion of Bevill residues from the definition of hazardous waste; (2) they are promulgated limits and so have been scrutinized and subject to public comment in previous rulemakings, notably the Third Third rule (55 FR 22619–625 (June 1, 1990)), the August 18, 1992, rule applying these standards to a wider group of prohibited wastes (57 FR 37203–206), and the May 24, 1993, interim final rule applying the standard to certain ignitable and corrosive hazardous wastes;[3] (3) the limits have been established for virtually every hazardous constituent that can be routinely analyzed by GC/MS; and (4) they should be readily achievable.

The majority of commenters to the March 24, 1993, letter agreed that these LDR limits were acceptable as interim limits pending rulemaking to establish more appropriate limits. Several commenters, however, expressed concern that exempting Bevill residues

[2] Commenters expressed concern that the list of appendix VIII, part 261, constituents is more comprehensive than the list of FO39 compounds. As a practical matter, this is a moot point because there are no analytical procedures for many of the compounds on appendix VIII, and others cannot be analyzed using readily available equipment, i.e., GC/MS).

[3] Entitled, "Land Disposal Restrictions for Ignitable and Corrosive Characteristic Wastes Whose Standards Were Vacated; Interim Final Rule."

at LDR levels may not be protective given that the LDR levels are technology-based, not health-based. Commenters also noted that the LDRs apply to waste that may remain subject to subtitle C management, rather than wastes excluded from Subtitle C regulation. We share commenters' concerns but note the LDR levels are interim limits (pending rulemaking to establish health-based levels), and we believe that they are sufficiently protective. The LDRs should ensure that nonmetals are largely destroyed because they are based on concentration levels achieved by applying best demonstrated available treatment technology. No commenter maintained that wastes containing these levels of organics would not satisfy the low hazard Bevill test with respect to nonmetal constituents. Moreover, in most cases, these LDR standards for nonmetals are based on the level of detection in combustion residues. Even if the health-based level for a compound were to be lower than the LDR, it may not have practical significance if the LDR is the limit of detection in the residue matrix.

Other commenters suggested that there is no emergency situation and that the Agency should develop appropriate health-based limits through rulemaking. Some commenters noted that, if the existing limits could not be met, facilities still had the option of documenting that the levels of toxic constituents in waste-derived residue were no higher than in normal (i.e., generated without burning hazardous waste) residue under § 266.112(b)(1). EPA believes that these limits are not reasonable (i.e., are so conservative that they replicate an unrealistic scenario), and that the option provided by paragraph (b)(1) in any case may not be practicable. In particular, we have learned since promulgation of the rule that it is often difficult to establish and re-establish concentration levels in normal residue as raw materials or operating conditions change that can affect the levels of hazardous constituents in the residue. This is because devices such as cement kilns must be operated for extensive periods of time (e.g., hours or days) to reach steady-state conditions with respect to levels of appendix VIII, part 261, compounds in the residue. Thus, the approach of comparing waste-derived residue to normal residue may be problematic.

Finally, we note that, by establishing LDR exemption levels for Bevill residue, the Agency is not suggesting that: (1) the technology-based treatment standards are equivalent to, or appropriate to use as, health-based limits; or (2) Bevill excluded residues should necessarily be subject to the LDR rules. These issues, as well as others, will be addressed in a follow-up rulemaking.[4]

B. Consideration of Using TC Limits

Several commenters suggested that the Agency establish limits using the same approach used for metals. Under that approach, the limits would apply to a TCLP extract and would be established at 100 times the health-based levels (e.g., maximum concentration limits (MCLs), and limits based on reference doses (RfDs) and unit risk values (for carcinogens) assuming the exposed individual drank two liters of extract per day for a lifetime) to consider dilution and attenuation.

While the Agency's ultimate policy preference is to establish risk-based regulatory levels, the difficulties involved in this task are formidable and controversial. For example, in this case, limits on extract concentrations of organics would not address the potential risk posed by ingestion of the residue itself (e.g., via fugitive dust). Although the extract limits may provide an adequate level of protection, the Agency has not addressed this potential exposure pathway at this time.

We note that, under HWIR, the Agency will define hazardous constituent concentration levels below which a waste is no longer considered "hazardous." Discussions concerning these levels are taking place in the context of the recently chartered Federal Advisory Committee on the Hazardous Waste Identification Rule (HWIR). The Committee chose to initially discuss how to provide greater flexibility for the remediation of contamination at hazardous waste sites. It has also begun discussions by focusing on concentrations below which waste mixtures and treatment residuals would no longer be subject to the hazardous waste regulations ("exit" criteria), while also discussing whether there is a regulatory approach to relatively quickly bring under regulation clearly hazardous waste not now controlled by the hazardous waste regulations (an "entry" rule). To help address the uncertainties of assessing multiple exposure pathways, the Agency also has initiated research to examine exposure of humans and the environment to hazardous constituents through a large number and variety of pathways.

[4] This latter issue is already the subject of rulemaking. See 56 FR 58166 (Oct. 24, 1991), and EPA will decide the question exclusively in that rulemaking.

C. Which Hazardous Constituents Are Affected

The Bevill comparison test is to be performed for any hazardous constituent (i.e., a constituent listed in appendix VIII of part 261) that may reasonably be expected to be a constituent in the hazardous waste being co-burned or co-processed in the Bevill unit, plus the list (found in appendix VIII of part 266) of all products of incomplete combustion that could also be found in the residues. See § 266.112(b)(1) and 56 FR 7199. These requirements remain unchanged by today's stay.

V. Implementation of the Revised Limits

The stay is conditioned on compliance with the interim LDR exemption values. Noncompliance with those values would mean that the owner or operator of the Bevill device is no longer meeting the conditions of the administrative stay and therefore must comply with the comparison test in § 266.112(b)(1), in order to qualify for the exclusion in § 266.112. If the owner or operator meets neither the conditions of the stay nor the comparison test, then the residue would be subject to regulation as a hazardous waste.

In addition, the stay does not affect the application of the procedural requirements in § 266.112(b)(2),[5] except as noted below.

A. Default Value is Stayed

Under the stay, the default value of 0.002 micrograms per kilogram established by § 266.112(b)(2) does not apply given that FO39 limits have been established for virtually every prohibited hazardous constituent for which analytical methods are readily available. In addition, that default value would not be appropriate because it was established as the lower 95th percentile of the (inappropriate) health-based limits.

B. Procedures for Handling Nondetects

The procedures for determining compliance when a constituent is not detected in the residue will be the same as those used for compliance with the FO39 nonmetal limits under the land disposal restrictions program. As provided by § 268.43(c)(3), the Agency

[5] In particular, the sampling and analysis requirements of § 266.112(b)(2)(iii) remain in effect. That paragraph requires sampling and analysis as often as necessary to determine whether residue generated during each 24-hour period exceeds the health-based limits. Further, compositing of samples is allowed, provided that the samples comprising the composite are taken from residue generated during a given 24-hour period.

considers that the limit for a constituent has been met if the facility has been unable to detect the constituent despite using its best efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are finalized (and no such guidance presently exists), the facility may demonstrate such efforts by achieving detection limits for the constituent that do not exceed an order of magnitude above the interim limit. See revised § 268.112(b)(2)(i).

We note that the Agency developed this policy for the FO39 nonmetal treatment standards because the standards were developed based on residual levels in incinerator ash, and incinerator ash matrices can be difficult to analyze. Under today's stay, however, the Agency is using these standards as interim limits for Bevill residues. (Incinerator ash is not a Bevill residue.) Although some Bevill residues may present a matrix as difficult to analyze (i.e., to achieve low detection limits) as incinerator ash (e.g., bottom ash from a coal-fired boiler burning hazardous waste fuel), the Agency believes that the vast majority of the residues eligible for the Bevill exclusion—cement kiln dust and bag house dust from light-weight aggregate kilns—will be easier to analyze than incinerator ash. As evidence, data from 23 samples on the concentration of 43 organic compounds in cement kiln dust from three facilities indicate that detection limits are well below the FO39 limits.[6] Thus, the Agency expects that cement facilities making a good-faith effort to achieve detection limits at or below the FO39 levels will be able to do so.

Further, the Agency believes that particulate matter collected from light-weight aggregate kilns represents an analytical matrix similar to cement kiln dust. Thus, light-weight aggregate facilities making a good-faith effort to achieve detection limits at or below the FO39 level should also be able to do so.

C. Analytical Methods

Several commenters expressed concerns about the availability of analytical methods to document compliance with the FO39 interim limits. One commenter asserts that the incineration-based FO39 nonwastewater standards are set below the levels of detection normally achievable in incinerator ash. As evidence, the commenter cites the results of a series of incineration tests the commenter performed in 1989 and 1990 and submitted to the Agency on comments on earlier land disposal restrictions rulemakings.[7] EPA does not believe that the commenter's data demonstrates that the FO39 standards are below the level at which a competent analytical lab can quantify these compounds. In the Third Third Final Rule, EPA revised the FO39 nonwastewater standards between proposal and promulgation to accommodate the commenter's concerns. See the Response to Comments Background Document for the Third Third Final Rule. Moreover, we note that, as discussed above, incinerator ash is not a Bevill residue and that the majority of Bevill residues should pose a easier matrix to analyze than incinerator ash. Finally, if a particular Bevill residue matrix is difficult to analyze, we note that a facility is deemed to be in compliance for a constituent if the detection limit for the constituent is not more than an order of magnitude higher than the FO39 level.

Several commenters stated that SW-846 methods are not readily available for 47 of the FO39 compounds and noted that a laboratory provided a list of 47 compounds on the FO39 list "for which they do not test." EPA believes that each FO39 compound is a target analyte for at least one SW-846 method. In fact, EPA deliberately excluded from consideration in developing the FO39 list compounds on appendix VIII, part 261, without SW-846 methods. Moreover, EPA is aware that many commercial laboratories advertise that they analyze the entire "RCRA list" of compounds.

D. Immediate Effective Date

EPA is issuing this administrative stay pursuant to 5 U.S.C. 705, authorizing Agencies to stay administrative action pending judicial review when "justice so requires." See also Rule 18 of the Federal Rules of Appellate Procedure authorizing issuance of administrative stays pending review. (The issue of appropriate limits for nonmetals in co-processing residues from Bevill devices is at issue in the litigation over the BIF rule.) EPA believes that issuance of a stay for nonmetal constituents here is needed because the existing regulatory values are not reasonable. As explained above, they are based on an improper conversion of values resulting in a situation that mirrors massive ingestion of wastes in a manner that could not possibly occur. These values should thus be changed immediately.

At the same time, the Agency believes it necessary to establish a replacement for the stayed exemption levels for Bevill residues. Having no interim limits for nonmetals would lead to unacceptable situations where persons co-processing hazardous wastes and Bevill materials could not establish whether their residues were significantly affected. Hence, they would automatically lose their Bevill status (assuming the statistical test cannot be satisfied), or, equally unacceptably, the residues from co-processing would retain Bevill status without having to determine whether the co-processing added significant levels of organic hazardous constituents to the residues (and thus creating the possibility of unregulated management of high volume, high hazard wastes, at odds with all the commands of subtitle C). To the extent good cause (pursuant to 5 U.S.C. 553(b)) is needed to justify the Agency's immediately effective adoption of interim nonmetal values, the existence of these two unacceptable alternatives establishes good cause, in EPA's view. EPA has also explained why use of interim values borrowed from LDR treatment standards is the most reasonable present course it can determine.

Several commenters also questioned whether the stay could be made retroactive to the original date of promulgation of the BIF rule. Retroactive applicability are normally highly disfavored as a legal matter, see *Chemical Waste Management v. EPA*, 869 F.2d 1526, 1536 (D.C. Cir. 1989), and EPA is therefore not promulgating a retroactive rule here.

VI. 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. EPA could not issue permits for any facilities in the State which the

[6] Correspondence from David Gassman, President, Gassman Consulting, Inc., to Bob Holloway, EPA, dated January 16, 1990.

[7] We note that the commenter's references to Practical Quantitation Limits (PQL's) obscures the issue because the concept of PQL's has been replaced by Method Detection Limits, defined in the current First Update to SW-846, Chapter One.

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 under HSWA authority 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 for those new requirements, 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.

Today's stay affects regulatory provisions promulgated pursuant to section 3004(q) of RCRA, a provision added by HSWA. (In particular, that provision implements the ambiguous language in section 3004(q)(1) that "(n)othing in this subsection shall be construed to impair the provisions of section 6921(b)(3) of this title" [the Bevill amendment].) Therefore, the Agency is adding today's provisions to Table 1 in § 271.1(j) which identifies the Federal program requirements that are promulgated pursuant to HSWA and that take effect simultaneously in all States, regardless of their authorization status. States that are already authorized to implement the BIF rule are also encouraged to undertake an administrative action (e.g., a stay or interim rule) consistent with the administrative stay announced today by EPA.

B. Effect on State Authorizations

With the exception of those States which have received authorization for the BIF rule, EPA will implement the BIF provisions of today's stay in all States. EPA's implementation of today's stay will continue until States modify their programs to adopt the provisions and the modification is approved by EPA. 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. Although today's stay replaces inappropriate limits with higher interim limits, and States may implement more stringent controls than EPA, we nonetheless strongly recommend that States adopt today's provisions. Because more stringent State program requirements are allowed under RCRA section 3009, EPA will not withhold authorization from a State that submits rules that contain the levels in the 2/21/91 rule. However, EPA recommends that the States modify their programs to adopt today's provisions, and that they do so on the same schedule that would be recommended for new regulations. Thus, we recommend that States modify their programs to adopt today's provisions by July 1, 1996, if a statutory change is not needed, or July 1, 1997, if a statutory change is needed. 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 provisions of today's stay 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 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.

VII. Paperwork Reduction Act

The information collection requirements of § 268.112 of the BIF rule have been approved by the Office of Management and Budget (OMB) under OMB Control number 2050–0073. This stay does not affect the information collection requirements of that section.

List of Subjects in 40 CFR Parts 266 and 271

Administrative practices and procedures, Hazardous waste, Intergovernmental relations, Recycling, Reporting and recordkeeping requirements.

Dated: October 15, 1993.

Carol M. Browner,

Administrator.

I. In part 266:

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

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. Section 266.112 is amended by revising paragraph (b)(2)(i) to read as follows:

§ 266.112 Regulation of residues.

* * * * *

(b) * * *

(2) * * *

(i) *Nonmetal constituents.* The concentration of each nonmetal toxic constituent of concern (specified in paragraph (b)(1) of this section) in the waste-derived residue must not exceed the health-based level specified in appendix VII of this part, or the level of detection (using analytical procedures prescribed in SW–846), whichever is higher. 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. The levels specified in appendix VII of this part (and the default level of 0.002 micrograms per kilogram or the level of detection for constituents as identified in Note 1 of appendix VII of this chapter) are administratively stayed under the condition, for those constituents specified in paragraph (b)(1) of this section, that the owner or operator complies with alternative levels defined as the land disposal restriction limits specified in § 268.43 of this chapter for FO39 nonwastewaters. In complying with those alternative levels, if an owner or operator is unable to detect a constituent despite documenting use of best good-faith efforts as defined by applicable Agency guidance or standards, the owner or operator is deemed to be in compliance for that constituent. Until new guidance or standards are developed, the owner or operator may demonstrate such good-faith efforts by achieving a detection limit for the constituent that does not exceed an order of magnitude above the level provided by § 268.43 for FO39 nonwastewaters. The stay will remain in effect until further administrative action is taken and notice is published in the

Federal Register and the Code of Federal Regulations; and

* * * * *

3. Appendix VII of part 266 is amended by designating the existing note at the end of the appendix as note 1 and adding a note 2 to read as follows:

Appendix VII [Amended]

* * * * *

Note 2: The levels specified in this appendix and the default level of 0.002 micrograms per kilogram or the level of detection for constituents as identified in Note 1 of this appendix are administratively stayed under the condition, for those constituents specified in § 266.112(b)(1), that the owner or operator complies with alternative levels defined as the land disposal restriction limits specified in § 268.43 of this chapter for FO39 nonwastewaters. See § 266.112(b)(2)(i).

II. In part 271:

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication in the Federal Register to read as follows:

§ 271.1 Purpose and scope.

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(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 198[redacted]

Promulgation date	Title of regulation	Federal Register reference	Effective date
*	*	*	*
November 9, 1993.	Burning of hazardous waste in boilers and industrial furnaces.	[insert FR page numbers].	October 15, 1993.

[FR Doc. 93-26041 Filed 11-8-93; 8:45 am]

BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 266 and 271

[FRL-4792-7]

Burning of Hazardous Waste in Boilers and Industrial Furnaces

AGENCY: Environmental Protection Agency (EPA).

ACTION: Interim final rule.

SUMMARY: On February 21, 1991, EPA promulgated regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA) that would expand controls on hazardous waste combustion to regulate the burning of hazardous waste in boilers and industrial furnaces (BIFs). Among other things, the regulations provide two tests for determining whether residues derived from Bevill devices (e.g., cement kilns, light-weight aggregate kilns, primary smelters, coal-fired boilers) co-processing hazardous waste and raw materials are exempt from hazardous waste control: if levels of the toxic constituents in the waste-derived residue are not significantly higher than in normal residue; or if levels of the toxic constituents in the waste-derived residue do not exceed specified health-based levels. EPA is today announcing an interim final rule on the health-based limits for nonmetals that are used to determine whether Bevill residues are exempt from the definition of hazardous waste under test number 2, provided that other limits are met on an interim basis (in order to prevent a situation where nonmetal constituents in these residues go unmonitored). The effect of this rule is to replace the current limits needed to qualify for the Bevill exemption (under test number 2) with the land disposal restriction limits for underlying constituents in nonwastewaters pending further administrative action to establish health-based levels.

EFFECTIVE DATE: October 15, 1993.

ADDRESSES: The official record for this document is identified as Docket Number F-93-BBAS-FFFFF, and is located in the RCRA Information Center located at: EPA/RCRA Information Center, room M2616, 401 M Street SW., Washington, DC 20460.

The RCRA Information Center 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) 260-9327 for appointments. Copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at: (800) 424-9346 (toll free) or (703) 920-9810.

For technical information concerning this notice, contact Shiva Garg, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (703) 308-8459.

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

I. Overview of Agency Action
II. Background
III. Inaccuracy of the Existing Limits
IV. Basis for Using Land Disposal Restriction Standards as Interim Limits
A. LDR Limits
B. Consideration of Using TC Limits
C. Which Hazardous Constituents are Affected
V. Implementation of the Revised Limits
A. Default Value is Stayed
B. Procedures for Handling Nondetects
C. Analytical Methods
D. Immediate Effective Date
VI. State Authority
A. Applicability of Rules in Authorized States
B. Effect on State Authorization
VII. Paperwork Reduction Act

I. Overview of Agency Action

On January 22, 1993, the Cement Kiln Recycling Coalition (CKRC) submitted a petition to EPA to modify § 266.112 of the Boiler and Industrial Furnace (BIF) Rule to amend the health-based limits for nonmetal constituents in waste-derived residues that must be met in order to qualify for the Bevill exemption (under the test in § 266.112(b)(2)). The Agency agrees that the nonmetal limits established in appendix VII, part 266, are extremely conservative to the point that they replicate an unrealistic scenario. The values, moreover, were based on unintended, mistaken assumptions on EPA's part. Therefore, the Agency is today staying those limits provided that owners and operators of such Bevill devices comply with land disposal restriction standards for the hazardous constituents that are reasonably expected to be present in these residues. The Agency believes that these technology-based land disposal restriction limits identify residues that have the "low toxicity" attribute that is one of the key bases for the temporary exemption of Bevill residues from the definition of hazardous waste. 56 FR 7197 (Feb. 21, 1991); *Environmental Defense Fund* v. *EPA*, 852 F.2d 1316, 1329 (D.C. Cir. 1988), cert. denied, 489 U.S. 1011 (1989). Thus, the limits serve as interim regulatory levels. Nonetheless, EPA views these land disposal restriction limits as a temporary measure pending future rulemaking to consider whether more appropriate health-based limits should be established.

This stay does not effect the application of procedural requirements of § 266.112(b)(2), except that the following provisions of paragraph (b)(2)(i) are also stayed: (1) The default limit of 0.002 micrograms per kilogram; and (2) the procedure for handling nondetect values. Under the conditioned stay, a default value does not apply given that EPA has established detectable limits for virtually every hazardous constituent for which analytical methods are readily available. Further, detection limits under the stay will be handled as they are for compliance with the land disposal restrictions. As provided by § 268.43(c)(3), the Agency considers that the limit for an organic constituent has been met if the facility used a combustion process to treat the waste, and has been unable to detect the constituent despite using its best efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are developed, the facility may demonstrate best efforts by achieving detection limits for the constituent that do not exceed the limit by an order of magnitude.

EPA is making this stay immediately effective. The Agency is taking this action after making a good-faith effort to provide advance notice and opportunity for comment on the conditioned stay. The Agency provided notice and requested comment from the approximately 80 commenters on the Bevill provision of the BIF rule during the previous rulemaking process.[1] EPA received comments from 16 respondents representing regulated BIFs and associated organizations, and from the incineration industry (e.g., the National Waste Management Association and the Hazardous Waste Treatment Council). These comments are addressed in this document.

II. Background

Under § 266.112 of the BIF rule, EPA codified procedures for owners and operators of Bevill devices (e.g., cement kilns, light-weight aggregate kilns, coal-fired boilers, and primary smelters) to determine whether their residues retain the Bevill exemption when the facilities co-fire or co-process hazardous wastes along with fossil fuels or normal raw materials. See 56 FR 7196-7200

[1] Letter from Matthew Straus, Director, Waste Management Division, EPA, to Commenters on Proposed Bevill Provisions of the BIF Rule, dated March 24, 1993.

(February 21, 1991). Those procedures implement the principle that, if burning hazardous waste does not affect the character of the residue (i.e., the residue would be essentially the same whether or not hazardous wastes were burned or co-processed), the waste-derived residue retains the Bevill exemption. The procedures require facilities that claim the Bevill exemption when burning listed hazardous waste to conduct sampling and analysis of their residues to document that either: (1) Levels of toxic constituents in waste-derived residue are not significantly higher than in normal (i.e., when not burning hazardous waste) residues; or (2) levels of toxic constituents in waste-derived residue do not exceed health-based levels specified in the rule. If the residue passes either test, the Bevill exemption is retained.

The rule requires sampling and analysis as often as necessary to characterize the residue, provided that the compositing period does not exceed 24 hours. For example, if a facility analyzes its residue less frequently than daily, the sample analyzed cannot represent residue that has been generated during a period exceeding 24 hours.

The constituents that must be analyzed for are: (1) Appendix VIII, part 261, hazardous constituents that could reasonably be expected to be in the hazardous waste burned; and (2) compounds that the Agency has determined are common products of incomplete combustion (i.e., they may be formed during combustion of the waste) and has listed in appendix VIII, part 266.

III. Inaccuracy of the Existing Limits

The health-based limits (HBLs) for nonmetals established in appendix VII, part 266, are based on the total concentration of the nonmetal in the residue, not an extract concentration. This is because combustion processes should destroy nonmetal compounds, and limits on the total concentration of the compound in the residue would better ensure effective destruction. The health-based limits on the total concentration of toxic compounds address exposure via ingestion of the residue.

To establish the HBLs for nonmetals, the Agency converted drinking water limits (i.e., maximum concentration limits (MCLs), and limits based on reference doses (RfDs) for noncarcinogens and unit risk values for carcinogens assuming the exposed individual drank two liters of water per day for a lifetime) to total concentrations simply by mathematically converting the milligram per liter drinking water limits to milligram per kilogram units. In the rush to promulgate the BIF rules under a stringent court-ordered deadline, the Agency failed to note that this approach continues to assume that the hypothetical exposed individual is ingesting two liters (two kilograms) per day of the media—that is, two kilograms or 4.4 pounds of residue. Clearly, this was not the Agency's intent. In previous risk assessments, the Agency has often assumed that an individual ingests 0.2 grams of soil per day. If a residue ingestion rate of 0.2 grams per day was assumed, then the appendix VII, part 266, nonmetal limits may be orders of magnitude too stringent.

What is certain is that the existing regulatory values are mistaken. The Agency thus believes that the nonmetal health-based limits must be corrected immediately.

CKRC also petitioned to alter the HBL value for thallium, likewise arguing that the regulatory value is inappropriately low (stringent) due to improper conversion of values and initial misclassification of thallium as a nonmetal. EPA is not acting on this part of the petition. Since the rule was promulgated, EPA has new health information on thallium that indicates that the RfD for this hazardous constituent is significantly lower than originally determined. Based on these new data, the Agency's Office of Drinking Water (after notice and comment rulemaking) has lowered the maximum concentration limit (MCL) for thallium to 0.002 mg/l. See 57 FR 31776 (July 17, 1992). Based on this new information, if anything, the existing regulatory value is not stringent enough, given that the Bevill limits were based on applying a 100 fold dilution factor to the MCLs. See 56 FR 7198. The Agency thus is not staying that value, and may issue guidance to permit writers regarding the possible use of omnibus permit authority to include thallium values in the § 266.112 demonstration that reflect the most recent health information.

IV. Basis for Using Land Disposal Restriction Standards as Interim Limits

This section discusses the basis for selecting the land disposal restriction (LDR) limits for the underlying hazardous constituents in nonwastewaters as interim limits as well as the rationale for not selecting an alternative approach based on drinking water limits times a dilution and attenuation factor (DAF). (It should be noted that the LDR limits established in today's stay are based on total concentrations in the residue; the alternative of establishing limits based on drinking water limits times a DAF would apply to the Toxicity Characteristic Leachate Procedure (TCLP) extract.)

A. LDR Limits

The Agency has established land disposal treatment standards for the underlying hazardous constituents in FO39 (multisource leachate) that are essentially a compilation of all earlier treatment standards and include virtually every RCRA hazardous constituent that can be routinely analyzed by gas chromatography/mass spectrometry (GC/MS).[2] The Agency believes that these limits are achievable for most RCRA hazardous wastes. See generally 58 FR 29867 (May 24, 1993) for an explanation of why EPA believes these treatment standards are achievable for most hazardous wastes.

The Agency believes that it is reasonable to exempt Bevill residues at these LDR levels on an interim basis (pending rulemaking to establish more appropriate limits) because: (1) Technology-based treatment limits should identify residues that have the "low toxicity" property that is one of the bases for the temporary exclusion of Bevill residues from the definition of hazardous waste; (2) they are promulgated limits and so have been scrutinized and subject to public comment in previous rulemakings, most notably the Third Third rule (55 FR 22619–625 (June 1, 1990)), the August 18, 1992, rule applying these standards to a wider group of prohibited wastes (57 FR 37203–206), and the May 24, 1993, interim final rule applying the standard to certain ignitable and corrosive hazardous wastes;[3] (3) the limits have been established for virtually every hazardous constituent that can be routinely analyzed by GC/MS; and (4) they should be readily achievable.

The majority of commenters to the March 24, 1993, letter agreed that these LDR limits were acceptable as interim limits pending rulemaking to establish more appropriate limits. Several commenters, however, expressed concern that exempting Bevill residues

[2] Commenters expressed concern that the list of appendix VIII, part 261, constituents is more comprehensive than the list of FO39 compounds. As a practical matter, this is a moot point because there are no analytical procedures for many of the compounds on appendix VIII, and others cannot be analyzed using readily available equipment (i.e., GC/MS).

[3] Entitled, "Land Disposal Restrictions for Ignitable and Corrosive Characteristic Wastes Whose Standards Were Vacated; Interim Final Rule."

at LDR levels may not be protective given that the LDR levels are technology-based, not health-based. Commenters also noted that the LDRs apply to waste that may remain subject to subtitle C management, rather than wastes excluded from Subtitle C regulation. We share commenters' concerns but note the LDR levels are interim limits (pending rulemaking to establish health-based levels), and we believe that they are sufficiently protective. The LDRs should ensure that nonmetals are largely destroyed because they are based on concentration levels achieved by applying best demonstrated available treatment technology. No commenter maintained that wastes containing these levels of organics would not satisfy the low hazard Bevill test with respect to nonmetal constituents. Moreover, in most cases, these LDR standards for nonmetals are based on the level of detection in combustion residues. Even if the health-based level for a compound were to be lower than the LDR, it may not have practical significance if the LDR is the limit of detection in the residue matrix.

Other commenters suggested that there is no emergency situation and that the Agency should develop appropriate health-based limits through rulemaking. Some commenters noted that, if the existing limits could not be met, facilities still had the option of documenting that the levels of toxic constituents in waste-derived residue were no higher than in normal (i.e., generated without burning hazardous waste) residue under § 266.112(b)(1). EPA believes that these limits are not reasonable (i.e., are so conservative that they replicate an unrealistic scenario), and that the option provided by paragraph (b)(1) in any case may not be practicable. In particular, we have learned since promulgation of the rule that it is often difficult to establish and re-establish concentration levels in normal residue as raw materials or operating conditions change that can affect the levels of hazardous constituents in the residue. This is because devices such as cement kilns must be operated for extensive periods of time (e.g., hours or days) to reach steady-state conditions with respect to levels of appendix VIII, part 261, compounds in the residue. Thus, the approach of comparing waste-derived residue to normal residue may be problematic.

Finally, we note that, by establishing LDR exemption levels for Bevill residue, the Agency is not suggesting that: (1) the technology-based treatment standards are equivalent to, or appropriate to use as, health-based limits; or (2) Bevill excluded residues should necessarily be subject to the LDR rules. These issues, as well as others, will be addressed in a follow-up rulemaking.[4]

B. Consideration of Using TC Limits

Several commenters suggested that the Agency establish limits using the same approach used for metals. Under that approach, the limits would apply to a TCLP extract and would be established at 100 times the health-based levels (e.g., maximum concentration limits (MCLs), and limits based on reference doses (RfDs) and unit risk values (for carcinogens) assuming the exposed individual drank two liters of extract per day for a lifetime) to consider dilution and attenuation.

While the Agency's ultimate policy preference is to establish risk-based regulatory levels, the difficulties involved in this task are formidable and controversial. For example, in this case, limits on extract concentrations of organics would not address the potential risk posed by ingestion of the residue itself (e.g., via fugitive dust). Although the extract limits may provide an adequate level of protection, the Agency has not addressed this potential exposure pathway at this time.

We note that, under HWIR, the Agency will define hazardous constituent concentration levels below which a waste is no longer considered "hazardous." Discussions concerning these levels are taking place in the context of the recently chartered Federal Advisory Committee on the Hazardous Waste Identification Rule (HWIR). The Committee chose to initially discuss how to provide greater flexibility for the remediation of contamination at hazardous waste sites. It has also begun discussions by focusing on concentrations below which waste mixtures and treatment residuals would no longer be subject to the hazardous waste regulations ("exit" criteria), while also discussing whether there is a regulatory approach to relatively quickly bring under regulation clearly hazardous waste not now controlled by the hazardous waste regulations (an "entry" rule). To help address the uncertainties of assessing multiple exposure pathways, the Agency also has initiated research to examine exposure of humans and the environment to hazardous constituents through a large number and variety of pathways.

[4] This latter issue is already the subject of rulemaking. See 56 FR 55160 (Oct. 24, 1991), and EPA will decide the question exclusively in that rulemaking.

C. Which Hazardous Constituents Are Affected

The Bevill comparison test is to be performed for any hazardous constituent (i.e., a constituent listed in appendix VIII of part 261) that may reasonably be expected to be a constituent in the hazardous waste being co-burned or co-processed in the Bevill unit, plus the list (found in appendix VIII of part 266) of all products of incomplete combustion that could also be found in the residues. See § 266.112(b)(1) and 56 FR 7199. These requirements remain unchanged by today's stay.

V. Implementation of the Revised Limits

The stay is conditioned on compliance with the interim LDR exemption values. Noncompliance with those values would mean that the owner or operator of the Bevill device is no longer meeting the conditions of the administrative stay and therefore must comply with the comparison test in § 266.112(b)(1), in order to qualify for the exclusion in § 266.112. If the owner or operator meets neither the conditions of the stay nor the comparison test, then the residue would be subject to regulation as a hazardous waste.

In addition, the stay does not affect the application of the procedural requirements in § 266.112(b)(2),[5] except as noted below.

A. Default Value is Stayed

Under the stay, the default value of 0.002 micrograms per kilogram established by § 266.112(b)(2) does not apply given that FO39 limits have been established for virtually every prohibited hazardous constituent for which analytical methods are readily available. In addition, that default value would not be appropriate because it was established as the lower 95th percentile of the (inappropriate) health-based limits.

B. Procedures for Handling Nondetects

The procedures for determining compliance when a constituent is not detected in the residue will be the same as those used for compliance with the FO39 nonmetal limits under the land disposal restrictions program. As provided by § 268.43(c)(3), the Agency

[5] In particular, the sampling and analysis requirements of § 266.112(b)(2)(iii) remain in effect. That paragraph requires sampling and analysis as often as necessary to determine whether residue generated during each 24-hour period exceeds the health-based limits. Further, compositing of samples is allowed, provided that the samples comprising the composite are taken from residue generated during a given 24-hour period.

considers that the limit for a constituent has been met if the facility has been unable to detect the constituent despite using its best efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are finalized (and no such guidance presently exists), the facility may demonstrate such efforts by achieving detection limits for the constituent that do not exceed an order of magnitude above the interim limit. See revised § 268.212(b)(2)(i).

We note that the Agency developed this policy for the FO39 nonmetal treatment standards because the standards were developed based on residual levels in incinerator ash, and incinerator ash matrices can be difficult to analyze. Under today's stay, however, the Agency is using these standards as interim limits for Bevill residues. (Incinerator ash is not a Bevill residue.) Although some Bevill residues may present a matrix as difficult to analyze (i.e., to achieve low detection limits) as incinerator ash (e.g., bottom ash from a coal-fired boiler burning hazardous waste fuel), the Agency believes that the vast majority of the residues eligible for the Bevill exclusion—cement kiln dust and bag house dust from light-weight aggregate kilns—will be easier to analyze than incinerator ash. As evidence, data from 23 samples on the concentration of 43 organic compounds in cement kiln dust from three facilities indicate that detection limits are well below the FO39 limits.[6] Thus, the Agency expects that cement facilities making a good-faith effort to achieve detection limits at or below the FO39 levels will be able to do so.

Further, the Agency believes that particulate matter collected from light-weight aggregate kilns represents an analytical matrix similar to cement kiln dust. Thus, light-weight aggregate facilities making a good-faith effort to achieve detection limits at or below the FO39 level should also be able to do so.

C. Analytical Methods

Several commenters expressed concerns about the availability of analytical methods to document compliance with the FO39 interim limits. One commenter asserts that the incineration-based FO39 nonwastewater standards are set below the levels of detection normally achievable in incinerator ash. As evidence, the commenter cites the results of a series of incineration tests the commenter performed in 1989 and 1990 and submitted to the Agency as comments on earlier land disposal restrictions rulemakings.[7] EPA does not believe that the commenter's data demonstrates that the FO39 standards are below the level at which a competent analytical lab can quantify these compounds. In the Third Third Final Rule, EPA revised the FO39 nonwastewater standards between proposal and promulgation to accommodate the commenter's concerns. See the Response to Comments Background Document for the Third Third Final Rule. Moreover, we note that, as discussed above, incinerator ash is not a Bevill residue and that the majority of Bevill residues should pose a easier matrix to analyze than incinerator ash. Finally, if a particular Bevill residue matrix is difficult to analyze, we note that a facility is deemed to be in compliance for a constituent if the detection limit for the constituent is not more than an order of magnitude higher than the FO39 level.

Several commenters stated that SW-846 methods are not readily available for 47 of the FO39 compounds and noted that a laboratory provided a list of 47 compounds on the FO39 list "for which they do not test." EPA believes that each FO39 compound is a target analyte for at least one SW-846 method. In fact, EPA deliberately excluded from consideration in developing the FO39 list compounds on appendix VIII, part 261, without SW-846 methods. Moreover, EPA is aware that many commercial laboratories advertise that they analyze the entire "RCRA list" of compounds.

D. Immediate Effective Date

EPA is issuing this administrative stay pursuant to 5 U.S.C. 705, authorizing Agencies to stay administrative action pending judicial review when "justice so requires." See also Rule 18 of the Federal Rules of Appellate Procedure authorizing issuance of administrative stays pending review. (The issue of appropriate limits for nonmetals in co-processing residues from Bevill devices is at issue in the litigation over the BIF rule.) EPA believes that issuance of a stay for nonmetal constituents here is needed because the existing regulatory values are not reasonable. As explained above, they are based on an improper conversion of values resulting in a situation that mirrors massive ingestion of wastes in a manner that could not possibly occur. These values should thus be changed immediately.

At the same time, the Agency believes it necessary to establish a replacement for the stayed exemption levels for Bevill residues. Having no interim limits for nonmetals would lead to unacceptable situations where persons co-processing hazardous wastes and Bevill materials could not establish whether their residues were significantly affected. Hence, they would automatically lose their Bevill status (assuming the statistical test cannot be satisfied), or, equally unacceptably, the residues from co-processing would retain Bevill status without having to determine whether the co-processing added significant levels of organic hazardous constituents to the residues (and thus creating the possibility of unregulated management of high volume, high hazard wastes, at odds with all the commands of subtitle C). To the extent good cause (pursuant to 5 U.S.C. 553(b)) is needed to justify the Agency's immediately effective adoption of interim nonmetal values, the existence of these two unacceptable alternatives establishes good cause, in EPA's view. EPA has also explained why use of interim values borrowed from LDR treatment standards is the most reasonable present course it can determine.

Several commenters also questioned whether the stay could be made retroactive to the original date of promulgation of the BIF rule. Rules with retroactive applicability are normally highly disfavored as a legal matter, see *Chemical Waste Management* v. *EPA*, 869 F.2d 1526, 1538 (D.C. Cir. 1989), and EPA is therefore not promulgating a retroactive rule here.

VI. 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. EPA could not issue permits for any facilities in the State which the

[6] Correspondence from David Chemerys, President, Chemerys Consulting, Inc., to Bob Holloway, EPA, dated January 16, 1992.

[7] We note that the commenter's reference to Practical Quantitation Limits (PQL's) obscures the issue because the concept of PQL's has been replaced by Method Detection Limits, defined in the current First Update to SW-846, Chapter One.

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 under HSWA authority 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 for those new requirements, 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.

Today's stay affects regulatory provisions promulgated pursuant to section 3004(q) of RCRA, a provision added by HSWA. (In particular, that provision implements the ambiguous language in section 3004(q)(1) that "(n)othing in this subsection shall be construed to impair the provisions of section 6921(b)(3) of this title" [the Bevill amendment].) Therefore, the Agency is adding today's provisions to Table 1 in § 271.1(j) which identifies the Federal program requirements that are promulgated pursuant to HSWA and that take effect simultaneously in all States, regardless of their authorization status. States that are already authorized to implement the BIF rule are also encouraged to undertake an administrative action (e.g., a stay or interim rule) consistent with the administrative stay announced today by EPA.

B. Effect on State Authorizations

With the exception of those States which have received authorization for the BIF rule, EPA will implement the BIF provisions of today's stay in all States. EPA's implementation of today's stay will continue until States modify their programs to adopt the provisions and the modification is approved by EPA. 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. Although today's stay replaces inappropriate limits with higher interim limits, and States may implement more stringent controls than EPA, we nonetheless strongly recommend that States adopt today's provisions. Because more stringent State program requirements are allowed under RCRA section 3009, EPA will not withhold authorization from a State that submits rules that contain the levels in the 2/21/91 rule. However, EPA recommends that the States modify their programs to adopt today's provisions, and that they do so on the same schedule that would be recommended for new regulations. Thus, we recommend that States modify their programs to adopt today's provisions by July 1, 1996, if a statutory change is not needed, or July 1, 1997, if a statutory change is needed. 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 provisions of today's stay 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 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.

VII. Paperwork Reduction Act

The information collection requirements of § 266.112 of the BIF rule have been approved by the Office of Management and Budget (OMB) under OMB Control number 2050–0073. This stay does not affect the information collection requirements of that section.

List of Subjects in 40 CFR Parts 266 and 271

Administrative practices and procedures, Hazardous waste, Intergovernmental relations, Recycling, Reporting and recordkeeping requirements.

Dated: October 15, 1993.

Carol M. Browner,

Administrator.

I. In part 266:

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

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. Section 266.112 is amended by revising paragraph (b)(2)(i) to read as follows:

§ 266.112 Regulation of residues.

* * * * *

(b) * * *

(2) * * *

(i) *Nonmetal constituents.* The concentration of each nonmetal toxic constituent of concern (specified in paragraph (b)(1) of this section) in the waste-derived residue must not exceed the health-based level specified in appendix VII of this part, or the level of detection (using analytical procedures prescribed in SW–846), whichever is higher. 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. The levels specified in appendix VII of this part (and the default level of 0.002 micrograms per kilogram or the level of detection for constituents as identified in Note 1 of appendix VII of this chapter) are administratively stayed under the condition, for those constituents specified in paragraph (b)(1) of this section, that the owner or operator complies with alternative levels defined as the land disposal restriction limits specified in § 268.43 of this chapter for FO39 nonwastewaters. In complying with those alternative levels, if an owner or operator is unable to detect a constituent despite documenting use of best good-faith efforts as defined by applicable Agency guidance or standards, the owner or operator is deemed to be in compliance for that constituent. Until new guidance or standards are developed, the owner or operator may demonstrate such good-faith efforts by achieving a detection limit for the constituent that does not exceed an order of magnitude above the level provided by § 268.43 for FO39 nonwastewaters. The stay will remain in effect until further administrative action is taken and notice is published in the

Federal Register and the Code of Federal Regulations; and

* * * * *

3. Appendix VII of part 266 is amended by designating the existing note at the end of the appendix as note 1 and adding a note 2 to read as follows:

Appendix VII [Amended]

* * * * *

Note 2: The levels specified in this appendix and the default level of 0.002 micrograms per kilogram or the level of detection for constituents as identified in Note 1 of this appendix are administratively stayed under the condition, for those constituents specified in § 268.112(b)(1), that the owner or operator complies with alternative levels defined as the land disposal restriction limits specified in § 268.43 of this chapter for FO39 nonwastewaters. See § 268.112(b)(2)(i).

II. In part 271:

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication in the Federal Register to read as follows:

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
*	*	*	*
November 9, 1993.	Burning of hazardous waste in boilers and industrial furnaces.	[insert FR page numbers].	October 15, 1993.

[FR Doc. 93-28041 Filed 11-8-93; 8:45 am]

BILLING CODE 6560-50-P

Revision Checklist 128 Summary

Rule Title:	Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Wastes from Wood Surface Protection
Checklist Title:	Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection
Reference:	59 FR 458-469
Promulgation Date:	January 4, 1994
Effective Date:	January 4, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Non-HSWA
Linkage:	Revision Checklist 132; Related to Revision Checklist 82 but not directly linked - see the summary
Optional:	No

Summary: Three categories of wastes (F032, F034 and F035) from wood preserving processes were listed as hazardous in 1990 (55 FR 50450; Revision Checklist 82). A final listing determination for wood surface protection wastes was deferred due to lack of data (53 FR 53282). This present rule announces that upon reviewing the public comments received on its proposal of April 27, 1993 (58 FR 25707), EPA has decided not to list wastes from the use of chlorophenolic formulations in wood surface protection processes. As a result of this determination, EPA is not mandating in this rule any specific operating or information collection requirements for owners/operators of wood surface protection plants. However, the Agency would very likely re-evaluate this decision not to list if use of chlorophenolic formulations resumes in the future. Although this final rule does not list as hazardous any wastes from wood surface protection processes, EPA believes that certain constituents contained in these wastes warrant inclusion in 40 CFR Part 261, Appendix VIII. Thus, the Agency is adding the following four chemicals to Part 261, Appendix VIII: the sodium and the potassium salts of pentachlorophenol and of tetrachlorophenol. This rule also finalizes the proposed amendment of SW-846 ("Test Methods for Evaluating Solid Waste, Physical/Chemical Methods") to include Method 4010 (Immunoassay Test for the Presence of Pentachlorophenol).

State Authorization: This rule is placed in RCRA Cluster IV and the changes addressed by it were made under non-HSWA authority. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). These changes do not go into effect until States become authorized for them because this rule was promulgated under pre-HSWA authorities. Only final authorization is available.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 128, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following new entry should be placed at Subsection I A (27) in the Model Revision Attorney General's Statement.

Revision Checklist 128 Summary (cont'd)

(27) Listing of three chemicals from wood surface protection processes, 40 CFR 261 Appendix VIII, as amended January 4, 1994 [59 FR 458], Revision Checklist 128.

The following new entry should be placed at Subsection I CC in the Model Revision Attorney General's Statement.

CC. State statutes and regulations incorporation by reference "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, the Third Edition (November 1986), as amended by Updates I, II and IIA, as indicated in Revision Checklist 128.

Federal Authority: RCRA §§2002(a), 3001(b), and 3001(e)(1); 40 CFR 260.11(a) as amended January 4, 1994 (59 FR 458).

Citation of Laws and Regulations; Date of Enactment and Adoption

Remarks of the Attorney General

RCRA REVISION CHECKLIST 128

Wastes From the Use of Chlorophenolic Formulations
in Wood Surface Protection
59 FR 458-469
January 4, 1994
(RCRA Cluster IV, Non-HSWA provisions)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL						
	SUBPART B - DEFINITIONS						
	REFERENCES						
1	revise the reference to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" by replacing "[Third Edition (September, 1986), as amended by Update I (July 1992)]" with "(Third Edition (November, 1986), as amended by Updates I, II and IIA)"; in the second sentence, replace "Update I" with "Updates I, II and IIA"; remove the last sentence regarding where copies may be inspected	260.11(a)					

RCRA REVISION CHECKLIST 128: Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROAD-IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE						
APPENDIX VIII TO PART 261						
HAZARDOUS CONSTITUENTS						
add the specified hazardous constituents in alphabetical order as shown below:	Appendix VIII					

Common Name	Chemical Abstracts name	No.	Chemical abstracts No.	Hazardous waste
* * *	* * * *		*	*
Potassium pentachlorophenate	Pentachlorophenol, potassium salt		7778736	None
* * *	* * * *		*	*
Sodium pentachlorophenate	Pentachlorophenol, sodium salt		131522	None
* * *	* * * *		*	*
2,3,4,6-tetrachlorophenol, potassium salt	same		53535276	None
2,3,4,6-tetrachlorophenol, sodium salt	same		25567559	None
* * *	* * * *		*	*

[1] Note the date (November 1986) given in the FR appears to be an error because the date on the third edition of SW-836 is September 1986 as was indicated in the Federal Register (58 FR 46040; August 31, 1993) addressed by Revision Checklist 126.

128

federal register

Tuesday
January 4, 1994

Part V

Environmental Protection Agency

40 CFR Parts 260 and 261
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Wastes From Wood Surface Protection; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260 and 261

[FRL-4804-6]

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Wastes From Wood Surface Protection

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The U.S. Environmental Protection Agency (EPA) is issuing a final hazardous waste listing determination for wastes generated from the use of chlorophenolic formulations in wood surface protection processes. Upon reviewing the public comments received on its proposal of April 27, 1993, the Agency has decided not to list wastes from the use of chlorophenolic formulations in wood surface protection processes. As a result of this determination, EPA is not mandating in this rule any specific operating or information collection requirements for owners/operators of wood surface protection plants. If, however, use of chlorophenolic formulations resumes in the future, the Agency would very likely re-evaluate this decision not to list. This rule also finalizes the proposed amendment of SW-846 ("Test Methods for Evaluating Solid Waste, Physical/Chemical Methods") to include Method 4010 (Immunoassay Test for the Presence of Pentachlorophenol). In addition, the Agency is adding the following four chemicals to 40 CFR part 261, Appendix VIII: Sodium and potassium salts of pentachlorophenol and tetrachlorophenol.

EFFECTIVE DATE: January 4, 1994.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F-93-F33F-FFFFF and is located in the EPA RCRA Docket, room M2616, 401 M Street, SW., Washington, DC 20460. The public must make an appointment to review docket materials by calling (202) 260-9327. The docket is open from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays. The public may copy up to 100 pages from the docket at *no cost*. Additional copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA/Superfund Hotline at (800) 424-9346 (toll-free) or (703) 920-9810 in the Washington, DC metropolitan area. The TDD hotline number is (800) 553-7672 or (703) 486-3323. For technical information on specific aspects of this rulemaking, contact Mr. David J. Carver at (202) 260-6775, Office of Solid Waste (Mailcode 5304), U.S. EPA, 401 M Street, SW., Washington, DC 20460. For technical information relating to the amendment of SW-846, contact Ms. Gail Hansen at (202) 260-4761, Office of Solid Waste (Mailcode 5304), at the same address provided above.

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

I. Legal Authority
II. Background & Summary
III. Overview of the Proposed Rule
IV. Summary of Public Comments and Responses
  A. General Comments
  B. Comments Regarding Risk Assessment
V. Overview of the Final Rule
  A. Basis for the Determination Not to List As Hazardous Wastes From Wood Surface Protection Operations
  B. Operating Requirements for Surface Protection Plants
  C. Addition of Chemicals to Appendix VIII of 40 CFR part 261
VI. Amendment of SW-846 (*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*)
VII. Pollution Prevention and Waste Minimization
VIII. Analysis of Potential Costs and Benefits
  A. Executive Order Requirements
  B. Description of Costs and Benefits of this Rule
IX. State Authority
X. Regulatory Flexibility Analysis
XI. Paperwork Reduction Act

I. Legal Authority

These regulations are being promulgated under the authority of sections 2002(a) and 3001(b) and (e)(1) of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912(a), 6921(b) and (e)(1), and 6922 (commonly referred to as RCRA).

II. Background & Summary

A. Background

Under section 3001(e) of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), EPA is required to make a hazardous waste listing determination for wastes containing chlorinated dioxins and dibenzofurans. As part of this mandate, the Agency began an investigation in 1988 of dioxin-containing wastes from wood preserving and wood surface protection processes. Three categories of wastes from wood preserving processes were listed as hazardous wastes in 1990, (F032, F034, and F035, see 55 FR 50450). A final listing determination for wood surface protection process wastes were deferred due to lack of data (53 FR 53282). In 1991, the Agency began a separate study of the surface protection industry in an effort to obtain sufficient information upon which to base a hazardous waste listing determination. The Agency, upon obtaining and evaluating information, published a proposed rule on April 27, 1993 which proposed a concentration-based hazardous waste listing option and requested comment on an alternative option not to list these wastes as hazardous (58 FR 25707). Details of the options can be found in the following section to this preamble. A detailed summary of all Agency actions related to wood surface protection wastes was provided in the April 27, 1993 proposal (58 FR 25707). The reader is encouraged to consult that document for more information on the wood surface protection rulemaking history.

In accordance with a proposed consent decree signed by EPA and the Environmental Defense Fund (EDF) in *EDF* v. *Browner* (U.S. District Court for the District of Columbia, case no. 89-0591), the Agency has agreed to make a final listing determination for chlorophenolic wastes from wood surface protection processes by December 31, 1993.

B. Summary of the Wood Surface Protection Regulation

After considerable review and study of the rulemaking docket for this action, including comments received on the proposal, the Agency has determined that listing as hazardous wastes from surface protection operations is unnecessary and will not yield the benefits intended by a hazardous waste listing under the RCRA program. This section summarizes elements of the proposed rule of April 27, 1993 (58 FR 25707), and details the conclusions reached in developing this final rule. The reader is cautioned that although some of the highlights brought up in the proposed rule are described below, the majority of information on the industry itself as well as the detailed risk assessment on which the initial proposed rule was based is found in the preamble and background documents to the proposed rule. The information contained in this final rule is primarily concerned with developments subsequent to the proposed rule. This rule describes, in detail, the Agency's justification for not listing wastes from surface protection processes that use chlorophenolic formulations. In addition, it summarizes the Agency's response to comments received on the proposal.

III. Overview of the Proposed Rule

The April 27, 1993 proposal discussed and requested comment on each of the following:

(1) Proposing a concentration-based hazardous waste listing for certain wood surface protection wastes,

(2) Proposing various testing, analysis, recordkeeping requirements and management standards for wood surface protection plants,

(3) Adding six hazardous constituents to appendix VIII of 40 CFR part 261,

(4) Amending of appendix VII of 40 CFR part 261 by adding F033 and the hazardous constituents found in the wastes,

(5) Modifying the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) list of hazardous substances to reflect the newly proposed listing,

(6) Amending SW-846 ("Test Methods for Evaluating Solid Waste, Physical/Chemical Methods") to include Method 4010 (Immunoassay Test for the Presence of Pentachlorophenol), and

(7) An alternative option not listing chlorophenolic wastes as hazardous.

The Agency proposed to list as hazardous at 40 CFR 261.31 only those wastes from wood surface protection processes using a formulation with a pentachlorophenate concentration greater than 0.1 ppm. Under this proposed option, surface protection operations using formulations with pentachlorophenate concentrations equal to or less than 0.1 ppm would not generate F033 listed wastes. The Agency proposed this concentration-based listing because it had information which suggested that many surface protectors who previously used chlorophenolics did not sufficiently clean out equipment prior to abandoning the use of chlorophenolics. Because of this, many formulations from past users of chlorophenolics exhibit "cross-contamination," the contamination of current formulations by dioxins and chlorophenolic compounds from old formulations. The rule proposed the following hazardous waste listing description for the F033 waste code and included the following specific waste streams from process operations:

F033:Process residuals, wastewaters that come into contact with protectant, discarded spent formulation, and protectant drippage from wood surface protection processes at plants that use surface protection chemicals having an in-process formulation concentration of pentachlorophenate, (expressed as pentachlorophenol during analysis) exceeding 0.1 ppm. (T)

Along with this option, various testing and recordkeeping requirements were proposed. For an owner/operator to demonstrate that he/she is not generating F033 wastes, EPA proposed formulation testing requirements for all surface protection plants. All owner/operators of wood surface protection plants would be required to test their formulation to determine the concentration of pentachlorophenate if the owner/operators wanted to avoid generating F033 wastes. If the analysis showed a concentration at or below 0.1 ppm, the owner/operator would be required to sign a certification to that effect and maintain records on site related to the testing procedure. This testing proposed an analysis using a method listed within the EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). The Agency proposed to add Method 4010 to SW-846. Method 4010 is an immunoassay test for the presence of pentachlorophenol, which determines whether a sample is above or below a set limit (such as the 0.1 ppm concentration level proposed).

Under the proposal, if analysis showed that a facility's formulation contains pentachlorophenate at levels exceeding 0.1 ppm, then the wastes generated from surface protection at that facility would be F033 wastes and the owner/operator would be subject to additional operating requirements proposed as subpart T of parts 264 and 265. For details on the specific operating requirements, the reader should refer to the proposed notice (58 FR 25706).

A number of the constituents of concern that are present in wastes generated from wood surface protection processes which use chlorophenolic formulations do not appear on the list of hazardous constituents at 40 CFR part 261, appendix VIII. The Agency proposed to add six hazardous constituents to appendix VIII: sodium pentachlorophenate, potassium pentachlorophenate, the sodium salt of 2,3,4,6-tetrachlorophenol, the potassium salt of 2,3,4,6-tetrachlorophenol, octachlorodibenzo-p-dioxin (OCDD) and octachlorodibenzofuran (OCDF).

Sodium and potassium pentachlorophenate are the sodium and potassium salts of pentachlorophenol. These salts were proposed for addition to appendix VIII of 40 CFR part 261 since, as a result of gastric secretions following ingestion, the sodium and potassium salts of pentachlorophenol and 2,3,4,6-tetrachlorophenol are readily converted to the corresponding phenols by acidification. Therefore, the sodium and potassium salts are reasonably expected to elicit the same health effects as the corresponding phenols. For this reason, the Agency proposed to add these four compounds to the list of hazardous constituents in appendix VIII of 40 CFR part 261.

The Agency also requested comment on an option not to list as hazardous wastes generated from surface protection processes. The Agency included the so-called "no-list" option in the proposal because the future generation of chlorophenolic wastes is expected to diminish rapidly to zero and because the results of risk analyses show that the risks from the dominant exposure pathways are relatively modest, assuming the widespread use of chlorophenolic formulations does not resume. The Agency believed at the time of the proposal that reintroduction of chlorophenolic formulations into the market place in the future was not likely to occur. EPA also noted that the Agency would always have the option of reconsidering the listing determination should chlorophenolic surface protection formulations be reintroduced in the future.

IV. Summary of Public Comments and Responses

Comments received on the proposed rule are placed under two separate headings for purposes of this summary. The first addresses the more general comments associated with the proposal, including those relating to: (1) General implementation issues of a listing for wastes generated by the wood surface protection industry; (2) technical approaches discussed in the proposal relating to data sampling methodologies; and (3) various engineering assumptions on which the proposed listing was based. The second part of this section describes the Agency's response to comments dealing with the risk assessment methodology used to support the listing determination for these wastes.

A. General Comments

Several comments were submitted on the proposed listing of F033 wastes. Four commenters supported the listing in general and two commenters supported the concentration-based approach in particular. Three commenters opposed the proposed listing and urged EPA to rely on its authority under FIFRA to control the risks posed by chlorophenolic formulations. One commenter supported an outright ban on the use of chlorophenolics for wood surface treatment.

Two commenters warned that listing F033 wastes would hinder remediation efforts at contaminated wood surface protection sites. The Agency agrees with

the commenters' point that a hazardous waste listing may provide a disincentive for owner/operators of surface protection plants to initiate voluntary remediation efforts. The regulation of potentially large amounts of contaminated soil as listed hazardous waste could delay the start of cleanup due to the administrative and economic realities of regulatory compliance.

Three commenters expressed concern over the possibly perceived interchangeability of the proposed 0.1 ppm concentration level and the Toxicity Characteristic (TC) regulatory level for pentachlorophenol. Although the Agency is not finalizing the F033 hazardous waste listing, EPA nevertheless wants to make clear that the concentration level proposed in the F033 listing description was not intended as a regulatory level for any purpose other than defining a waste as F033. The current regulatory level for pentachlorophenol that defines a waste as hazardous under the TC (100 mg/L) would not have been affected by this rulemaking in any way had the F033 listing been promulgated today. Levels set for the TC are obtained by running models which simulate acidic landfill conditions. For the proposed listing, the proposed 0.1 ppm level was calculated using a Maximum Contaminant Level (MCL) of 0.001 ppm and a risk analysis using the Agency's Multi-med model. Multi-med simulates groundwater contamination from specific sources, and for this proposal, it incorporated variables which are specific to sawmill conditions. The Agency's analysis approximated the dilution of pentachlorophenate from the time the waste contacts the ground to when it reaches a ground water well. The Agency did not arrive at the 0.1 ppm level by applying a dilution attenuation factor (DAF) of 100 (as the Agency has done in other circumstances) to the MCL. Indeed, the Agency did not take a position in the proposal about the use of DAFs in calculating acceptable risk levels for any constituents. A detailed discussion of the Agency's modeling assumptions and actual parameters used to generate risk approximations can be found in the docket for the proposed rule.

One commenter expressed reservations regarding the decontamination procedures promulgated previously for wood preserving equipment (55 FR 50482–50483, December 6, 1990). The Agency is aware that equipment cleaning will not always prevent cross-contamination. However, it will certainly reduce the amount of contamination that would occur if no equipment cleaning took place. Although the Agency is not finalizing the proposed F033 hazardous waste listing, EPA encourages owner/operators of surface protection plants to clean or replace any surface-treating equipment that was used previously with chlorophenolic formulations upon a switch to non-chlorophenolic chemicals and properly dispose of the wastes in an environmentally sound manner. Furthermore, the Agency has obtained information which shows that some new substitute products are more effective if residual chlorophenolic contamination is removed. Hence, removing sludge and cleaning equipment from previous chlorophenolic use will not only be more environmentally sound, but may also enhance the new products effectiveness. Methodology on recommended cleaning and operating practices for surface protectors will be published in the near future by the Agency in a pollution prevention and waste minimization guidance document.

One commenter suggested that the proposed operating standards for surface protection plants be codified in part 262 as opposed to parts 264/265. The commenter reasoned that most surface protection plants are only generators and do not function as treatment, storage, and disposal facilities (TSDFs). However, since the F033 hazardous waste listing is not being promulgated, this issue is moot and there is no need for special generator requirements.

Several commenters had specific concerns about the applicability of the proposed F033 listing. Since the Agency is not finalizing the proposed F033 listing, these concerns are also moot. However, where appropriate, answers specific to each of these comments have been addressed in the background document of this final rule.

One commenter questioned the representativeness of the Agency's data on cross-contamination. The commenter stated that because sites were not randomly selected, there is no true sample representation of the surface protector population. EPA did not choose sampling sites based on their statistical representativeness. Rather, the sites were selected as appropriate from what the Agency considered to be typical operating plants. The Agency visited more than 15 surface protection sites in the Nation (both large and small plants). From the information obtained from these plant tours and interviews, the Agency developed a view of what is considered typical from an engineering standpoint (*e.g.* size of equipment, production scale, presence of containment systems, size of storage yards, amount of drippage, etc). The sites sampled need not represent the entire surface protection industry in terms of the process used and the degree of cross-contamination present to allow the Agency to demonstrate that wastes from current and previous use of chlorophenolics at surface protection sites were contaminated with the constituents of concern. These sites were chosen from information obtained by a questionnaire sent out under the Agency's 3007 RCRA authority.

B. Comments Regarding Risk Assessment

Five commenters responded to the risk assessment presented in the proposed rule. One commenter stated that the EPA incorrectly converted units of measurement in the record sampling data used for the risk assessment causing the overestimation of incremental risk for the fish/shellfish consumption and soil ingestion pathways by a 1,000-fold. The EPA agrees with the commenter. The dioxin concentrations in the formulation at one of the affected facilities (Aquasco, MD) were reported in the wrong units, causing a 1,000-fold error to be incorporated into the risk estimates for the fish and shellfish ingestion and soil ingestion scenarios. When this error is corrected, the TCDD-TEQ dioxin levels used as the source concentration (the concentration of formulation dripping onto the ground) for affected facilities (cross-contamination from past use of chlorophenolic formulations) and used in the lifetime individual risk estimates for the soil ingestion scenario and fish and shellfish ingestion scenario were reduced by a 1,000-fold. The lifetime individual risk values using the corrected data are presented in Table 1.

TABLE 1.—INDIVIDUAL RISK FROM CROSS-CONTAMINATION FROM PAST USAGE OF CHLOROPHENOLIC FORMULATIONS FROM FISH AND SHELLFISH INGESTION

Population	Recreational fishers		General population	
	Central tendency	High end	Central tendency	High end
Constituent: 2,3,4,7,8-TCDD TEQ [1]	2E–12	3E–11	8E–13	1E–11

[1] Excess lifetime cancer risk.

The estimated risk to any one individual using the corrected values are 1.000-fold lower than the risk estimated in the proposed rule from cross-contamination due to past use. In this case for the typically exposed individual in the general population, the incremental risk of developing cancer is a chance of 0.8 in a trillion (8E–13); in the recreational fisher person, the risk of developing cancer is increased by only 2E–12. The estimated incremental population risk is also reduced, after correction, approximately by a 1.000-fold, to 0.0002 cases/70 years for the anticipated increase in the development of cancer as a result of exposure to ingestion of fish/shellfish contaminated with wastes from the use of chlorophenolic formulations for wood surface protection. Chart 1 in Section V Part A of this final rule shows the original values reported in the April 27, 1993 proposed notice.

The soil ingestion scenarios also were based on the storage yard soil concentrations. The soil ingestion scenario assumed that children ages 1 to 6 could come into contact with the contaminated soil at the sawmill sites because sawmill sites could be converted to rural residential land use and the child's play area could be located on the area previously used as a storage yard area. The lifetime individual risks, using the corrected formulation concentration values for dioxin, associated with the soil ingestion scenario for cross-contamination from past users of chlorophenolic formulations are presented in Table 2.

TABLE 2.—INDIVIDUAL RISK FROM CROSS-CONTAMINATION FROM PAST USAGE OF CHLOROPHENOLIC FORMULATIONS FROM DIRECT SOIL INGESTION

Source	Storage yard	
	Central tendency	High end
Constituent: 2,3,7,8-TCDD TEQ [1].	7E–10	2E–9

[1] Upper bound excess lifetime cancer risk.

The estimates presented in Table 2 show that the incremental risks from direct soil ingestion by children are below what the Agency considers a level of concern. A child exposed to storage yard soils cross-contaminated by past users of chlorophenolics under typical conditions (consumption of 0.1 gram of soil/day for 160 days/year for six years) would be subject to an increased cancer risk of 7E–10 over a lifetime, or a chance of 0.7 in a billion. The estimated incremental population risk is also reduced approximately 1.000-fold (to 4E–7 cases per year over a 70-year period) for the anticipated increase in the development of cancer as a result of exposure to direct ingestion of soil contaminated with wastes from the use of cross-contaminated formulations for wood surface protection.

One commenter remarked that the EPA failed to specifically address the incremental risks to subsistence fisher persons from consumption of fish/shellfish contaminated from the use of chlorophenolic formulations for wood surface protection. EPA agrees that the risks to highly exposed sub-populations should be considered. The fish ingestion scenarios developed for the proposed rule considered exposure to a general population and recreational fisher at the outflow of a drainage area containing surface protection facilities.

EPA used the analysis for the high end recreational fisher to approximate the risk to the subsistence fisher. Recent data show that the high end ingestion rate for a subsistence fisher is greater than for a recreational fisher by a factor of approximately 2. Therefore, the incremental risk for a subsistence fisher would not exceed a level of concern, since the projected risk to recreational fishers is much less than 10^{-6}.

The analysis of risks from fish consumption assumes that all fish in the drainage basin are contaminated. The estimates of PCDDs and PCDFs in fish tissue are based on sediment concentrations of these constituents. The sediment concentrations are estimated based on the erosion of contaminated soils from sawmill sites in a river or stream basin and subsequent dilution of contaminant levels by the erosion of uncontaminated soils from the corresponding drainage basin.

The projected risk levels increase as the size of the drainage area decreases, due to the relatively lower amounts of uncontaminated soil in smaller drainage basins. EPA performed an analysis which shows that, even with all exposure parameters set at values which would maximize the overall estimate of exposure, in order to reach a risk level of 10^{-6}, the drainage area would need to be 8.000 hectares or less, which is smaller than the smallest drainage area in the country. The average drainage area is 440,000 hectares, and the lower fifth percentile of the size distribution is 109,000 hectares.

With regard to the fish/shellfish ingestion scenario, one commenter maintained that the fish/shellfish ingestion scenario should have been performed on a site-specific basis (*i.e.* EPA should have used parameters seen at individual sites), because not all sawmills are located on streams with commercial fisheries. The EPA chose the fish/shellfish ingestion scenario to be protective of the recreational fisher persons and the general population. The risk analysis was structured so that the hydrologic cataloguing unit (or watershed) was the basic unit of analysis to ensure that the contaminated sediment would be associated with a body of water large enough to support

fish hatcheries and recreational fisher persons. When these assumptions were used in the fish/shellfish ingestion scenario using corrected values for dioxin found in formulation for PCDDs and PCDFs, the incremental risk to individuals with high-end exposures remains well below 1×10^{-6}.

With regard to the Universal Soil Loss Equation (USLE), one commenter asserted that the equation is overly conservative for estimating soil erosion from surface protection sites. This equation models the amount of soil which is dumped into a drainage area containing fish. For a more detailed description of the model, the reader is referred to background document of the proposed rule. The EPA believes that, although this may be a conservative approach, it is the best method currently available. It has been used to support other EPA rulemakings and guidance documents. The most notable example being the Assessment of Risks from Exposure of Humans, Terrestrial and Avian Wildlife, and Aquatic Life to Dioxins and Furans, from Disposal and Use of Sludge from Bleached Kraft and Sulfite Pulp and Paper Mills.[1] Even using these conservative assumptions, the incremental risks from cross-contamination at these sites are not at a level of concern.

One commenter suggested that the population risks attributable to the contaminated fish/shellfish ingestion scenario were too high because the entire U.S. population was considered to be exposed. EPA disagrees and believes it is appropriate to consider the consumption rate of the entire population in estimating risk to the general population from this exposure pathway. However, an adjustment of 0.4 was made to the diet fraction to account for the fact that not all fish are contaminated. Thus, only some percentage of the population would be affected by the contaminated fish. As discussed in the Risk Assessment Background Document for the proposed rule, the 0.4 diet fraction was derived by estimating the percentage of rivers and streams (i.e., cataloguing units) that have at least one sawmill. A second adjustment was made in the calculation of population risk to account for the percentage of sawmills that operate surface protection processes (about 30% of the entire number of sawmills nationally). Population risk for the fish/shellfish ingestion scenario has been recalculated for the final rule using the corrected incremental storage yard soil TCDD-TEQ concentrations. The corrected estimate of incremental population risk from cross-contamination is three orders of magnitude lower than the risk originally stated in the proposed rule. The corrected number of cancer cases expected in 70 years is now 0.0002.

One commenter asserted that the soil ingestion scenario was overly conservative because all of the soil consumption was attributed to contaminated storage yard soil and no consumption of "indoor dust" was considered. EPA considered only the consumption of storage yard soil in order to be protective of human health. The range of soil ingestion rates for average children aged 1 through 6 is presented in the EPA's Exposure Factors Handbook (1990) as 0.2 to 0.8 grams per day. These estimated values were determined from the clay content of fecal samples taken from children in this age group and thus represent consumption of soil. However, the percent of this consumption that is attributed to house dust is unknown, as is the contaminant concentration in the house dust. The EPA has recalculated the soil ingestion scenario using the corrected incremental TCDD-TEQ concentrations obtained from the formulation sample. The incremental risk estimated is below 1E-6, using the conservative assumptions. The Agency's risk levels are particularly protective with the use of these conservative assumptions, thereby further lending support to the Agency's decision not to list these wastes.

One commenter stated that children are unlikely to consume sediment at the same rate that they consume soil. The Agency agrees, but notes that sediment consumption by children was not considered as an exposure pathway in the proposed rule. The Agency does not feel that this exposure pathway is a significant one in making a determination whether or not to list chlorophenolic wastes since the exposure areas of concern are relatively small and any land conversion which could take place would most likely require soil testing prior to land development.

One commenter stated that the assumptions used to estimate the exposed population in the soil ingestion population risk scenario greatly overestimate the number of exposed children. EPA believes that the scenario may be conservative, but not implausible. The scenario assumes that all sawmill sites are converted to rural residential land use, that the children's play areas are located on the site of the former storage yards, and that the homes are resold to new families with young children every 25 years. These assumptions include a low population density in these areas. It would take only a limited number of sites to be converted to suburban housing or to daycare or school facilities to cause a substantial increase in the exposed population. The incremental population risk estimated using the corrected incremental value for the storage yard soil TCDD-TEQ concentration is 4E-7 cases in 70 years, three orders of magnitude lower than that in the proposed rule.

One commenter maintained that the soil ingestion scenario was questionable because Superfund liabilities, state laws, and lender requirements make land use changes unlikely without site cleanup activities. The EPA agrees that, in some states, land transfers and subsequent land use changes would be unlikely to occur without cleanup. However, not all states are equally diligent in requiring site investigations at the time of property transfer, making the types of land use changes described in the soil ingestion scenario plausible. Because of this, EPA believes it is entirely appropriate to assess risk via the soil ingestion pathway, notwithstanding any risk management decisions that may be made at some future time to address the risk.

Two commenters believed that some of the values used as input parameters to the ground-water model (*i.e.* recharge rate, regional conductivity, and average depth to water) were too conservative and that more appropriate input parameters should be used in this MULTIMED model. One commenter believed that the Agency had used DRASTIC (a name given to a modelling program used to evaluate the potential which may exist resulting from groundwater pollution) to perform its groundwater modeling. First, the EPA did not use the DRASTIC model in this rulemaking effort; it used the MULTIMED model developed by the Agency to perform groundwater models. The Agency did, however, use some soil and hydrogeologic information (on hydrogeologic regions and subregions collected by Aller *et al.* (1988)) which is used when applying the DRASTIC model. With regard to the parameters felt by the commenter to be too conservative, the EPA supports the values used in the proposed rule (58 FR at 25706 of April 27, 1993). This hydrogeologic information includes

[1] Environmental Protection Agency, 1990. Assessment of Risks from Exposure of Humans, Terrestrial and Avian Wildlife to Dioxins and Furans, from Disposal and Use of Sludge from Bleached Kraft and Sulfite Pulp and Paper Mills. Prepared for the Office of Toxic Substances. Washington, DC by Abt Association, Inc. under contract nos. 68-02-4283, Task 3-02, and 68-D0-0160, Task 1-15. EPA 560/5-90-13. July, 1990.

many of the input parameters required to run the MULTIMED model, and includes such parameters as depth to water, soil type and hydraulic conductivity, net recharge, aquifer hydraulic conductivity. The EPA selected hydrogeologic subregions in the northwest and southeast United States, excluding subregions where sawmills were not likely to be sited (*e.g.*, mountain slopes or flanks). Since the parameter value ranges presented in Aller *et al.* (1988) are based on compilations of literature values and expert opinion, the values should be viewed as bounding ranges, and are not sufficiently statistically rigorous to estimate true means or parameter distributions. For the average case, "typical" parameter values were obtained by examining the ranges of values in Aller *et al.* (1988) for the selected subregions only and selecting values representing the central tendency of the reported ranges. Similarly, high-end values were selected to represent the high end of the exposure distribution, using the higher end of the range of parameter values deemed likely to occur by Aller *et al.* (1988). EPA recognizes that there are limitations to this approach, largely associated with the non-statistical nature of the data. The Agency believes, however, that this data source is the best available at this time for regional and subregional estimates of the hydrogeologic properties necessary to estimate exposures through the ground-water pathway.

Two commenters felt that the Agency's use of input parameter values used for well location and well intake point were too conservative. EPA derived the horizontal distance to wells from the responses reported in the RCRA's 3007 Industry Questionnaires. Because information was not obtained on the well type or construction, all wells described in the questionnaire were assumed to be possible sources of drinking water and were assumed to be screened to the top of the aquifer, that is, well water was assumed to be drawn off the top of the aquifer where organics are assumed to exist in greater concentrations than when water is drawn from the middle of the aquifer. These assumptions are consistent with similar conservative assumptions used to develop other RCRA regulations, such as the Toxicity Characteristic (55 FR 11798, March 29, 1990).

Two commenters contended that neither biodegradation or chemical degradation rates were considered in the ground-water modeling of pentachlorophenol contamination. These commenters submitted studies showing that biological and chemical degradation of PCP can occur and that adequate biological and chemical degradation rates are available or can be estimated from these studies. EPA has reviewed these studies and agrees that they do indicate that biological and chemical degradation of PCP can occur. The information submitted by the commenters are results from laboratory studies, reporting the results from controlled experiments. However, EPA does not agree that there is sufficient information on unassisted field degradation rates, the geochemical factors that affect degradation, or their spatial variability from site-to-site or region-to-region to model degradation in the field at generic or prototypical sites for regulatory purposes. Moreover, the existence of metabolites that would confirm the occurrence of biodegradation in the field has not been firmly established. Therefore, EPA does not believe the data warrant an assumption that biodegradation does occur at significant rates at most sites. In addition, the toxicities of potential degradation products have not been characterized. Therefore, the EPA does not believe it is appropriate to consider these mechanisms in this rulemaking.

One commenter suggested that it would be more appropriate to calculate the average peak concentration of pentachlorophenate in groundwater used to reflect a 9-year exposure duration by producing a breakthrough curve of annual concentrations at a well using the MULTIMED model and calculate a series of 9-year or 10-year moving averages. The moving averages would be sorted in descending order and a paper plot prepared. A preferred percentile value could then be selected as the concentration of concern. EPA believes the current method of calculating 10-year time-weighted averages by averaging two 5-year concentrations (including the maximum concentration and the highest adjacent 5-year value calculated from each model run) is an appropriate approach for estimating lifetime individual risk and the Agency selected this approach to be conservative and protective of human health. The 30-year exposure duration scenario uses a time-weighted 30-year average concentration that includes the maximum concentration. Population risk estimates aggregated over 70 years were based on a time-weighted 70-year average concentration that includes the maximum concentration.

One commenter believed that the source concentration used by EPA for PCP in the ground-water ingestion scenario was too high because PCP is no longer in use and, thus, the infiltration to ground water would be reduced. The commenter suggested that source reduction also would occur from erosion of surface soil containing PCP, before it is leached and enters the ground water. EPA addressed the fact that PCP is no longer in use at most facilities in its baseline risk estimates in the proposed rule, which have been revised in the final rule based on comments received to reflect source concentrations and pulse durations (estimated time in which pentachlorophenate is expected to be present in substitute wood surface protection product from time of changeover) more representative of the cross-contamination scenario. While surface runoff and erosion may reduce the amount of PCP available for leaching to ground water, EPA has assumed, for the purpose of its analysis, that any reductions are negligible. The EPA adopted this conservative assumption mainly because of lack of data necessary to quantify such a loss and its effects on ground-water concentrations. Furthermore, EPA does not believe that surface water and erosion will significantly reduce source leachate concentrations. As formulation drips onto the soil it will rapidly penetrate the soil until the soil is saturated. Subsequent rain events may wash off contaminated surface soil, but will not erode deeper soil horizons where most of the contaminant mass resides. Thus, EPA does not consider this assumption to be overly conservative.

One commenter noted that the results of the ground-water analysis were not supported by actual resource damage data. The Agency does not expect, nor does it feel that it is needed, that ground water PCP concentrations predicted by MULTIMED would agree precisely with the resource damage data. The resource damage incidents presented in the background document are intended to illustrate that ground-water contamination from PCP does occur at sawmill facilities, and are not intended as validation points for exposure modeling. Resource damage data were obtained from monitoring and other wells that happened to be in place at a facility when the sampling was conducted. There are a number of possible reasons why sampling data from the resource damage incidents may not reflect well-water concentrations predicted by the model, in particular the location of the wells with regard to plume centerline and ground-water flow direction, and the timing of peak plume concentrations at the wells.

The latter point is especially important because, depending on patterns of past PCP use and the well

location, the peak concentration in the plume may not have reached or may have passed the well(s) sampled. In these resource damage cases, sufficient information was not available to determine the placement and design of these wells with respect to the site's hydrogeology or possible plume locations and travel time. Thus, it is not possible to use these data points for validation of model results. However, it should be noted that the model-estimated ground-water PCP concentrations in the final rule are similar to those reported from resource damage incidents. When the revised average source concentration was used in the ground-water model, the estimated concentrations for PCP in ground water (average = 0 .005 mg/L; high-end = 288 mg/L) are in a reasonable agreement with the values reported in the resource damage accounts (<0.001 to 45 mg/L).

One commenter disagreed with the use of MULTIMED in that it was not as "robust" or well-tested as the Monte Carlo-based EPACML model used for the TC rule. Another commenter recommends the use of the Monte Carlo approach for all input parameters in the modeling effort. First, it is important to note that the MULTIMED ground-water model is the same model as used in EPACML except for the manner in which input parameters are specified. EPACML can only be run in a probabilistic, Monte Carlo mode, while MULTIMED allows Monte Carlo runs as well as for individual input parameters to be specified and fixed. The ground-water flow and transport model components are the same for MULTIMED and EPACML. Second, the Agency did not pursue a probabilistic, Monte Carlo-based approach when developing input parameters for this modeling effort due to the fact that using this sophisticated technique requires knowledge and proper specification of input parameter distributions, and variable independence or proper specification of joint probability parameter distributions. When these requirements cannot be met, the Monte Carlo approach will not provide better estimates than a scenario-based approach.

EPA has adopted a scenario-based regional modeling approach that uses input parameters developed for regions of the U.S. where sawmills are more prevalent. In this approach, EPA uses average and high-end values for estimating model input parameters on a regional basis because information does not exist on the actual means and distributions of these parameters for the regions modeled. The Agency believes that this approach is an appropriate one and, furthermore, that the resulting model estimates bracket or bound the uncertainty associated with the model input parameters.

Two commenters questioned the use of cancer as the endpoint of concern for 2,3,7,8-TCDD. EPA disagrees. The cancer endpoint for TCDD was selected because it is the most sensitive endpoint for which qualitative dose response data are available. 2,3,7,8-TCDD has been demonstrated to be a potent carcinogen in animals and has been classified as a B2 (potential human) carcinogen. Recently published epidemiological studies of occupationally exposed individuals report significant increases in cancer mortality. 2,3,7,8-TCDD also has potent reproductive and teratogenic endpoints and enough data exist to estimate a reference dose (RfD) based on these alternative short-term effects. (For a detailed discussion of this information, and for references to studies supporting these conclusions, the reader is referred to the background document of the proposed rule.) However, if health-based levels (HBLs) are calculated using the reproductive effect RfD, the exposure level is an order of magnitude higher than the level calculated using the carcinogen slope factor (CSF). Thus, if the cancer endpoint is used as the basis for calculating a permissible exposure level, it also will be protective against short-term exposures such as those associated with reproductive effects.

The issue of 2,3,7,8-TCDD toxicity is being reassessed by EPA (outside the framework of this rulemaking) and all endpoints are being considered. TCDD has been observed to express a wide variety of effects including teratogenesis, reproductive effects, and suppression of the immune system function in many species. Mechanistic approaches to understanding and identifying toxic effects levels are also being considered. Until the reassessment process has been completed, the EPA will continue to use the current carcinogenicity endpoint CSF value that has been accepted as the basis for the MCL.

Two commenters noted limitations associated with the use of the Toxicity Equivalence Factors (TEF's) methodology. They argued that the TEF methodology should not be used to justify the addition of appendix VIII in the absence of valid toxicological studies that demonstrate actual health effects associated with exposure to these compounds. One commenter questioned the proposal to add Octachlorodibenzo-p-dioxin (OCDD) and Octachlorodibenzofuran (OCDF) to 40 CFR part 261, appendix VIII. The commenters stated that neither compound has been shown to produce toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms. The Agency has decided not to add, at this time, OCDD and OCDF to appendix VIII of 40 CFR part 261. Although the original basis for including these congeners on appendix VIII remains valid (details of which can be found in the background document supporting this final rulemaking), the Agency is investigating further the information submitted by the commenters regarding the effects of OCDD and OCDF reported in the Couture, Elwell, and Birnbaum study used to support the decisions made in the "Interim Procedures for Estimating Risks Associated with Exposures of Mixtures of Chlorinated Dibenzo-p-dioxins and Dibenzofurans and the 1989 Update". OCDD and OCDF are the most prevalent of the PCDD and PCDF congeners accounting for approximately 85 percent of the total CDD and CDF present in five of the six storage yard soil samples. OCDD has been shown to exhibit "dioxin-like" toxicity in male rats when administered in small doses in a sub-chronic toxicity study.[2] These findings have been confirmed by a second sub-chronic study conducted in female rats.[3] OCDD and OCDF have not exhibited toxicity in short term studies; however, acute exposure is not the only concern of EPA. The Agency is currently re-evaluating its original assessment of risks from dioxin. At this point, the Agency wishes to conclude its on-going reassessment before adding OCDD and OCDF to appendix VIII of 40 CFR part 261.

One commenter questioned the conclusion that soil contamination presents no risk to wildlife. The EPA recognizes that concentrations that are protective of human health may not necessarily always be protective of wildlife. However, in view of the relatively small areas occupied by sawmills and the low concentration of TCDD–TEQ in storage yard soil from cross contamination, the EPA believes the incremental risks to wildlife will be below a level of concern.

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[2] Couture, L.A., M. R. Elwell, and L. S. Birnbaum Dioxin-like effects observed in male rats following exposure to octachlorodibenzo-p-dioxin (OCDD) during a 13-week study. Toxicology and Applied Pharmacology, Vol. 93, pp 31–45, 1988.

[3] Hermelinger, N., N. Peiger, and C. Schlatter. Results of a 9-month feeding study with OCDD and OCDF in rats. Organohalogen Compounds, Vol. 1, 1990, pp. 221–224.

V. Overview of the Final Rule

This final rule makes final the Agency's hazardous waste listing determination for chlorophenolic wastes generated at wood surface protection plants. EPA believes that listing as hazardous chlorophenolic wastes from surface protection operations is unnecessary for reasons described in Part A of this preamble.

This document also amends SW–846 (Test Methods For Evaluating Solid Waste, Physical/Chemical Methods) by adding Method 4010 (Immunoassay Test for the Presence of Pentachlorophenol). This action is discussed in Section VI of this preamble.

This final rule also adds four chemicals to the list of hazardous constituents at 40 CFR part 261, appendix VIII. These four chemicals are: (1) Sodium pentachlorophenate, (2) potassium pentachlorophenate, (3) sodium tetrachlorophenate, and (4) potassium tetrachlorophenate. A discussion of this action is found in part C of this section.

A. Basis for the Determination Not To List as Hazardous Wastes From Wood Surface Protection Operations

As discussed in the proposed rule, in making a hazardous waste listing determination, the Agency applies a "weight-of-evidence" approach. In doing this, the Agency examines the risks associated with all potential human health and environmental exposure pathways, analyzes trends in the current industry, researches pest damage incidents, as well as other factors found in 40 CFR 261.11.

Upon reviewing and responding to comments received on the proposed rule, the Agency has decided not to list as hazardous wastes from the use of chlorophenolic formulations in the wood surface protection industry for several reasons.

First, chlorophenolic formulations are no longer being produced in the United States and the Agency believes it is very unlikely they will be produced in the future. The only remaining producer of chlorophenolics in the U.S., Chapman Chemicals, stopped production in January of 1992 and sometime later applied for voluntary cancellation of its FIFRA product registration. A notice describing this action was published in the Federal Register on June 3, 1992 (57 FR 23401), and a final cancellation order was sent to Chapman Chemicals with an effective date of September 14, 1992. This cancellation notice applies to the following products produced by Chapman Chemicals: Permatox 181, 10S, and 101, and Mitrol G-ST. Any manufacturer wishing to resume production of chlorophenolics would have to obtain a new FIFRA registration before these chemicals could be re-introduced and made available for use in wood surface protection. Currently, there remains only one known user of chlorophenolics in the U.S. out of an estimated 1000 previous users and the remaining plant's existing stock is believed to be very limited. A major element in the decision not to list as hazardous chlorophenolic wastes generated from the surface protection industry is the fact that use of chlorophenolic formulations has ceased. EPA believes it is highly unlikely that a manufacturer will seek reregistration for this product for many reasons, including the availability of effective substitute products and the potentially high financial and administrative burdens imposed by the FIFRA registration process. Additional justification to support non-future production is the fact that European countries do not want to accept dioxin-containing wood products which have affected large export mills who will not use chlorophenolic formulations in the future in part for this reason. Use of chlorophenolics for surface protection has declined steadily (even without the influence of RCRA) from over 1,000 users to one user over the past decade. Should a new registration of this product be sought, EPA will consider this surface protection risk analysis for full strength application when determining whether a new listing determination under RCRA should be initiated. Currently, the Agency is aware of nine available substitute products currently being used by surface protectors in place of chlorophenolics. The substitute products are for a large part satisfactory to their users (as mentioned on various site trips), and the Agency does not feel as though a switch back to chlorophenolics is likely.

A second reason why the Agency has decided not to list these wastes is because the risk to human health and the environment from on-going operations which previously used chlorophenolics is shown to tail off quickly because chlorophenolic concentrations diminish to a near zero concentration within a short period of time following switchover to an alternate product. The Agency has determined that the use of full-strength chlorophenolic formulations generates wastes that result in unacceptable risk to human health and the environment. As before mentioned, should the use of chlorophenolics for surface protection applications resume, for any reason, the Agency will most likely re-evaluate its current position. However, dealing with the current situation, there remains only one known user of chlorophenolics with a limited supply remaining.

Although the Agency believes the use of full-strength chlorophenolics will be phased out in the very near future, there was concern at the time of proposal that there may be unacceptable risks posed by the use of substitute products that become cross-contaminated from previous chlorophenolic use. Particularly, the proposal cited possible ground water risks of 2×10^{-4} for individuals and a broad but very low potential exposure risk due to surface run-off contributing to dioxin levels in fish. The Agency received several comments addressing these potential impacts. In response to these comments, the Agency conducted additional ground-water modeling using new pulse assumptions developed from commenter-submitted information. The Agency developed what it believed to be better pulse assumptions in an effort to determine how long pentachlorophenate will be present in on-going operations which have switched over from its past use. This new data was obtained from performing mass balance iterations using typical tank volumes found at both large and small facilities. These mathematical calculations showed that cross-contamination from previous use of chlorophenolics will be present in a substitute products for only two to six years from the time a plant stops using chlorophenolics. The Agency found that the highest estimated risk to an individual from drinking ground water for nine years at peak concentrations in the two- or six-year pulse resulting from cross contamination, is significantly diminished and the broad effect on dioxin levels in fish is reduced by several orders of magnitude. This new analysis shows that the risks associated with cross-contamination do not justify a hazardous waste listing to capture cross-contaminated wastes. In the proposed rule, EPA addressed the fact that PCP is no longer in use at most facilities in its baseline risk estimates, which have been revised in the final rule to reflect source concentrations and pulse durations more representative of the cross-contamination, incremental-risk scenario. Chart 1 below compares the incremental risks from cross-contaminated wastes as calculated for the proposed rule to the values obtained using the new approach.

CHART 1.—INCREMENTAL RISKS [1] DUE TO CROSS CONTAMINATED WASTES

	Constituent	Significant threat pathway	Central tendency	High end	Population risk
Proposed in NPRM ..	Pentachlorophenate (assumed 30 year pulse).	Ground water	5×10^{-7}	2×10^{-4}	.005
	Dioxin fish and shellfish consumption (general population and recreational fisher).	Soil	18×10^{-10} (general population).	4×10^{-7}, rec fisher.	0.2
	Dioxin soil ingestion	Soil	7×10^{-7}	2×10^{-5}	.0004
Revised	Pentachlorophenate (2 year pulse, for large facilities).	Ground water	6×10^{-7}	2×10^{-5}	.007
	Pentachlorophenate (6 year pulse, for small facilities).	Ground water	2×10^{-6}	6×10^{-5}	0.02
	Dioxin fish & shellfish consumption (recreational fisher).	Soil	2×10^{-12}	3×10^{-11}	NR
	Dioxin fish & shellfish consumption (general pop.).	Soil	8×10^{-13}	1×10^{-11}	.0002
	Dioxin soil ingestion	Soil	7×10^{-10}	2×10^{-9}	4×10^{-7}

[1] Excess lifetime cancer risk.

As shown in Chart 1, population risk is lower than that presented in the proposal for both fish/shellfish consumption and the soil ingestion pathway, due to a unit conversion error in expressing dioxin concentration. The dioxin concentrations in the formulation at one of the affected facilities (Aquasco, MD) were reported using incorrect units, causing a 1,000-fold error to be incorporated into the risk estimates for the fish and shellfish ingestion and soil ingestion scenarios. When this error was corrected, the TCDD-TEQ levels used as the source concentration for affected facilities (cross-contamination from past use of chlorophenolic formulations) and used in the lifetime individual risk estimates for the soil/fish and shellfish ingestion scenarios also were reduced 1,000-fold.

The incremental population risk was revised for the ground-water scenario from an original 0.005 value to between 0.007 and 0.02 cancer cases. This range of 0.007 to 0.02 cancer cases was obtained because two different modelling scenarios were run to generate the extremes of this range. One model run used input parameters which would simulate decay for a small production plant. The input information was obtained from a mass balance iteration which showed that it would take a small plant approximately 6 years to decrease cross-contamination levels to near zero; likewise, the second model used input parameters for large facilities which predicted a two year decline to near zero levels of cross-contamination. The details of the mass balance approach and the resulting change in population risk can be found in the background document for this final rule. The Agency believes that these revised risk levels do not warrant a hazardous waste listing.

Based on the above two main factors (*i.e.* (1) chlorophenolic production stoppage and subsequent chlorophenolic use decline and (2) revised risk due to cross contamination), the Agency looked closely at any potential environmental benefits that may accrue from a hazardous waste listing. Given the market trend, the Agency cannot identify any tangible benefits to be gained from listing wastes generated from the use of chlorophenolic formulations for wood surface protection. Environmental damages caused by previous use of chlorophenolics have already occurred. A listing of these wastes cannot mitigate past damages nor can it force the clean-up of these damages. Such potential jurisdiction exists under current programs. Authority under CERCLA and RCRA 3007 exists even if a decision is made not to list as is the case for this final rule.

Damage to the environment of this magnitude from previous use of chlorophenolic formulations within this industry are not expected to occur in the future unless use of full-strength chlorophenolics resumes. Furthermore, sampling data collected at surface protection sites indicate that dioxin concentrations in storage yards (the largest area of a plant) are below 1 ppb. The heavier contamination that occurs in the process area is confined to a small area and likely will not migrate off-site to environmental receptors. Therefore, the Agency finds that the risks posed by this residual contamination are limited and that a hazardous waste listing would likely simply result in these limited areas of contamination being left in place and not produce an environmental benefit. Thus the effect on past contamination does not justify a hazardous waste listing.

B. Operating Requirements for Surface Protection Plants

Because the Agency is not listing F033 wastes, the operating standards for surface protection plants proposed in the April 27, 1993 notice are not applicable and, thus, are not being finalized. Furthermore, surface protection plants are not required to follow any specific waste management requirements regarding previous use of chlorophenolics as a result of this rule.

C. Addition of Chemicals to Appendix VIII of 40 CFR Part 261

Although this final rule does not list any wastes from wood surface protection processes as hazardous, the Agency believes that certain constituents contained in these wastes warrant inclusion in appendix VIII of part 261. 40 CFR 261.11 provides that "[s]ubstances will be listed on appendix VIII only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms." In the April 27 notice, EPA proposed to add six hazardous constituents of concern found in surface protection wastes to appendix VIII of 40 CFR part 261. Based on the information gathered during this listing investigation, the following four are being added to the list: sodium pentachlorophenate, potassium pentachlorophenate, the sodium salt of 2,3,4,6-tetrachlorophenol, and the potassium salt of 2,3,4,6-tetrachlorophenol. The Agency presented information in the proposed rule and supporting background documents on the adverse effects of these compounds. For those reasons, EPA is finalizing the addition of four of these constituents to appendix VIII of part 261. The Agency is not at this time finalizing the addition of OCDD and

OCDF to Appendix VIII. As mentioned before, the Agency is investigating further the information submitted by the commenters regarding the effects of OCDD and OCDF reported in the Couture, Elwell, and Birnbaum study, used to support the decisions made in the "Interim Procedures for Estimating Risks Associated with Exposures of Mixtures of Chlorinated Dibenzo-p-dioxins and Dibenzofurans and the 1989 Update".

VI. Amendment of SW–846 (Test Methods for Evaluating Solid Waste, Physical/Chemical Methods)

In the notice of proposed rulemaking, the Agency proposed to add Method 4010 (Immunoassay Test for the Presence of Pentachlorophenate) to the Second and Third Editions of SW–846. The purpose behind this proposal was to aid owners/operators of wood surface protection plants with the proposed formulation testing requirement.

With respect to requiring the use of SW–846 methods for testing for the presence of pentachlorophenate in wood surface protection "in-process" formulation, the issue is moot since EPA is not listing any wood surface protection wastes as hazardous. Nonetheless, EPA believes that although no comments were received on Method 4010, Method 4010 is an appropriate method, in general, for testing for the presence of pentachlorophenate or pentachlorophenol and can, therefore, be used in other applications other than for wood surface protection formulation testing. The Agency is, therefore, adding Method 4010 to the Third Edition of SW–846 as Update IIA. We are not adding Method 4010 to the Second Edition of SW–846 since the Third Edition has replaced the Second Edition on August 31, 1993 for use in mandatory applications (58 FR 46040). Method 4010, including its protocol and documentation supporting this action can be found in the docket for this rulemaking. See the "For Further Information" Section in front of this preamble for the EPA contact person for further information or with questions on Method 4010.

VII. Pollution Prevention and Waste Minimization

The Agency is preparing a separate guidance manual recommending voluntary pollution prevention and waste minimization techniques for the lumber industry. Since it has studied the surface protection industry in making a listing determination for wastes generated from the use of chlorophenolic formulations, EPA has gained a broad perspective on the best ways to reduce wastes generated by this wood surface protection industry. The ideas gained from the study are presented in this manual. Some recommended strategies for pollution prevention in the surface protection industry are described in this section. Further information can be found in the manual.

The ultimate goal of pollution prevention is to reduce present and future threats to human health and the environment. Pollution prevention (also referred to as source reduction) is the use of materials, processes, or practices that reduce or eliminate the quantity and/or toxicity of wastes at the source of generation. Pollution prevention is the first step in a hierarchy of options for reducing the generation of waste. The first recommended pollution prevention option is to replace chemical treatment with another type of treatment to achieve surface protection. One alternate is to dry the wood to reduce water content (high water content leads to sapstain). The Agency is aware that this option may not be economically viable for a smaller mill. If such a system cannot be feasibly employed, it would be preferable for a user of chlorophenolic-containing formulations to switch to an alternate formulation.

Other pollution prevention strategies for use within the surface protection industry include: (1) Providing local and general ventilation within the cutting process area to reduce dust that can accumulate on wood; (2) blowing wood with air to reduce the amount of sawdust on wood prior to surface protection; and (3) using drainage collection devices like gutters on rooftops to keep precipitation away from process wastes. The pollution prevention practices described here can be critical to reduce the amount of waste generated. Although the Agency is not listing these chlorophenolic wood surface protection wastes, the pollution prevention practices described in the guidance manual are applicable to any waste generating process. For wastes that cannot be reduced at the source, generators may consider recycling as the next best option.

VIII. Analysis of Potential Costs and Benefits

A. Executive Order Requirements

Executive Order 12866

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review. Nevertheless, the Agency prepared an abbreviated RIA or "Economic Assessment" (EA) in order to examine costs and benefits likely to occur as a result of that action.

B. Description of Costs and Benefits of This Rule

Because the Agency has decided not to list wastes generated from the use of chlorophenolic formulations in surface protection operations, no specific action is required under this Rule. Facilities, however, may choose to take some remedial action as a result of publicity surrounding this action. A detailed analysis of work performed is described in the background document for this final rule.

IX. State Authority

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. (See 40 CFR part 271 for the standards and requirements for authorization.) Following authorization, EPA retains enforcement authority under sections 3007, 3008, 3013, and 7003 of RCRA, although authorized States have primary enforcement responsibility.

Before the Hazardous and Solid Waste Amendments of 1984 (HSWA) amended RCRA, a State with final authorization administered its hazardous waste program entirely in lieu of the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any plants located in the State with permitting authorization. When new, more stringent Federal requirements were promulgated or

enacted, the State was obligated to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

By contrast, under section 3006(g) of RCRA, 42 U.S.C. 6926(g), new requirements and prohibitions imposed by the HSWA take effect in authorized States at the same time that they take effect in non-authorized States. EPA is directed to implement those requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, the Federal HSWA requirements apply in authorized States in the interim.

Although this final rule does not list, as hazardous, chlorophenolic wastes from the wood surface protection industry, it does add four constituents to appendix VIII of 40 CFR part 261. These additions will not be effective in authorized States since the requirements are not being imposed pursuant to HSWA. These requirements will be effective only in those States that do not have final authorization. In authorized States, these requirements will not be applicable until the States revise their programs to adopt equivalent requirements under State law.

Section 271.21(e)(2) of EPA's state authorization regulations (40 CFR part 271) requires that States with final authorization must modify their programs to reflect Federal program changes and submit the modifications to EPA for approval. The deadline by which the States must modify their programs to adopt this proposed regulation, if it is adopted as a final rule, will be determined by the date of promulgation of a final rule in accordance with § 271.21(e)(2). If the proposal is adopted as a final rule, Table 1 at 40 CFR 271.1 will be amended accordingly. Once EPA approves the modification, the State requirements become RCRA Subtitle C requirements.

States with authorized RCRA programs already may have regulations similar to what is being finalized in this rule. These State regulations have not been assessed against the Federal regulations being proposed today to determine whether they meet the tests for authorization. Thus, a State would not be authorized to implement these regulations as RCRA requirements until State program modifications are submitted to EPA and approved, pursuant to 40 CFR 271.21. Of course, States with existing regulations that are not less stringent than current Federal regulations may continue to administer and enforce their regulations as a matter of State law.

It should be noted that authorized States are required to modify their programs only when EPA promulgates Federal standards that are more stringent or broader in scope than existing Federal standards. Section 3009 of RCRA allows States to impose standards more stringent than those in the Federal program. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. (See 40 CFR 271.1(i).) This proposed rule, if finalized, is neither less stringent than nor a reduction in the scope of the current Federal program and, therefore, states would be required to modify their programs to retain authorization to implement and enforce these regulations.

X. Regulatory Flexibility Analysis

This final rule amends the hazardous waste regulations by adding four chemicals to appendix VIII of 40 CFR part 261 and amending SW–846 by adding Method 4010. These are impacts with negligible effects to small entities. Therefore, there is no need to consider its impacts on small entities by preparing a Regulatory Flexibility Analysis.

XI. Paperwork Reduction Act

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

List of Subjects

40 CFR Part 260

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous waste.

40 CFR Part 261

Hazardous materials, Waste treatment and disposal, Recycling.

Dated: December 23, 1993.

Carol M. Browner,

Administrator.

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

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

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

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

2. Section 260.11 is amended by revising the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" reference in paragraph (a) to read as follows:

§ 260.11 References.

(a) * * *

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 (Third Edition (November, 1986), as amended by Updates I, II and IIA). The Third Edition of SW–846 and Updates I, II, and IIA (document number 955–001–00000–1) are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 783–3238.

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

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

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

4. Appendix VIII of part 261 is amended by adding the following hazardous constituents in alphabetical order by common name to read as follows:

Appendix VIII to Part 261—Hazardous Constituents

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
*	*	*	*
Potassium pentachlorophenate	Pentachlorophenol, potassium salt	7778736	None

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
* * *	* * *	*	*
Sodium pentachlorophenate	Pentachlorophenol, sodium salt	131522	None
* * *	* * *	*	*
2,3,4,6-tetrachlorophenol, potassium salt	same	53535276	None
2,3,4,6-tetrachlorophenol, sodium salt	same	25567559	None
* * *	* * *	*	*

* * * * *

[FR Doc. 93-32032 Filed 12-30-93; 8:45 am]

BILLING CODE 6560-50-P

Revision Checklist 129 Summary

Rule Title:	Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Treatability Studies Sample Exclusion
Checklist Title:	Revision of Conditional Exemption for Small Scale Treatability Studies
Reference:	59 FR 8362-8366
Promulgation Date:	February 18, 1994
Effective Date:	February 18, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Non-HSWA
Linkage:	Revision Checklist 49
Optional:	Yes

Summary: On July 19, 1988 (53 FR 27290; Revision Checklist 49) EPA promulgated the Treatability Sample Exemption Rule which conditionally exempted from Subtitle C regulation samples of hazardous waste collected for purposes of conducting small-scale treatability studies. That rule was promulgated in recognition of the inhibiting effect of the stringent RCRA Subtitle C requirements on the development of new treatment capacity and the minimal public health and environmental risks involved in conducting small-scale treatability studies. This February 18, 1994 rule revises that existing rule, the principal change being to increase the quantity and time limits for major classes of contaminated media (specifically soil and debris) used in treatability studies without triggering RCRA Subtitle C requirements. The rule increases the exempt amounts from 1000 kg to 10,000 kg of media contaminated with non-acute hazardous waste and from 250 kg to 2500 kg of media contaminated with acute hazardous waste, when used in treatability studies. To the initial period of two years for completing testing, this new rule also allows the Administrator to grant requests on a case-by-case basis for up to an additional two years for treatability studies involving bioredmediation. The existing case-by-case variance provision at 40 CFR 261.4(e)(3) has also been increased from 500 kg to 5,000 kg for media contaminated with non-acute hazardous waste and from 250 kg to 2,500 kg for media contaminated with acute hazardous waste. Provisions have been added to allow these additional quantities to be requested prior to commencing treatability studies. This revised rule is based in part on the recognition that larger quantities of contaminated media are often needed for treatability testing by technology developers and that larger-scale testing would also greatly increase confidence with which remedial action decision-makers make remedy selection, thus improving CERCLA response activities and RCRA corrective actions.

State Authorization: This rule is placed in RCRA Cluster IV; the changes addressed by it were promulgated under non-HSWA authority. Thus, this regulation is immediately applicable only in states that do not have final authorization for a base RCRA program. For states that are authorized for a base program, these changes do not go into effect until the state becomes authorized for them. Like the initial Treatability Exemption rule, these changes are considered optional as they are less stringent or reduce the scope of the federal program. The Agency encourages the states to adopt these changes and plans to work with states to encourage timely adoption of this rule because of its benefits to the development of treatment capacity. For states that choose to adopt these changes, the state modification deadline is July 1, 1995

Revision Checklist 129 Summary (cont'd)

(or July 1, 1996 if a State Statutory change is necessary). The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 129, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following entry should be placed at Subsection I DD in the Model Revision Attorney General's Statement.

> DD. [OPTIONAL: This is a reduced requirement.] State statutes and regulations increase the quantity and time limits for contaminated media used in treatability studies, as indicated in Revision Checklist 129.
>
> Federal Authority: RCRA §3001; 40 CFR 261.4(e)(2)(i)&(ii), (e)(3), (f)(3), (f)(4), and (f)(5) as amended February 18, 1994 (59 FR 8362).
>
> Citation of Laws and Regulations; Date of Enactment and Adoption
>
> Remarks of the Attorney General

RCRA REVISION CHECKLIST 129

Revision of Conditional Exemption for
Small Scale Treatability Studies
59 FR 8362-8366
February 18, 1994
(RCRA Cluster IV, Non-HSWA provisions)

1) This rule revises the July 19, 1988 (53 FR 27290) Treatability Studies Sample Exemption Rule addressed by Revision Checklist 49. States which are not authorized for Revision Checklist 49 are encouraged to adopt these present revisions at the same time the requirements addressed by Revision Checklist 49 are adopted.

2) As with the July 19, 1988 rule, States are not required to adopt these present revisions because they are less stringent or reduce the scope of the existing Federal requirements. However, EPA strongly encourages States to adopt these revisions. In addition, the Agency plans to work with States to encourage timely adoption of this rule because of its benefits to the development of treatment capacity.

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE						
SUBPART A - GENERAL						
† EXCLUSIONS						
replace "1000 kg of any non-acute hazardous waste" with "10,000 kg of media contaminated with non-acute hazardous waste, 1000 kg of non-acute hazardous waste other than contaminated media"; replace "or 250 kg of soils, water, or debris" with "2500 kg media"	261.4(e)(2)(i)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small Scale Treatability Studies (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
replace "1000 kg of non-acute hazardous waste, 1 kg of acute hazardous waste, or 250 kg of soils, water, or debris contaminated with acute hazardous waste" with "10,000 kg; the 10,000 kg quantity may be all media contaminated with non-acute hazardous waste, or may include 2500 kg of media contaminated with acute hazardous waste, 1000 kg of hazardous waste, and 1 kg of acute hazardous waste"	261.4(e)(2)(ii)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small Scale Treatability Studies (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
completely revise paragraph; add a new first sentence regarding requests for treatability studies involving bioremediation; delete the phrase ", or State Director (if located in an authorized State)," after "The Regional Administrator"; delete commas around the phrase "on a case-by-case basis"; change "paragraph (e)(2)(i)" to "paragraphs (e)(2)(i)&(ii) and (f)(4)"; replace "500 kg of non-acute hazardous waste," with "5000 kg of media contaminated with non-acute hazardous waste, 500 kg of non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste and"; delete the phrase ", and 250 kg of soils, water...to conduct further treatability study evaluation when"; restructure the remaining portions of paragraph 261.4(e)(3) starting with "There has been an equipment failure..." and "The additional quantities allowed...", and redesignate them as new subparagraphs (e)(3)(ii) and (e)(3)(iii)	261.4(e)(3)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small Scale Treatability Studies (cont'd)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
1	redesignate old 261.4(e)(3)(i) as 261.4(e)(3)(iii)(A); add new subparagraph regarding factors to be considered when reviewing requests for authorization to ship, store and conduct treatability studies	261.4(e)(3)(i)					
	redesignate old 261.4(e)(3)(ii) as 261.4(e)(3)(iii)(B); the third to the last sentence ("There has been an equipment... specifications for treatment.") from the old 261.4(e)(3)(intro) becomes the new 261.4(e)(3)(ii); to the beginning of that sentence add the phrase "In response to requests for authorization to ship, store and conduct treatability studies on additional quantities after initiation or completion of initial treatability studies, when:"	261.4(e)(3)(ii)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small Scale Treatability Studies (cont'd)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	redesignate old 261.4(e)(3)(iii) as 261.4(e)(3)(iii)(C); the last two sentences (beginning with "The additional quantities") from the old 261.4(e)(3)(intro) become the new 264.4(e)(3)(iii); revise the first of these two sentences by inserting the phrase "and timeframes" between "quantities" and "allowed" and replacing "are subject to all the provisions in paragraphs (e)(1) and (e)(2)(ii)(vi) of this section" with "in paragraph (e)(3)(i) and (ii) of this section are subject to all the provisions in paragraphs (e)(1) and (e)(2)(iii) through (vi) of this section."	261.4(e)(3)(iii)					
2	old 261.4(e)(3)(i) becomes 261.4(e)(3)(iii)(A); insert "time or" between both occurrences of "additional" and "quantity"; replace the semicolon at the end of the subparagraph with a comma	261.4(e)(3)(iii)(A)					
	old 261.4(e)(3)(ii) becomes 261.4(e)(3)(iii)(B); change "data" to "date" after "studies including the"	261.4(e)(3)(iii)(B)					
	old 261.4(e)(3)(iii) becomes 261.4(e)(3)(iii)(C)	261.4(e)(3)(iii)(C)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small Scale Treatability Studies (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
old 261.4(e)(3)(iv) becomes 261.4(e)(3)(iii)(D)	261.4(e)(3)(iii)(D)					
old 261.4(e)(3)(v) becomes 261.4(e)(3)(iii)(E)	261.4(e)(3)(iii)(E)					
replace "250 kg of "as received" hazardous waste is subjected" with "10,000 kg of "as received" media contaminated with non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste or 250 kg of other "as received" hazardous waste is subject"	261.4(f)(3)					
replace "1000 kg, the total of which can include 500 kg of soils, water, or debris contaminated with acute hazardous waste or" with "10,000 kg, the total of which can include 10,000 kg of media contaminated with non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste, 1000 kg of non-acute hazardous wastes other than contaminated media, and"; in the last sentence delete the colon, remove text of 261.4(f)(4)(i) and the subparagraph designators "(i) and (ii)", including only the text of 261.4(f)(4)(ii), with "Treatment materials" changed to "treatment materials"	261.4(f)(4)					

RCRA REVISION CHECKLIST 129: Revision of Conditional Exemption for Small-Scale Treatability Studies (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
insert "(two years for treatability studies involving bioremediation)" after "no more than one year"; replace "has elapsed" with "have elapsed"; add two new sentences at the end of the paragraph regarding treated material from treatability studies that can be archived	261.4(f)(5)					

[1] Note that there is a typographical error in this subparagraph; "treatabilty" should be "treatability."

[2] The replacement of the semi-colon with a comma at the end of 261.4(e)(iii)(A) may be a typographical error as other 261.4(e)(iii) subparagraphs (i.e., 261.4(e)(iii)(B)-(D)) end with a semi-colon.

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federal register

Friday
February 18, 1994

Part VII

Environmental Protection Agency

40 CFR Part 261
Identification and Listing of Hazardous Waste, Treatability Studies Sample Exclusion; Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 261

[FRL-4838-5]

Hazardous Waste Management System: Identification and Listing of Hazardous Waste; Treatability Studies Sample Exclusion

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: On July 7, 1993, the Environmental Protection Agency (EPA) proposed revisions to the Treatability Studies Sample Exemption Rule. The rule conditionally exempts small scale treatability studies from Subtitle C regulation.

EPA is today issuing a final rule. The principal change to the existing rule is to increase the quantity of contaminated media which are conditionally exempt from Subtitle C regulation when used in conducting treatability studies.

EFFECTIVE DATE: This rule becomes effective on February 18, 1994.

ADDRESSES: The public docket for this rulemaking is located in the RCRA docket, located in room M2427 at the U.S. Environmental Protection Agency, 401 M St. SW., Washington, DC 20460. The telephone number for the docket is (202) 260-9327. The record is available for inspection by appointment only, between the hours of 9 a.m. and 4 p.m., Monday through Friday, excluding legal holidays. Viewers may copy up to 100 pages free of charge, after which copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: Questions relating to the technical content of this rule should be directed to Jim Cummings or John Kingscott, Technology Innovation Office (5102W), U.S. Environmental Protection Agency at (703) 308-8796 or (703) 308-8749. Other inquiries should be directed to the RCRA/Superfund Hotline at (800) 424-9346 or (703) 920-9810.

SUPPLEMENTARY INFORMATION:

Outline

I. Background
II. Discussion
A. Summary of Existing Treatability Sample Exclusion Rule
B. Need and Rationale for This Rulemaking
C. Response to Major Comments
1. Quantity Limits
2. Scope of the Exemption
3. Time Limits for Sample Retention
4. Variances for Processing Additional Quantities and Extended Time Limits
5. Treatability Studies at Federal Facilities
6. Promulgation/State Adoption
III. State Authority
IV. Effective Date
V. Regulatory Analyses
A. Executive Order 12866
B. Regulatory Flexibility Act
C. Paperwork Reduction Act

I. Background

On July 19, 1988 (52 FR 27290), EPA issued a rule that conditionally exempted from Subtitle C hazardous waste regulation waste samples collected for purposes of conducting small-scale treatability studies. 40 CFR 261.4 (e)–(f). This rule was promulgated in recognition of the inhibiting effect of the stringent Resource Conservation and Recovery Act (RCRA) Subtitle C requirements on the development of new treatment capacity, and the minimal public health and environmental risks involved in conducting small-scale treatability studies. The rule identified specific quantities of various types of wastes which could be transported, stored and used in treatability studies without the need for RCRA Subtitle C regulation.

On July 7, 1993 (58 FR 36367), EPA proposed amendments to the existing rule which would increase the quantity limits for major classes of contaminated media (specifically soil and debris) which could be employed in treatability studies without triggering RCRA Subtitle C requirements. The proposal was based in part on the recognition that larger quantities of soil and debris were often needed for treatability testing by technology developers. Larger-scale testing also greatly increases the confidence with which remedial action decision-makers make remedy selection decisions, thus improving CERCLA response activities and RCRA corrective actions, see 58 FR 36367, 36370.

EPA also requested comment on the desirability of an amendment to increase the quantity limits for other forms of remediation waste in addition to soil and debris. The proposal also included an amendment which would allow longer time frames for conducting treatability studies involving bioremediation, and solicited comment on appropriate time limits for other technologies. EPA did not request comment on, or reopen the comment period on, the propriety of the existing exemption.

Twenty-seven comments were received in response to the proposed rule. The comments were universally favorable regarding the need for and desirability of increasing the treatability study quantity limits. A substantial majority of the comments favored extending the scope beyond soil and debris to other forms of remediation and/or hazardous waste. General reasons offered by commenters mirror those stated in the proposed rule, e.g., assisting technology development and increasing confidence in remedy selection.

EPA is today issuing a final rule which increases the quantity and time limits for contaminated media to be used in treatability studies. The rule would increase the exempt amounts from 1000 kg up to 10,000 kg of media contaminated with non-acute hazardous waste and from 250 kg to 2500 kg of media contaminated with acute hazardous, when used in treatability studies.

The existing case-by-case variance provision (40 CFR 261.4(e)(3)) is increased from 500 kg to 5000 kg for media contaminated with non-acute hazardous waste and from 250 kg to 2500 kg for media contaminated with acute hazardous waste. The existing variance provision focuses on allowing limited additional quantities after the initial increment of material is processed. EPA is adding criteria to the variance provision to allow the additional quantity to be requested in advance.

EPA is also increasing the time limits for treatability studies involving bioremediation. Treatability studies involving bioremediation have an initial period of two years to complete testing, and under the case-by-case variance provisions discussed below, may request up to an additional two years.

The remainder of the preamble discusses the major comments received on the proposed rule and EPA's response to them. All other comments are discussed in a background document that is available in the RCRA docket.

II. Discussion

A. Summary of the Existing Treatability Sample Exclusion Rule

The existing Treatability Sample Exclusion rule imposes limits on the quantity of material which may be shipped, stored or treated under the exemption. In order to qualify for the conditional exclusion, laboratory and test facilities must comply with the following quantity and time limitations as well as notification, reporting and record-keeping requirements:

Shipment—The mass of each sample shipment may not exceed 1000 kg of "as received" hazardous waste, 1 kg of acute hazardous waste, or 250 kg soils, water, or debris contaminated with acute hazardous waste. 40 CFR 261.4(e)(2)(ii). "As received" refers to the waste

shipped by the generator or sample collector as it arrives at the laboratory or testing facility. 40 CFR 261.4(f)(3).

Storage—The laboratory or testing facility may store up to 1000 kg of non-acute hazardous waste. This limitation can include 500 kg of soils, water, or debris contaminated with acute hazardous waste or 1 kg of acute hazardous waste. 40 CFR 261.4(f)(4).

Treatment—The laboratory or testing facility, on a per waste stream per treatment process basis, may conduct treatability tests on up to 1000 kg of non-acute hazardous waste, 250 kg of soils, water, or debris contaminated with acute hazardous waste, or 1 kg of acute hazardous waste. 40 CFR 261.4(e)(2)(i). The rule imposes a treatment initiation rate limit of 250 kg per day of "as received" waste for the entire laboratory or testing facility.

Time Limits—The existing exclusion requires that the laboratory or testing facility return the sample to the generator or sample collector, or send it to a designated facility within 90 days of completion of the treatability study, or no more than one year from the time the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs. 40 CFR 261.4(f)(5).

EPA did not seek comment on the propriety of these exemption levels or criteria, but merely sought comment on amendments that would expand the scope of the existing rule.

B. Need and Rationale for Amendments to the Existing Rule

The preamble to the proposed rule contained an extensive discussion of the reasons the Agency felt that amendments to the existing rule were desirable. 58 FR 36367 (July 7, 1993). Interested readers are referred to that document for further information.

C. Response to Major Comments

1. Quantity Limits

All commenters supported an amendment to increase the quantity limits in the exemption for soil and debris samples by at least the quantities proposed. Almost 50% of the comments suggested adopting higher exemption limits on either an across-the-board or a case-by-case basis.

Commenters noted the significant challenges posed in designing and verifying the operational performance of treatment processes. Commenters also noted the challenges encountered in designing and testing ancillary system components—e.g., material handling equipment (getting the waste material into the treatment unit in an appropriate physical state and condition), and emission control equipment. Smaller-scale tests conducted at the laboratory or bench scale often do not involve ancillary system components, or may not utilize sufficient throughput to adequately test these components.

Suggestions to further increase the quantity limits ranged as high as 25,000 kg. Other comments suggested that quantity limits higher than those proposed be set on a case-by-case basis. These comments identified site size, the nature of the waste and/or the remediation technology, the concentration of hazardous constituents in the waste matrix, and the intent of the study as possible factors to be considered in these case-by-case determinations.

EPA is aware that the larger the scale of the technology development or remedy selection treatability study, the more likely the results will represent the performance of full-scale remedial equipment. Furthermore, EPA's proposal identified the need to address materials handling problems as a major basis for the proposed revision.

The data adduced by EPA in the proposed rule support the conclusion that many of the technologies can be tested within the limits proposed. Nevertheless, EPA's own data also confirm that there are situations where additional quantities may be necessary in order to conduct treatability studies at an appropriate scale.

The existing rule has a provision for case-by-case approval of additional quantities. 40 CFR 261.4(e)(3). As discussed further below, EPA is modifying the variance provision to allow advance approval, on a case-by-case basis, of conducting studies on additional quantities of contaminated media. Due to the potential for delay in processing case-by-case applications, laboratory and testing facilities should carefully consider the tradeoffs in seeking advance approval of additional quantities.

2. Scope of the Exemption

All comments supported the basic proposal to increase the quantity limits for soil and debris. In response to EPA's solicitation of comment on increasing the scope of the revision beyond soil and debris, a substantial majority of the comments recommended extending the quantity increases to various other forms of hazardous waste. Comments differed on the exact scope beyond soil and debris—e.g., all hazardous waste, 'remediation waste', wastewater and/or groundwater.

Reasons suggested for increasing the scope beyond soil and debris included the difficulty of determining the boundary between sludge and media in, for example, unlined lagoons; the low concentration of contaminants in groundwater; the need for longer-duration continuous flow tests; and the need to develop integrated, optimized remediation approaches in the case of 'remediation waste' in general. A number of commenters also suggested extending the increases to all forms of hazardous waste, which would include newly-generated industrial hazardous wastes.

In response to these comments, and in light of EPA's own experience regarding the variety of contaminated media encountered in cleanup efforts, EPA is at this time modifying the scope of the exemption to reach contaminated media, including groundwater, surface water, soils, sediment and debris that contain listed hazardous waste or that themselves exhibit a characteristic. However, the proposal did not focus on samples of newly-generated waste or waste sludges, and the Agency is not taking final action of those materials at this time. EPA is considering additional rulemaking to address larger scale treatability studies on other forms of hazardous waste.[1]

3. Time Limits for Sample Retention

As discussed above, EPA proposed to allow up to two years for treatability studies involving bioremediation. EPA solicited comment on whether these time frames were sufficient, and whether testing involving other technologies also required longer time frames. No negative comments were received on this proposal. Comments included suggestions that the allowable time period be even longer and/or that additional technologies (e.g., phytoremediation and solidification/stabilization) be eligible for longer duration studies.

With regard to the time limits, EPA believes that two years should be adequate for most treatability testing involving bioremediation.[2] Nevertheless, as discussed below, EPA is modifying the case-by-case variance provisions to allow up to an additional

[1] As noted by several commenters, sludges will have often become commingled with underlying media, and present difficulty for those attempting to collect media samples for shipment. EPA agrees that it may be difficult to distinguish sludges from underlying media. Where uncontainerized sludges have come into contact with underlying media, EPA does not expect sample collectors to undertake extraordinary efforts to assure that samples consist only of contaminated media.

[2] As a point of clarification, for purposes of this rule, EPA considers phytoremediation to be a form of bioremediation.

two years for completion of such studies.

EPA expects that this provision will be used judiciously. Laboratory and testing facilities cannot exceed the limits in the rule on the amount of material which may be stored and treated. (e.g., 10,000 kg of media contaminated with non-acute hazardous waste plus 5000 kg if a full variance quantity request is granted). On-going studies reduce the quantity of materials which may be stored for use in new studies.

With regard to stabilization/solidification, EPA's experience in the Superfund Innovative Technology Evaluation (S.I.T.E.) program indicates that a one-year time frame is generally adequate. Modifications discussed below which allow retaining small samples of treated materials should address some of the concerns underlying suggestions for allowing longer duration studies for this technology (e.g., to ensure the long-term efficacy of the stabilization).

Several comments addressed the desirability of retaining samples of treated material for future analysis. EPA understands that such a provision may be useful for technologies such as solidification/stabilization where the attributes of treated material such as compressive strength and leachability of contaminants may change over time, or solvent extraction where there may be issues of the long-term biodegradability of residual solvent in treated soil.

In response to these comments, EPA is promulgating a provision allowing up to 500 kg of treated material from a particular wastestream from treatability studies to be stored by the laboratory or testing facility for up to 5 years. Material archived for future analysis must be included in the storage quantity limit for the facility—e.g., a facility which archives two 500 kg samples from separate waste streams may only store up to 9,000 kg (plus 5000 kg if a variance is granted) of additional material, and must be identified as such in facility records and reports.

4. Variances for Requesting Additional Quantities and Extended Time Limits

Several commenters suggested that the variance provisions in the existing rule (40 CFR 261.4(e)(3)) be increased by the same factor applied to the base quantity allowed. For example, under the existing rule laboratories or testing facilities could request approval for further testing on up to an additional 500 kg from a particular wastestream. Comments included raising the variance limit for contaminated media by the same amount as the basic proposal. The variance provisions allow additional quantities of materials to be used in treatability studies on a case-by-case basis if specified conditions are met—e.g., mechanical failure during the initial treatability study or need to verify the results of a previously conducted study. As with the comments relating to quantity limits in general, commenters suggested across-the-board and case-by-case approaches to variances.

EPA finds the suggestion to allow increased quantities of contaminated media to a set maximum on a case-by-case basis to be reasonable. EPA is modifying the variance quantity by the same factor by which it is increasing the basic quantity limit.

Thus, laboratory and testing facilities may request up to an additional 5000 kg of media contaminated with non-acute hazardous waste, or 2500 kg of media contaminated with acute hazardous waste. The Agency considers this to be a conforming change to the general concept of allowing larger quantity studies, and views it as a logical outgrowth of the proposed rule.

Furthermore, as discussed above, in response to comments that quantities beyond those proposed be allowed on a case-by-case basis, EPA is also adding a provision that will allow laboratory and testing facilities to apply for advance authorization for variances. Factors to be considered in reviewing advance requests for additional quantities include the nature of the technology, the type of process (e.g., batch versus continuous), size of the unit undergoing testing (particularly in relation to scale-up considerations), time/quantity of material required to reach steady-state operating conditions, and test design considerations such as mass balance calculations.

Finally, the case-by-case variance provision has been modified to allow laboratory and testing facilities conducting bioremediation treatability studies to request a variance of up to two additional years to complete their studies.

5. Treatability Studies at Federal Facilities

Several comments requested clarification of the status of federal facilities for purposes of eligibility for the treatability study sample exclusion. Federal facilities are often large in size, with numerous different contamination problems for which solutions must be developed and applied. EPA notes that the rule identifies "laboratory or test facilities" as the entities which may take advantage of the conditional exclusion. The Agency would not consider a large federal installation with numerous laboratories or testing sites to be a single "laboratory or test facility" for purposes of this rule. Distinguishing attributes include the requirement to obtain an EPA Identification number for each laboratory or test facility. 40 CFR 261.4(f)(2).

6. Promulgation/State Adoption

Comments on State Authorities are addressed below in the "State Authority" section.

III. State Authority

A number of comments indicated that the efficacy of this rule depends to a considerable extent on the availability of the exclusion at the State level. Since the original treatability sample exclusion rule was promulgated under RCRA and not the Hazardous and Solid Waste Act Amendments of 1984 (HSWA), this revision is also promulgated pursuant to RCRA. As with the existing rule, the revisions promulgated today are not immediately effective in authorized States, since this rulemaking does not impose requirements or prohibitions contained in HSWA. Thus this regulation will be applicable only in those States that do not have final authorization for the non-HSWA base RCRA program.

In a State authorized to implement the base RCRA program, the proposed regulation would not be applicable until the State revises its program to adopt equivalent regulations under State law. However, as with the original rule these proposed changes are less stringent or reduce the scope of the Federal program. Therefore, although EPA strongly encourages timely adoption, authorized States are not required to modify their programs to adopt regulations consistent with and equivalent to this rulemaking. The Agency plans to work with States to encourage timely adoption of this rule because of its benefits to the development of treatment capacity.

IV. Effective Date

This rule is effective immediately upon publication. HSWA amended section 3010 of RCRA to allow rules to become effective in less than 6 months when the regulated community does not need the 6-month period to come into compliance. This is the case here, because this rule reduces the existing requirements for laboratories and test facilities conducting treatability studies on contaminated media. An effective date 6 months after publication would impose unnecessary expense and regulatory burden upon those persons the rule is designed to benefit, and

might delay the achievement of the rule's objective of improving CERCLA response activities and RCRA corrective actions by facilitating treatability studies. These reasons also provide a basis for making this rule effective immediately upon final promulgation under the Administrative Procedures Act, 5 U.S.C. 553(d).

V. Regulatory Analyses

A. Executive Order 12866

OMB has determined that this rule is not a significant rule within the meaning of Executive Order 12866.

B. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, whenever an Agency is required to publish 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).

The purpose of the original rule was to eliminate time-consuming and costly permitting requirements. This revision extends the scope of activities which may be conducted without requirements to obtain permits, and will thus have additional positive effects on small entities.

This amendment will have no adverse economic impact on small entities. In fact, it should reduce the burden imposed on small entities that conduct treatability studies and comply with the provisions of this rulemaking. Accordingly, I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities. This regulation therefore does not require a regulatory flexibility analysis.

C. Paperwork Reduction Act

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

To the extent that this rule discusses information collection requirements imposed under existing regulations, these requirements have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control number 2050–0053.

List of Subjects in 40 CFR Part 261

Hazardous waste, Recycling.

Dated: February 9, 1994.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, title 40 of the Code of Federal Regulations is amended to read 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 revising paragraphs (e)(2)(i) and (e)(2)(ii), (e)(3), (f)(3), (f)(4), and (f)(5) to read as follows:

§ 261.4 Exclusions.

* * * * *

(e) * * *

(2) * * *

(i) The generator or sample collector uses (in "treatability studies") no more than 10,000 kg of media contaminated with non-acute hazardous waste, 1000 kg of non-acute hazardous waste other than contaminated media, 1 kg of acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste for each process being evaluated for each generated waste stream; and

(ii) The mass of each sample shipment does not exceed 10,000 kg; the 10,000 kg quantity may be all media contaminated with non-acute hazardous waste, or may include 2500 kg of media contaminated with acute hazardous waste, 1000 kg of hazardous waste, and 1 kg of acute hazardous waste; and

* * * * *

(3) The Regional Administrator may grant requests on a case-by-case basis for up to an additional two years for treatability studies involving bioremediation. The Regional Administrator may grant requests on a case-by-case basis for quantity limits in excess of those specified in paragraphs (e)(2) (i) and (ii) and (f)(4) of this section, for up to an additional 5000 kg of media contaminated with non-acute hazardous waste, 500 kg of non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste and 1 kg of acute hazardous waste:

(i) In response to requests for authorization to ship, store and conduct treatabilty studies on additional quantities in advance of commencing treatability studies. Factors to be considered in reviewing such requests include the nature of the technology, the type of process (e.g., batch versus continuous), size of the unit undergoing testing (particularly in relation to scale-up considerations), the time/quantity of material required to reach steady state operating conditions, or test design considerations such as mass balance calculations.

(ii) In response to requests for authorization to ship, store and conduct treatability studies on additional quantities after initiation or completion of initial treatability studies, when: There has been an equipment or mechanical failure during the conduct of a treatability study; there is a need to verify the results of a previously conducted treatability study; there is a need to study and analyze alternative techniques within a previously evaluated treatment process; or there is a need to do further evaluation of an ongoing treatability study to determine final specifications for treatment.

(iii) The additional quantities and timeframes allowed in paragraph (e)(3) (i) and (ii) of this section are subject to all the provisions in paragraphs (e) (1) and (e)(2) (iii) through (vi) of this section. The generator or sample collector must apply to the Regional Administrator in the Region where the sample is collected and provide in writing the following information:

(A) The reason why the generator or sample collector requires additional time or quantity of sample for treatability study evaluation and the additional time or quantity needed.

(B) Documentation accounting for all samples of hazardous waste from the waste stream which have been sent for or undergone treatability studies including the date each previous sample from the waste stream was shipped, the quantity of each previous shipment, the laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped, and the available results on each treatability study;

(C) A description of the technical modifications or change in specifications which will be evaluated and the expected results;

(D) If such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and

(E) Such other information that the Regional Administrator considers necessary.

(f) * * *

(3) No more than a total of 10,000 kg of "as received" media contaminated with non-acute hazardous waste, 2500

kg of media contaminated with acute hazardous waste or 250 kg of other "as received" hazardous waste is subject to initiation of treatment in all treatability studies in any single day. "As received" waste refers to the waste as received in the shipment from the generator or sample collector.

(4) The quantity of "as received" hazardous waste stored at the facility for the purpose of evaluation in treatability studies does not exceed 10,000 kg, the total of which can include 10,000 kg of media contaminated with non-acute hazardous waste, 2500 kg of media contaminated with acute hazardous waste, 1000 kg of non-acute hazardous wastes other than contaminated media, and 1 kg of acute hazardous waste. This quantity limitation does not include treatment materials (including nonhazardous solid waste) added to "as received" hazardous waste.

(5) No more than 90 days have elapsed since the treatability study for the sample was completed, or no more than one year (two years for treatability studies involving bioremediation) have elapsed since the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs. Up to 500 kg of treated material from a particular waste stream from treatability studies may be archived for future evaluation up to five years from the date of initial receipt. Quantities of materials archived are counted against the total storage limit for the facility.

* * * * *

[FR Doc. 94-3745 Filed 2-17-94; 8:45 am]
BILLING CODE [illegible]

Revision Checklist 130 Summary

Rule Title:	Hazardous Waste Identification and Listing of Hazardous Waste; Recycled Used Oil Management Standards
Checklist Title:	Recycled Used Oil Management Standards; Technical Amendments and Corrections II
Reference:	59 FR 10550-10560
Promulgation Date:	March 4, 1994
Effective Date:	April 4, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Both HSWA and Non-HSWA
Linkage:	Revision Checklists 19, 112 and 122
Optional:	No

Summary: This rule clarifies the existing pipeline exemption as promulgated by the September 10, 1992 rule (57 FR 41566; Revision Checklist 112) and expands the exemption from the Part 279 requirements to other petroleum refinery applications. Specifically, EPA clarifies that the exemption from the used oil management standards did not intend to exclude used oil mixed with crude oil or natural gas liquids (hereinafter referred to as "crude oil") in pipeline units (e.g. stock tanks, production separators) prior to being introduced into the crude oil pipeline. The rule also expands the used oil exemption to include transportation and/or storage of mixtures of small amounts of used oil (i.e. less than 1%) and crude oil destined for insertion into a petroleum refining facility process at a point prior to crude distillation or catalytic cracking. Also exempted from the Part 279 standards are used oil that is inserted into the petroleum refining facility process after distillation or catalytic cracking operations and used oil that incidentally enters and is recovered from a refinery's hydrocarbon recovery system or wastewater treatment system, provided these used oils meet certain specifications or handling requirements.

This rule also expands the transfer facility definition to allow used oil to be held for more that 24 hours but less than 35 days prior to an activity performed pursuant to 279.20(b)(2).

Finally, this rule corrects errors in the May 3, 1993 technical amendment (58 FR 26420; Revision Checklist 122) to the September 10, 1992 rule.

State Authorization: This rule is placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary)[1]. As explained in the preamble to the May 3, 1993 Technical Correction to the September 10, 1992 rule, EPA is treating the majority of the final used oil management standards in the same manner as "non-HSWA" Subtitle C requirements. However, provisions that were issued under HSWA authority in the November 29, 1985 rule (50 FR 49201; Revision

[1]Note that the preamble to this rule incorrectly lists the due dates as "July 1, 1994 or July 1, 1995 if a statutory change is necessary." These are the due dates for RCRA Cluster III rather than RCRA Cluster IV.

Revision Checklist 130 Summary (cont'd)

Checklist 19) and recodified in part 279 (specifically, 279.10, 279.11 and portions of 279.1 and Subparts G and H of Part 279) remain HSWA requirements and will continue to be enforced by EPA until a State becomes authorized for them. This rule amends both HSWA and non-HSWA provisions. The standards promulgated by the March 4, 1994 rule at 279.20(g), 279.41(c), 279.46(a)(5), and the revision of the transfer facility definition 279.48(b)(5) are less stringent than or reduce the scope of the existing Federal requirements. Thus, authorized States are not required to modify their programs to adopt the provisions addressed by these citations. The remaining provisions need to be adopted, however.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 130, other associated checklists and other application materials, i.e. a project description and an MOA, as determined by the Regional office.

Attorney General Statement Entry: Subsection XX E in the Model Revision Attorney General's Statement should be revised to read as follows:

> E. State statutes and regulations provide used oil management standards for used oil generators, transporters, processors, re-refiners, burners, and marketers as indicated in Revision Checklist 112, 122 and 130.

Federal Authority: Federal Authority: RCRA §§ 1004, 1006, 2002, 3001, 3014 and 7004; 40 CFR Parts 260, 261, 266 and 279 as amended September 10, 1992 (57 FR 41566), May 3, 1993 (58 FR 26420) and March 4, 1994 (58 FR 10550).

Citation of Laws and Regulations: Date of Enactment and Adoption

Remarks of the Attorney General

RCRA REVISION CHECKLIST 130

Recycled Used Oil Management Standards;
Technical Amendments and Corrections II
59 FR 10550-10560
March 4, 1994
(RCRA Cluster IV, HSWA and Non-HSWA provisions)

Notes: 1) This rule provides clarifying amendments to the recycled used oil management standards rule, published September 10, 1992 (57 FR 41566; Revision Checklist 112) and expands the exemption from the Part 279 requirements to other petroleum refinery applications. This rule also corrects errors in regulations that appeared in the May 3, 1993 rule Federal Register (58 FR 26420; Revision Checklist 122).

2) As stated in the preamble to the May 3, 1993 Technical Correction to the September 10, 1992 rule, EPA is treating the majority of the final used oil management standards in the same manner as "non-HSWA" Subtitle C requirements. However, provisions that were issued under HSWA authority in the November 29, 1985 rule (50 FR 49201; Revision Checklist 19) and recodified in part 279 by the September 10, 1992 rule (specifically 279.10, 279.11, and portions of 279.1 and Subparts G and H) remain HSWA requirements and will continue to be enforced by EPA until a State becomes authorized for them. The HSWA provisions changed by this checklist are designated by a "◆" (diamond symbol).

3) The standards promulgated in the March 4, 1994 rule at 279.20(g), 279.41(c), 279.46(a)(5), 279.46(b)(5) and the revision to the transfer facility definition are less stringent than or reduce the scope of the existing Federal requirements. Thus, authorized States are not required to modify their programs to adopt the provisions addressed by these citations. States are required to adopt the other provisions addressed by this checklist, however.

4) States are encouraged to apply for Checklists 112, 122 and 130 at the same time. A checklist which consolidates the Checklist 112, 122 and 130 provisions has been developed to help States apply for these checklists concurrently. States that have already adopted Revision Checklists 112 and 122 are encouraged to adopt Revision Checklist 130 as soon as possible.

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 279 - STANDARDS FOR THE MANAGEMENT OF USED OIL						
SUBPART A - DEFINITIONS						
DEFINITIONS						
add, in alphabetical order, definition of "petroleum refining facility"	279.1					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROA… IN SCOPE
† remove comma after "storage areas"; insert "and no longer than 35 days" after "24 hours"; replace "and no longer than 35 days" after "normal course of transportation" with "or prior to an activity performed pursuant to 279.20(b)(2)"	279.1 "used oil transfer facility"					
SUBPART B - APPLICABILITY						
APPLICABILITY						
in the last sentence, remove phrase "for the cost of $110.00."	279.10(b)(1)(ii)					
◆ delete phrase "and is not listed in subpart D of part 261 of this chapter"; insert "ignitable-only" before "mineral spirits" and "resultant" before "mixture does not exhibit"	279.10(b)(2)(iii)					
† replace old paragraph with new heading "Used oil introduced into crude oil pipelines or a petroleum refining facility"	279.10(g)					
† add new paragraph; used oil mixed with crude oil or natural gas liquids for insertion into a crude oil pipeline is exempt from the Part 279 requirements; this used oil is subject to Part 279 requirements prior to mixing of used oil with crude oil or natural gas liquids	279.10(g)(1)					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
† add new paragraph; mixtures of used oil and crude oil or natural gas liquids containing less than 1% used oil being stored or transported to crude oil pipeline or petroleum refining facility for insertion into refining process at a point prior to crude distillation or catalytic cracking are exempt from the Part 279 requirements	279.10(g)(2)					
† add new paragraph; used oil inserted into petroleum refining facility process before crude distillation or catalytic cracking without prior mixing with crude oil exemption is exempt from the Part 279 requirements provided used oil constitutes less than 1% of crude oil feed to any petroleum facility process unit at any time; this used oil is subject to Part 279 requirements prior to insertion into the petroleum refining facility process	279.10(g)(3)					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
† add new paragraph; except as provided in 279.10(g)(5), used oil introduced into petroleum refining facility process after crude distillation or catalytic cracking is exempt from the Part 279 requirements only if used oil meets 279.11 specifications; this used oil is subject to Part 279 requirements prior to insertion into petroleum refining facility process	279.10(g)(4)					
† add new paragraph; used oil incidentally captured by hydrocarbon recovery system or wastewater treatment system as part of routine process operations at petroleum refining facility and inserted into the petroleum refining facility process is exempt from the Part 279 requirements; exemption does not extend to used oil intentionally introduced into a hydrocarbon recovery system	279.10(g)(5)					
† add new paragraph; tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil or natural gas liquids are exempt from the Part 279 requirements	279.10(g)(6)					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART C - STANDARDS FOR USED GENERATORS						
APPLICABILITY						
redesignate existing paragraph 279.20(b)(2) as 279.20(b)(2)(i); insert "Except as provided in paragraph (b)(2)(ii) of this section," at the beginning of the sentence	279.20(b)(2)(i)					
add new subparagraph; generators who perform the following activities are not processors provided the used oil is generators on-site and is not being sent off-site to a burner of on- or off-specification used oil fuel:	279.20(b)(2)(ii)					
filtering, cleaning, or otherwise reconditioning used oil before returning it for reuse by generator	279.20(b)(2)(ii)(A)					
separating used oil from wastewater generated on-site to make the wastewater acceptable for discharge or reuse under CWA or other applicable Federal regulations governing the management or discharge of wastewaters	279.20(b)(2)(ii)(B)					
using oil mist collectors to remove small droplets of used oil from in-plant air to make plant air suitable for continued recirculation	279.20(b)(2)(ii)(C)					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BRO[illegible] IN SCOPE
	draining or removing used oil from materials containing or contaminated with used oil in order to remove excessive oil pursuant to 279.10(c)	279.20(b)(2)(ii)(D)					
	filtering, separating or reconditioning used oil before burning it in a space heater pursuant to 279.23	279.20(b)(2)(ii)(E)					
	SUBPART E - STANDARDS FOR USED OIL TRANSPORTERS AND TRANSFER FACILITIES						
	RESTRICTIONS ON TRANSPORTERS WHO ARE NOT ALSO PROCESSORS OR RE-REFINERS						
†	add new paragraph; transporters of used oil removed from oil bearing electrical transformers and turbines and filtered by transporter or at a transfer facility prior to being returned to its original use are not subject to the processor/re-refiner requirements in subpart F of Part 279	279.41(c)					
	REBUTTABLE PRESUMPTION FOR USED OIL						
	in the last sentence, remove phrase "for the cost of $110.00."	279.44(c)					
	TRACKING						
†	redesignate existing paragraph 279.46(a)(5) as 279.46(a)(5)(i); insert "Except as provided in paragraph (a)(5)(ii) of this section," at the beginning of the sentence	279.46(a)(5)(i)					

RCRA REVISION CHECKLIST 130: Recycled Used Oil Management Standards; Technical Amendments and Corrections II (cont'd)

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
†	add new subparagraph; intermediate rail transporters not required to sign record of delivery	279.46(a)(5)(ii)					
†	redesignate existing paragraph 279.46(b)(5) as 279.46(b)(5)(i); insert "Except as provided in paragraph (b)(5)(ii) of this section," at the beginning of the sentence	279.46(b)(5)(i)					
†	add new subparagraph; intermediate rail transporters not required to sign record of delivery	279.46(b)(5)(ii)					
	SUBPART F - STANDARDS FOR USED OIL PROCESSORS AND RE-REFINERS						
	REBUTTABLE PRESUMPTION FOR USED OIL						
	in the last sentence, remove phrase "for the cost of $110.00."	279.53(c)					
	SUBPART G - STANDARDS FOR USED OIL BURNERS WHO BURN OFF-SPECIFICATION USED OIL FOR ENERGY RECOVERY						
	REBUTTABLE PRESUMPTION FOR USED OIL						
◆	in the last sentence, remove phrase "for the cost of $110.00."	279.63(c)					

130

federal register

Friday
March 4, 1994

Part V

Environmental Protection Agency

40 CFR Parts 271 and 279
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Recycled Used Oil Management Standards; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 271 and 279

[EPA/530-S-93-011; FRL-4845-2]

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Recycled Used Oil Management Standards

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: On September 10, 1992, EPA exempted used oil inserted into crude oil pipelines from the part 279 used oil management standards. EPA is today clarifying the existing pipeline exemption and expanding the exemption to other petroleum refinery applications. Today's document clarifies that the exemption from the used oil management standards did not intend to exclude used oil mixed with crude oil or natural gas liquids (hereinafter referred to as "crude oil") in pre-pipeline units (e.g., stock tanks, production separators) prior to being introduced into the crude oil pipeline. In addition, today's rule expands the used oil exemption to include transportation and/or storage of mixtures of small amounts of used oil (i.e., less than 1%) and crude oil that are destined for insertion into a petroleum refining facility process at a point prior to crude distillation or catalytic cracking.

Today's rule exempts from the part 279 standards, used oil that is inserted into the petroleum refining facility process after distillation or catalytic cracking operations provided that the used oil meets the used oil specification prior to insertion.

Today's rule also exempts from the part 279 standards used oil that incidentally enters and is recovered from a refinery's hydrocarbon recovery system or wastewater treatment system (i.e., process sewer, storm sewer, or wastewater treatment units), if the recovered used oil is subsequently inserted into the petroleum refinery process.

In addition, today's rule expands the definition of transfer facility to allow used oil to be held more than 24 hours but less than 35 days prior to specified activities.

Finally, EPA is today amending the used oil processor standards to clarify that a specific set of on-site maintenance, filtering, and separation activities were not intended to be covered under the used oil processor standards. EPA is also correcting errors in regulations that appeared in the May 3, 1993, Federal Register.

EFFECTIVE DATE: April 4, 1994.

ADDRESSES: The regulatory docket for this rulemaking is available for public inspection at room 2427, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460 from 9 a.m. to 4 p.m., Monday through Friday, except for Federal holidays. The docket number is F-94-UOTA-FFFFF. The public must make an appointment to review docket materials by calling (202) 260-9327. The public may copy a maximum of 100 pages from any regulatory document at no cost. Additional copies cost $.20 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, Office of Solid Waste, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460; Telephone (800) 424-9346 (toll free) or, in the Washington DC, metropolitan area at (703) 920-9810.

For information on specific aspects of this rule, contact Ms. Eydie Pines, telephone (202) 260-3509, U.S. EPA, 401 M Street SW., Washington, DC 20460.

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

I. Authority.
II. Background.
A. Summary of Recent Regulatory Actions Pertaining to Used Oil.
1. Summary of May 20, 1992, Federal Register Notice.
2. Summary of September 10, 1992, Federal Register Notice.
3. May 3, 1993, and June 17, 1993 Correction Notices.
B. Summary of the 1985 Comments.
C. Summary of 1991 Comments.
III. Analysis of New Part 279 Provisions.
A. Summary of Comments from Interested Parties.
B. Definition of petroleum refining facility, used oil re-refining facility.
C. Used Oil Introduced into Crude Oil Pipelines or Petroleum Refineries.
1. Used Oil Introduced into Crude Oil Pipelines.
2. Storage and Transportation of Mixtures of Used Oil and Crude Oil.
3. Used Oil Inserted into the Petroleum Refining Process without Prior Mixing and Mixtures of Greater Than One Percent Used Oil.
4. Used Oil Inserted Into the Petroleum Refining Process after Crude Distillation or Catalytic Cracking.
5. Used Oil Captured by the Refinery's Hydrocarbon Recovery System or Wastewater Treatment System and Inserted into Petroleum Refining Process.
6. Stock Tank Bottoms.
D. Used Oil Transportation. Definition of Transfer Facility.
E. Used Oil Processing by Generators and Transfer Facilities.
1. Definition of Used Oil Processor.
(A) Reconditioning used oil before returning it for reuse by the generator.
(B) Separating used oil from wastewater to make wastewater acceptable for discharge or reuse.
(C) Using oil mist collectors to remove droplets of used oil from in-plant air to make plant air suitable for continued recirculation.
(D) Removing used oil from materials containing or otherwise contaminated with used oil in order to remove excessive oil.
(E) Filtering, separating, or otherwise reconditioning used oil before burning it in a space heater.
F. Restrictions on transporters who are not also processors or re-refiners and changes to the definition of transfer facility.
G. Tracking.
H. Correction to the Regulatory Language.
1. Requirements for enforcement authority
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Authority

The regulations promulgated today are issued under the authority of sections 1004, 1006, 2002(a), 3014, and 7004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and as amended by the Used Oil recycling Act, as amended, 42 U.S.C. 6903, 6905, 6912(a), 6935, and 6974.

II. Background

A. Summary of Recent Regulatory Actions Pertaining to Used Oil

1 Summary of May 20, 1992, Federal Register Notice

On May 20, 1992, EPA published a final listing determination for used oils that are destined for disposal (see 57 FR 21524). The Agency determined that used oils destined for disposal did not have to be listed as a hazardous waste because used oils do not typically and frequently meet the technical criteria for listing a waste as hazardous. EPA gave considerable attention, in reaching its determination, to the current Federal regulations that govern the management of used oils that are disposed, including the requirement for used oil that exhibits a characteristic of hazardous waste under subtitle C of RCRA.

The May 20, 1992, Federal Register notice also included a categorical exemption from the definition of hazardous waste in § 261.4 for non-terne-plated used oil filters that have been hot-drained to remove used oil.

EPA based this exemption on data submitted to the Agency indicating that these filters do not typically and frequently exhibit the toxicity characteristic.

2. Summary of September 10, 1992, Federal Register Notice

On September 10, 1992, EPA promulgated a final listing decision for used oils that are recycled and simultaneously promulgated management standards for used oil, codified at 40 CFR part 279 (see 57 FR 41566). EPA determined that used oil destined for recycling did not have to be listed as a hazardous waste because the used oil did not meet the technical criteria for listing a waste as hazardous, particularly in light of the new management standards and other federal requirements which control the risks posed by improper management of used oil. The standards cover used oil generators, transporters, processors, re-refiners, off-specification burners and marketers. The standards included an exemption from the management standards for used oil placed directly in a crude oil pipeline.

3. May 3, 1993, and June 17, 1993 Correction Notices

On May 3, 1993, EPA published technical amendments and corrections to the May 20, 1992 and September 10, 1992, Federal Register Notices (see 58 FR 26421). On June 17, 1993, EPA corrected several errors in the May 3, 1993, notice (see 58 FR 33341).

B. Summary of the 1985 Comments Regarding Used Oil Mixed With Crude Oil Destined for Refineries

On November 29, 1985, EPA proposed to list all used oil as a hazardous waste (50 FR 49248). Commenters responded that used oil mixed with crude oil be exempt from such regulation because the small quantities of used oil mixed with crude oil posed no threat to the environment when refined with crude oil.

C. Summary of 1991 Comments

On September 23, 1991, EPA proposed that the two exemptions from subtitle C requirements promulgated in 1985 (see 40 CFR 261.6(a)(3) (v)–(viii)) for oil-bearing hazardous waste and fuels derived from these wastes, also apply to used oils. (56 FR 48026, 48042) EPA proposed exemptions from the used oil management requirements (whether or not EPA ultimately listed used oil as a hazardous waste) for: (1) Used oils that are reinserted as feedstocks at primary petroleum refineries; and (2) fuels derived from those used oils.

Commenters (mainly the primary petroleum refining industry) stated that if EPA chose to list used oil as hazardous waste, the Agency should exempt used oil that is reintroduced into the refinery process from hazardous waste or used oil management standards requirements. Commenters further stated that if EPA did not adopt this exemption, the entire refinery process could be subject to hazardous waste management requirements, including permits. Commenters stated that this would be unwarranted because the reintroduction of used oil into the refining process contributes only insignificant concentrations of metals to the crude oil or finished petroleum product. Other commenters stated that refiners that handle used oil should be subject to the same requirements for used oil management as are used oil re-refiners.

Commenters from the primary petroleum refining industry also stated that EPA should not limit the exemption to those instances where used oil is inserted before fluid catalytic cracking or distillation, since other conversion and distillation processes in the refinery would also remove, alter or immobilize impurities in the oil. They asserted that limiting the point of insertion could foreclose the future development of used oil recycling activities. These commenters also stated that limiting the insertion point could preclude refineries from accepting DIY oil. Commenters asserted that DIY oil might have to undergo certain pre-processing at refineries prior to its insertion into the refining process. They also asserted that under the proposed exemption, this pre-processing would not be exempt and would be a hazardous waste activity. Commenters stated that these activities are part of the refining process.

Commenters from the primary petroleum industry further stated that EPA should extend the exemption to apply to used oil inserted into the pipeline at marketing, E&P and pipeline facilities for use in the refinery process. They asserted that used oil recovered from oil and gas exploration and production is placed in pipelines and trucks and returned to the refinery from other petroleum facilities. Commenters stated that the recovered oils are useful, valuable raw materials that are reintroduced into the crude stream for their economic value.

III. Analysis of New Part 279 Provisions

On September 10, 1992, EPA promulgated a final listing decision for used oils that are recycled and simultaneously promulgated standards in 40 CFR part 279 for the management of used oil under RCRA section 3014. Under § 279.10(g) of part 279, EPA granted an exemption for used oils introduced directly into crude oil pipelines from part 279 standards at the point at which they are introduced. EPA did not address the proposed exemptions for used oil inserted into the petroleum refining facility process either prior to or after crude distillation or catalytic cracking.

The American Petroleum Institute filed a petition for review of the September 10, 1992, rule, on December 8, 1992, raising the issue that EPA had not addressed the proposed exemptions for petroleum refining, production, and transportation in the September 10, 1992, final rule. Today's rule responds to comments and addresses outstanding issues related to used oil and petroleum refining facility processes.

A. Summary of Comments From Interested Parties

Today's rule was distributed in draft form for comment to the litigants and intervenors concerning the 1992 rule, and other concerned members of the regulated community, States, and environmental groups. The primary substantive comments received on the draft and EPA's responses to those comments are summarized below.

EPA received several comments from the petroleum industry on the exemption from part 279 for storage and transportation of mixtures of used oil and crude oil that contain less than 1% used oil and are destined for insertion into petroleum refining process. These commenters objected primarily to provisions in the draft final rule limiting the exemption to mixtures that contain less than 1% used oil. The commenters also objected to limiting the amount of used oil that can be directly inserted into the petroleum refining process to 1% of the crude oil process unit throughput at any given time. EPA has retained the 1% limit in both cases in today's final rule for reasons discussed in section III.B.2 of this preamble.

EPA received comments from used oil re-refiners (i.e., "secondary" petroleum industry—a type of used oil processor) regarding the regulatory status of petroleum refineries that receive used oil from off-site and store the used oil on-site before mixing it with crude oil. The draft rule proposed to regulate petroleum refining facilities as used oil transfer facilities in these circumstances. Commenters stated, however, that petroleum refiners that receive used oil from off-site pose the same potential concerns from receipt of

adulterated used oil and improper storage of used oil as re-refiners and should therefore be subject to the requirements for used oil processor/re-refiners prior to mixing. EPA agrees and has revised the draft rule accordingly. These changes are discussed in greater detail below.

EPA also received numerous comments on provisions clarifying what constitutes a used oil processor. Provisions contained in the draft document would have prohibited both on- and off-site burning of used oil generated from specified activities that EPA is today clarifying are not subject to the used oil processor standards. Commenters stated that the used oil generated from these activities would be suitable for burning in accordance with the part 279, subpart G standards and that burning should not be further restricted. In response to these comments, EPA has decided to allow on-site burning of the used oil generated from these activities but has retained the prohibition against off-site burning. The basis for this decision is discussed in section III.C of today's preamble.

B. Section 279.1—Definition of Petroleum Refining Facility

Today's rule establishes a regulatory definition for "petroleum refining facility." EPA believes it is necessary to define this term in order to provide a clear distinction between what the Agency considers to be and regulates as primary petroleum refining facilities and facilities that EPA considers to be used oil re-refiners for regulatory purposes. Under today's rule, "petroleum refining facility" is defined as follows:

"Petroleum refining facility" means an establishment primarily engaged in producing gasoline, kerosine, distillate fuel oils, residual fuel oils, and lubricants, through fractionation, straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes (i.e., facilities classified as SIC 2911).

A used oil re-refiner, in contrast, is a facility that processes used oil to produce lube base stocks and greases, industrial fuels, asphalt extenders, diesel like fuels, and other products.

EPA is aware that petroleum refiners and used oil re-refiners employ similar production processes and produce similar products. Consequently, the Agency has avoided defining these facilities in terms of the process steps employed to produce a finished product or the type of products produced. As defined by today's rule, petroleum refining facilities and used oil re-refining facilities differ primarily in the material that constitutes the primary initial feed to the process. In order for a facility to be considered a petroleum refining facility, the material fed to the front end of the refining process must be comprised primarily of crude oil. In order to be considered a used oil re-refiner, the material entering the front end of the process must be comprised primarily of used oil.

C. Section 279.10(g)—Used Oil Introduced Into Crude Oil Pipelines or Petroleum Refining Facilities

1. Section 279.10(g)(1)—Used Oil Introduced Into Crude Oil Pipelines

The September 10, 1992, final used oil regulations provided an exemption at § 279.10(g) from management standards for used oil that is placed directly into a crude oil pipeline (see 57 FR 41613). Today's rule replaces § 279.10(g) with § 279.10(g)(1) which clarifies the original intent of the pipeline exemption. Section 279.10(g) of the September 10, 1992, final rule provided that "Used oil that is placed directly into a crude oil, oil or natural gas pipeline is subject to the management standards of [part 279] only prior to the point of introduction into the pipeline. Once the used oil is introduced to the pipeline, the material is exempt from the requirements of [part 279]."

EPA is concerned that the phrase, "placed directly into a crude oil or natural gas pipeline," can be literally interpreted to apply more narrowly than the Agency had intended. EPA understands that it is standard practice to first mix small amounts of used oil, typically less than 1%, with crude oil in stock tanks, production separators or other tank units that are connected via pipeline to the petroleum refining facility (i.e., pre-pipeline units). It was not EPA's intent to exclude used oil that is mixed with crude oil in these pre-pipeline units from the § 279.10(g) pipeline exemption. Rather, EPA intended to include this practice within the meaning of "direct insertion." Because used oil is typically inserted into the petroleum pipeline through these pre-pipeline units, to exclude these units from the pipeline exemption would effectively render the exemption meaningless. Clearly this was not EPA's intent. Today's rule revises the language of the exemption to clarify that used oil may be inserted into the pipeline via pre-pipeline units (which contain crude oil) exempt from the requirements of part 279. It should be noted here that the § 279.10(g)(1) pipeline exemption established by today's rule is limited to pipelines that convey crude oil from off-site locations to the petroleum refining facility. The exemption does not apply to pipelines that convey crude oil from one on-site location within a petroleum refinery to another. If such on-site piping contains used oil, it is exempt only if it qualifies under §§ 279.10(g)(2)–(5) discussed below. Also, if processing of the used oil is performed prior to mixing with crude oil in these pre-pipeline units, such processing remains subject to the part 279, subpart F standards for used oil processors and re-refiners. Used oil that is generated and stored at the pipeline is subject to the used oil generator standards prior to mixing with crude oil. Used oil that is transported to the pipeline and immediately mixed with crude oil or stored for less than 24 hours prior to such mixing is subject to all Subpart E transporter standards except for § 279.45 which applies to transfer facilities. Used oil that is transported to and subsequently stored at the pipeline for more than 24 hours and less than 35 days prior to mixing with crude oil is subject to all the part 279, subpart E transporter/transfer facility requirements.

2. Section 279.10(g)(2)—Storage and Transportation of Mixtures of Used Oil and Crude Oil

Section 279.10(g)(2) of today's rule expands the used oil management standard exemption to include: (1) Mixtures of used oil and crude oil containing less than 1% used oil that are being stored at the petroleum refining facility or in discrete units remotely located from the pipeline, as long as the mixture is destined for the refinery and inserted prior to crude distillation or catalytic cracking; and (2) mixtures of used oil and crude oil containing less than 1% used oil that are being transported (via truck, rail, or vessel) to the petroleum refinery or the pipeline for insertion into the petroleum refining process prior to crude distillation or catalytic cracking. The former exemption provided at § 279.10(g) did not apply either to mixtures of used oil and crude oil that are stored at the petroleum refinery or in remotely located units, or to the transportation of mixtures of used oil and crude oil. The previous, more narrow exemption was based on the assumption that used oil was placed directly into the pipeline (or into units directly connected to the pipeline as previously discussed). EPA assumed that the mixing of used oil and crude oil occurred at the point at which used oil was inserted into the pipeline. EPA has since learned, however, that mixing frequently occurs at exploration and

production sites that are remotely located from the pipeline or the petroleum refinery.

For example, used oil generated during on- and off-shore drilling activities (e.g. from compressors, trucks and other heavy equipment) is routinely mixed with crude oil in units (e.g. production separators, seagoing vessels, stock tanks, etc.) located at the exploration and production site and then transported, as a mixture, to the pipeline or petroleum refining facility. Depending on the location of the drilling activities, the mixture of used oil and crude oil may need to be transported (by vessel, truck, rail, etc.) to a separate location for introduction into the pipeline or the petroleum refining facility. In the case of off-shore drilling sites for example, conveyance of the mixture may involve multiple modes of transportation (i.e., from the off-shore platform to land by vessel or pipeline and then to the crude oil pipeline by land-based transport). Today's exemption covers all modes of transportation of mixtures of used oil and crude or natural gas liquids, as long as the mixture contains less than 1% used oil and is destined for insertion into a petroleum refining facility process at a point prior to crude distillation or catalytic cracking. In addition, today's exemption covers storage of mixtures of used oil and crude oil, provided that the mixture contains less than 1% used oil and is inserted into a petroleum refining facility process prior to crude distillation or catalytic cracking.

Used oil that is generated at exploration and production sites continues to be subject to used oil generator standards prior to being mixed with crude oil such that it is exempt under today's rule. Used oil that is generated off-site and transported to or stored at an exploration and production site is subject to the transporter and transfer facility standards, as applicable, up until the point at which the used oil is mixed with crude oil such that it is exempt under § 279.10(g)(2).

EPA is exempting mixtures of used oil and crude oil held in discrete units at a refinery or at remote locations because the Agency understands that the amount of used oil contained in these mixtures is extremely small relative to the large quantities of crude oil. In developing today's rule, EPA held numerous discussions with petroleum refinery industry representatives regarding the maximum amount of used oil contained in mixtures of used oil and crude oil that are destined for insertion into a petroleum refining process prior to crude distillation or catalytic cracking. Industry representatives repeatedly informed the Agency that used oil constitutes less than 1% of these mixtures. In gathering information for today's rule, EPA held conference calls with representatives from a number of petroleum refining companies (e.g., Mobil Oil Corporation and Phillips Petroleum Inc.,). The Agency also conducted several site visits, including visits to an Amoco refinery in Whiting, Indiana and a Mobil Oil Corporation refinery in Paulsboro, New Jersey. In each case, EPA was informed that used oil does not currently, and will not comprise greater than 1% of the crude oil/used oil mixture because of the sheer volumes of crude oil that are continuously being produced and processed relative to the amount of used oil that is generated at production sites or refineries. This recent information is consistent with comments submitted in response to the 1985 Used Oil Proposed Rule in which Exxon Company, USA stated that the average percentage of used oil in refinery feed stock streams is less than 0.02% and Texaco, Inc., indicated that used oil would constitute no more than 0.01% of the refinery input.

EPA does not believe it is necessary to apply the used oil management standards to the less than 1% fraction of used oil that is being held temporarily in discrete units or transported from those units to the pipeline or the petroleum refinery for recycling as part of a mixture that is composed overwhelmingly of crude oil. In essence, because of the high ratio of crude oil to used oil, EPA considers the mixture to be equivalent to crude oil for regulatory purposes. EPA's part 279 standards were designed to control those particular risks associated with the management of used oil (e.g., uncontrolled burning, improper storage practices by used oil handlers) pursuant to section 3014 of RCRA.

The reason for EPA's imposition of a 1% limit on the amount of used oil contained in mixtures of used oil and crude oil being stored or transported to a crude oil pipeline or petroleum refinery prior to insertion into the refining process is that, while we have determined that the small amounts of used oil that are being added to crude oil under current practices pose no incremental risk over normal crude oil, we have not evaluated whether larger amounts of used oil also pose no incremental risk. Given the information provided to EPA by the petroleum refining industry regarding the inherent limitations on the amount of used oil that is or should be contained in mixtures of used oil and crude oil (i.e., less than 1%), and given that EPA has received no information, either recently, or in response to previous rulemakings that provides basis for an alternative limit, the Agency sees no point in imposing a higher cap. Imposition of a higher cap could have the effect of encouraging mixing of used oil with crude oil that would not otherwise occur during the normal course of petroleum refining operations. Such an incentive might lead to increased incremental risk from management of large amounts of used oil, exempt from the part 279 standards, at petroleum refineries. EPA also concluded that a less precise limit (i.e., "*de minimis*" or "small amounts"), as was suggested by some commenters from the petroleum refining industry, would needlessly cause uncertainty, given that EPA was told repeatedly that amounts currently introduced are far less than 1%.

3. Section 279.10(g)(3)—Used Oil Inserted Into the Petroleum Refining Process Without Prior Mixing and Mixtures of Greater Than One Percent Used Oil

As previously stated, under today's rule, mixtures of used oil and crude oil containing less than 1% used oil that are transported to or stored at a petroleum refinery, and are introduced prior to crude distillation or catalytic cracking, are exempt from part 279 standards under § 279.10(g)(2). It is EPA's understanding, based on information received from petroleum industry representatives, that used oil can potentially be inserted directly into the petroleum refining process prior to crude distillation or catalytic cracking without either: (1) Mixing the used oil with crude oil feedstocks, or (2) pre-processing of the used oil to ensure that any contaminants in the used oil will not interfere with the refining process (e.g., contaminants fouling a catalyst, etc.). Based on this understanding, today's exemption also applies to used oil that is introduced directly into the petroleum refining process at a point prior to crude distillation or catalytic cracking as long as the used oil comprises less than 1% of the crude oil feed to a petroleum refining facility process unit at any given time. Again, because of the high ratio of crude oil to used oil, EPA considers these mixtures to be equivalent to crude oil for regulatory purposes. Therefore, the Agency believes that this activity would pose no significant increase in risk.

Used oil that is inserted directly into the petroleum refining process (at a volume of less than 1% of the crude oil process unit feed at any given time) is considered mixed, and therefore exempt

from part 279, at the point at which it enters the process. This exemption applies both to used oil generated at the petroleum refining facility where the used oil is being inserted, and to used oil generated off-site that is collected and transported to the petroleum refining facility for insertion into the refining process prior to crude distillation or catalytic cracking.

Used oil that is inserted into the petroleum refining process without first being mixed with crude oil feedstocks (e.g. in crude oil stock tanks) is subject to part 279 standards prior to insertion. Used oil that is generated on-site and then stored without prior mixing and used oil generated on-site that constitutes greater than 1% of a mixture of used and crude oil continues to be subject to the part 279, subpart C standards for generators. With the exception of used oil that is exempt from the part 279 standards because it constitutes less than 1% of a mixture of used oil and crude oil, used oil that is generated off-site and then transported to or stored at a petroleum refining facility, continues to be subject to the applicable part 279 requirements i.e., to the requirements for used oil transporters and transfer facilities while being transported and to the requirements for used oil processors upon receipt at the petroleum refining facility. Petroleum refining facilities that receive used oil from off-site for direct insertion into the petroleum refining process are subject to the used oil processor standards from the point at which they receive the used oil up until the point at which the used oil is inserted into the petroleum refining process. Finally, it is important to reiterate that the exemptions provided under both §§ 279.10(g)(2) and 279.10(g)(3) of today's rule apply at the point of mixing and only to mixtures that contain less than 1% of used oil.

Although petroleum industry representatives have raised concerns that a 1% limit on the amount of used oil that can be inserted directly into the petroleum refining process may be technology limiting, EPA has not received any information that would support this position, nor has the Agency received information to support an alternative level. The Agency believes that by limiting the amount of used oil that can be introduced directly into the refining process exempt from the used oil processing standards, it can better ensure against mixing only to avoid compliance with the part 279 processing standards. If information becomes available that the 1% limit is inhibiting used oil recycling, the Agency will consider whether any change to the rules is necessary.

In the draft rule, EPA proposed to regulate petroleum refining facilities that receive used oil from off-site as used oil transfer facilities prior to mixing. However, EPA agrees with comments on the draft rule that petroleum refining facilities that receive used oil from off-site pose the same potential concerns associated with receipt of adulterated used oil and improper storage of used oil as used oil re-refiners. Petroleum refining facilities that receive used oil from off-site may not have adequate information to ensure that the used oil has not not been improperly mixed with listed hazardous waste. Also, the volumes of used oil that may be managed require adequate planning for dealing with emergency releases. EPA has therefore revised the final rule to provide that petroleum refining facilities that receive and store used oil from off-site are subject to the used oil processor standards prior to mixing. The principal effect of this change is that petroleum refiners that receive used oil from off-site must prepare a waste analysis plan to ensure that the used oil has not been mixed with hazardous waste and must maintain an operating record to document compliance with the waste analysis plan. In addition, such refineries will have to adopt or amend emergency contingency plans to address used oil in accordance with § 279.52 of the used oil management standards.

4. Section 279.10(g)(4)—Used Oil Inserted Into the Petroleum Refining Process After Crude Distillation or Catalytic Cracking

Under § 279.10(g)(4) of today's rule, used oil that is inserted into the petroleum refining process after crude distillation or catalytic cracking is exempt from the part 279 standards provided that the used oil meets the used oil specification prior to insertion. Used oil remains subject to part 279 standards up until its actual insertion into the petroleum refining process. As previously discussed, used oil generated on-site must be stored according to part 279, subpart C standards for used oil generators. Used oil generated off-site must be transported according to the part 279, subpart E standards for transporters and transfer facilities and stored according to the part 279, subpart F standards for used oil processor/re-refiners.

EPA's use of the terms "before" and "after" crude distillation or catalytic cracking is intended to distinguish between the initial part of the petroleum refining process where crude oil is the primary feedstock and is refined by undergoing crude distillation or catalytic cracking and the latter part of the petroleum refining process where crude oil residuals constitute the primary feed, and coke and asphalt are the primary products. Refinery processes that occur after crude distillation or catalytic cracking do not provide refining to the same extent as that which occurs as a result of crude distillation or catalytic cracking. Crude distillation or catalytic cracking is expressly designed to remove, alter, or otherwise immobilize contaminants in the normal course of the refining process. EPA has insufficient information on post-crude distillation or catalytic cracking units identified by commenters (e.g., asphalt towers, petroleum cokers), and is concerned about the possible environmental effects (e.g., air emissions, transfer of inorganics to asphalt or petroleum coke) of placing large amounts of off-specification used oil into the petroleum refining process without passing through the crude distillation or catalytic cracking units. In contrast, on-specification used oil may be burned in the same manner as virgin petroleum fuel in other situations, therefore it makes little sense to restrict its use as a feedstock to the petroleum coker (or in any other process "after" crude distillation or catalytic cracking).

It should be noted that if off-specification used oil is inserted into petroleum refining processes after crude distillation or catalytic cracking (e.g., a coker), the facility would be subject to the used oil processing requirements in part 279, subpart F. In addition, petroleum refining facilities that wish to insert on-specification used oil into the refining process after crude distillation or catalytic cracking and that are the first to claim that the used oil is on-specification (whether generated at the refinery, or at an off-site location), would be defined as marketers subject to the requirements for used oil marketers found in part 279, subpart H.

5. Section 279.10(g)(5)—Used Oil Captured by the Refinery's Hydrocarbon Recovery System or Wastewater Treatment System and Inserted Into Petroleum Refining Process

Section 279.10(g)(5) of today's rule exempts from the part 279 standards used oil that incidentally enters and is recovered from a petroleum refining facility's hydrocarbon recovery system or its wastewater treatment system (e.g., process sewer, storm sewer, or wastewater treatment units), if the recovered used oil is subsequently inserted into the petroleum refining

process. Oil (that may contain small amounts of used oil) that has been recovered from a refining facility's hydrocarbon recovery or wastewater treatment system is typically used as a feedstock in petroleum refining to produce more petroleum products. EPA understands that used oil, generated from routine refinery process operations and that incidentally enters a refinery's recovery or wastewater treatment system (e.g., drips, leaks, and spills from compressors, valves, and pumps), represents a small portion of the total oil that enters (and is then recovered from) the recovery or wastewater treatment system. Thus, the oil recovered from the system is more properly characterized as crude feedstock than used oil. Provided the used oil is inserted into the petroleum refining process, EPA believes that regulation under part 279 standards is unwarranted. This exemption from the part 279 standards does not extend to used oil which is intentionally introduced into a petroleum refinery's recovery or wastewater treatment system (e.g., pouring collected used oil into any part of the hydrocarbon recovery system, storm or process sewer system or into wastewater treatment units). Used oil may not be introduced to the refinery's hydrocarbon recovery or wastewater treatment system as a way to avoid meeting the conditions specified in § 279.10(g)(4).

For the purposes of the exemption in today's rule, the examples cited in the existing *de minimis* wastewater exclusion (§ 279.10(f)) provide guidance on what types of releases to a refinery's hydrocarbon recovery or wastewater treatment system would be considered "routine" or "incidental". The exemption is intended to cover losses from drippage, minor spillage, etc., that cannot be reasonably avoided. For example, used oil that has been collected from equipment or vehicle maintenance activities and intentionally introduced into a refinery's wastewater treatment system would not be exempt under § 279.1(g)(5) from the part 279 standards once recovered. Similarly, used oil that is generated off-site and is brought to the refinery may not be added to any portion of the refinery's wastewater treatment system (i.e., process sewer, storm sewer, or wastewater treatment units), and still be exempt under § 279.10(g)(5) once recovered; such oil is clearly not "incidentally captured" by the refinery's wastewater treatment system. In fact, unless specifically exempted under § 279.10(g)(2) or § 279.10(g)(3) of today's rule, this type of activity would meet the definition of used oil processing under the existing used oil management standards (see 40 CFR 279.1).

Today's rule does not preclude intentional introduction of used oil in to the facility's recovered oil tanks. EPA is aware that used oil from both on- and off-site is often added directly to the petroleum refining facility's recovered oil tanks. Mixtures of used oil and recovered oil that contain greater than 1% used oil are regulated as used oil. Mixtures of used oil and recovered oil that contain less than 1% used oil and are inserted into the petroleum refining process prior to crude distillation or catalytic cracking are exempt from the part 279 used oil management standards under § 279.10(g)(2). Mixtures of used oil and recovered oil that contain less than 1% used oil and are inserted into the petroleum refining process after crude distillation or catalytic cracking are exempt from the part 279 standards (under § 279.10(g)(4)) only if the used oil meets the used oil specification prior to mixing with recovered oil.

6. Section 279.10(g)(6)—Stock Tank Bottoms

Section 279.10(g)(6) of today's rule exempts tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil from the part 279 standards. Like the actual mixtures of used oil and crude oil, the bottoms from these mixtures are expected to contain insignificant amounts of used oil. Therefore, the Agency does not believe that the bottoms from tanks (or other units) containing mixtures of used oil and crude oil should be subject to the used oil management standards. The tank bottoms are subject to all other applicable requirements, i.e., the § 262.11 requirement to determine if they are hazardous waste.

D. Used Oil Transportation

Section 279.1—Definition of Transfer Facility

Today's rule revises the definition of transfer facility to allow used oil to be held at a location (i.e., a transfer facility) temporarily prior to activities that are not subject to the processor standards as a result of today's rulemaking. In the September 10, 1992 final rule, a transfer facility was defined as a transportation-related facility where shipments of used oil are held for more than 24 hours but less than 35 days during the normal course of transportation. Today's rule expands that definition to allow used oil to be held for more than 24 hours but less than 35 days during the normal course of transportation or prior to an activity performed pursuant to § 279.20(b)(2). Under the amended definition, as discussed below in section F of this preamble, a site to which used oil from oil-bearing electrical transformers is transported for filtering prior to reuse would be considered a transfer facility under today's definition.

E. Section 279.20(b)(2)(ii)—Used Oil Processing by Generators and Transfer Facilities

Since the promulgation of the September 10, 1992, Used Oil Management Standards, a number of parties have raised concerns regarding the definition of used oil processor and the types of activities that are covered by that definition. The commenters are concerned that a broad construction of the term processor inappropriately includes a number of very basic on-site generator activities that the Agency did not intend to regulate under the used oil processor standards (e.g. reconditioning/maintenance to extend the life of used oil, separation of used oil from wastewater discharge, etc.). EPA agrees that activities such as these, when performed by the generator, were not intended to be covered under the used oil processor standards because used oil processing is not their primary purpose, as explained below in greater detail. In fact, too broad an interpretation of the processor definition may discourage environmentally beneficial recycling and waste minimization activities by imposing an unwarranted regulatory burden on owners and operators that EPA did not intend to regulate as used oil processors.

Therefore, today's rule revises the used oil management regulations to clarify the Agency's intent regarding the definition of a used oil processor by specifying those on-site maintenance, filtering, and separation activities that are not, and were not intended to be subject to the used oil processing standards. Under today's rule, generators [1] who only handle used oil in a manner specified under § 279.20(b)(2)(ii) are not processors provided that the used oil is generated on-site and is not being sent directly off-site to a burner of on- or off-specification used oil fuel. (Section 279.20(b)(2)(ii) also applies to collection

[1] A used oil generator is any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulations. For example, generators include all persons and businesses who produce used oil through commercial or industrial operations and vehicle services, including government agencies, and/or persons and businesses who collect used oil from households and "do-it-yourself" oil changes.

centers and aggregation points since these entities are regulated as generators.)

Activities that EPA did not intend to include under the definition of used oil processor are described below. EPA does not believe that the activities identified in § 279.20(b)(2)(ii) should be subject to the used oil processor standards because used oil processing is not the primary purpose of these activities i.e., the primary purpose of these activities is not to produce from used oil or to make it more amenable for the production of used oil derived products, and the Agency does not expect these limited activities will pose the same kinds of environmental problems that may occur at processor facilities. Instead, in these cases, the act of mixing, filtering, separating, draining etc., used oil by the generator constitutes a basic step that is incidental or ancillary to a primary activity which is distinct from used oil processing. It is important to note, however, that owners or operators who generate used oil as a result of any of the activities specified in § 279.20(b)(2)(ii) are considered used oil generators and are subject to the generator standards in subpart C.

EPA is allowing on-site but not off-site burning of used oil generated from designated on-site activities because the Agency believes that this approach best enables EPA to strike a reasonable balance between encouraging beneficial on-site reuse and recycling activities that should pose very limited risks, on one hand, and ensuring that activities undertaken primarily to make used oil more amenable for burning (i.e., used oil processing) are adequately controlled under the more stringent used oil processing standards.

The definition of a used oil processor is based on the purpose for which used oil is being filtered, separated, or otherwise reconditioned (i.e., whether the activity is designed to produce used oil derived products or to make used oil more amenable for the production of used oil derived products). The Agency is concerned that in situations where used oil is being filtered, separated or otherwise reconditioned and then sent to off-site burners, the purpose of the activity may prove difficult to discern and that consequently, § 279.20(b)(2)(ii) provisions may be used as a means to avoid compliance with the used oil processor standards (i.e., by persons who claim not to be used oil processors under the § 279.20(b)(2)(ii) provisions but whose primary purpose is to make the used oil more suitable for burning). Therefore, EPA believes it is necessary to adopt an objective measure of the purpose of the activity. The Agency believes that a prohibition against sending used oil generated from specified on-site activities to off-site burners provides the most practical and effective way to ensure that activities undertaken only to make used oil more amenable for burning are subject to the used oil processor standards.

1. Definition of Used Oil Processor

(A) Reconditioning used oil before returning it for reuse by the generator. Under today's rule facility owners or operators who clean, separate, or otherwise recondition used oil generated on-site and then reuse it are not considered used oil processors, provided that the reconditioned used oil is being reused by the owner or operator who generated it. Examples of activities covered under this category include filtering of metalworking fluids for reuse, and filtering and then replacing oil from oil-bearing transformers and turbines during routine maintenance.

Most manufacturing facilities have in place central filtration systems designed to remove contaminants from and extend the life of water-soluble metal working fluids (e.g., lubricants and coolants), used in machining, grinding, and boring equipment. These filtration systems are on-site systems that filter chips, metal fines, dirt, water, and other contaminants from cutting fluids, drawing lubricants and coolants used in machining operations. The filtration of these extraneous materials is designed to extend the life of the reusable coolants and lubricants and is incidental to the production process. Today's rule clarifies that this type of filtration activity is not subject to the used oil processing standards when the generator reuses the filtered oil.

Similarly, during regularly scheduled maintenance of oil-bearing transformers and turbines, the oil in the electrical equipment is removed so that repairs/maintenance can be performed. In some instances, the oil is filtered prior to replacement. The filtering of the used oil is done to extend the life of the used oil, not because the oil is no longer useful, and is therefore ancillary to the equipment repair and maintenance. While, under today's rule, the owner or operator would not be considered a processor in these cases, the draining of the used oil from the transformer constitutes generation of used oil so that the facility would be considered a used oil generator.

The Agency is aware that not all used transformer oil is drained and filtered in the field. Instead, the oil-bearing electrical equipment may be transported to a central location where the oil is removed, filtered, and replaced. Or, the used oil may be removed from the transformers or turbines in the field and then transported separately in a tanker truck to a central location where it is filtered and put back into electrical equipment. Under today's rule, in cases where electrical equipment containing used oil is transported to a central location, the transporter of the oil bearing electrical equipment would not be considered a used oil transporter. However, the owner or operator would become a generator at the point at which the used oil is drained from the equipment (i.e., at the site where the oil is drained and filtered).

In cases where the used oil is removed from the transformers or turbines in the field and then transported separately in a tanker truck to a central location for filtering prior to replacement into electrical equipment, the owner or operator would become a generator in the field (i.e., at the point at which the used oil is drained). The person who then transports the used oil would also be considered a used oil transporter subject to the transporter standards. In these cases, the location at which the used oil is filtered would be considered a used oil transfer facility subject to the transfer facility standards in § 279.45, provided that the used oil is stored at the site for more than 24 hours and less than 35 days. If the used oil is filtered within 24 hours of being drained (i.e., during transport) only the part 279 standards for used oil transporters would apply. This filtering activity should not raise the kind of environmental concerns that would be present at used oil processors; essentially, the filtering is incidental to the transportation and storage and should not change a facility's regulatory status. As discussed in more detail below, today's rule provides that transporters of used oil that is removed from electrical transformers and turbines and filtered by the transporter or at a transfer facility prior to being returned to the same use are not subject to the processor or re-refiner requirements in subpart F. In accordance with § 279.10(e), once the used oil has been reclaimed to the point where it is ready for reuse without further processing, it is not subject to regulation as used oil.

(B) Separating used oil from wastewater to make wastewater acceptable for discharge or reuse. Today's rule clarifies that oil/water separation activities designed to make wastewater acceptable for discharge or reuse are not subject to the used oil processor standards. Facilities often use oil/water separators to remove oil (which may contain used oil) from oil/

water mixtures collected from the facility's storm sewer, process sewer, sumps and other wastewater containment areas. These separation systems use chemical and physical methods to break the oil/water emulsion and recover oil from the wastewater in order to make the wastewater or storm water acceptable for discharge or reuse in compliance with local, state and federal regulations.

This type of pretreatment of wastewater containing oil is designed primarily to ensure that the wastewater meets established limits for water discharge to streams and POTWs, and not to produce used oil derived products or to make used oil more amenable for the production of used oil derived products. This type of oil/water separation activity is therefore not subject to the used oil processor standards as clarified under today's rule. It should be noted, however, that any used oil recovered from separator units would be subject to the used oil generator standards. It is also important to note that this provision applies only to used oil that is generated on-site. The provision would apply, for example, to simple oil water separation activities conducted (for purposes of wastewater discharge) by a used oil processor on wastewater which has been generated by that processor. However, persons who perform oil/water separation activities on oily wastewater received from off-site would be considered used oil processors.

(C) Using oil mist collectors to remove droplets of used oil from in-plant air to make plant air suitable for continued recirculation. As clarified under today's rule, the act of removing used oil from ambient air in the workplace is not subject to the used oil processor standards. At manufacturing facilities, droplets of used oil from machining operations are often dispersed into in-plant air. Oil mist collectors physically remove the small droplets of oil present in the ambient air. This activity is not subject to the used oil processing standards because it is intended primarily to make plant air suitable for continued recirculation and not to produce products from used oil or to make it more amenable for the production of used oil derived products. However, the oil removed from oil mist collectors is subject to the used oil generator standards.

(D) Removing used oil from materials containing or otherwise contaminated with used oil in order to remove excessive oil. Under § 279.10(c) of the used oil standards, materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed to the extent possible such that no visible signs of free-flowing oil remain in or on the material are not used oil except when burned for energy recovery. Today's rule clarifies that the Agency does not consider the removal of used oil from materials containing or contaminated with used oil in order to remove excess oil in accordance with § 279.10(c) to be used oil processing. The production of used oil derived products is clearly not the primary reason for removing used oil from materials containing or contaminated with used oil. Instead, the activity is conducted primarily to clean the materials (e.g., machine tools, scrap metal, etc.) prior to reuse, recycling, or disposal and is therefore not subject to the used oil processing standards as clarified by today's rule. However, in removing the used oil from the materials, the owner or operator becomes a used oil generator subject to the Subpart C used oil generator standards.

(E) Filtering, separating, or otherwise reconditioning used oil before burning it in a space heater. Under § 279.23 of the used oil standards, used oil may be burned in a used oil-fired space heater under specified conditions, and provided that the space heater burns only used oil that the owner or operator generates and/or used oil obtained from household DIY oil changers. Prior to burning, the used oil must often be filtered to remove impurities. Today's rule clarifies that filtering of used oil for the purpose of removing contaminants prior to burning the used oil in a space heater is not considered processing of used oil.

EPA provided a regulatory exemption from the used oil burning standards for generators who burn used oil in on-site space heaters (in accordance with § 279.23) because the Agency believes that burning of small amounts of used oil in space heaters poses insignificant risks due to the small volume of used oil burned (see 50 FR 49194, Nov. 29, 1985). The Agency believes that, because of the small volumes of used oil involved, filtering, separating, or otherwise reconditioning used oil that is generated on-site prior to burning it in a space heater would also not pose significant risk. Therefore, although the purpose of the filtering activity in this case is to make the used oil more amenable for burning, because of the small amounts of used oil being filtered for this purpose, the Agency does not believe that imposition of the used oil processor standards is warranted. EPA is therefore adding a regulatory clarification (§ 279.20(b)(2)(ii)(F)) that the used oil processor standards do not apply to filtering of used oil prior to burning it in a space heater, provided that the used oil is generated on-site or obtained from households or "do-it-yourself" oil changes.

F. Section 279.41—Restrictions on transporters who are not also processors or re-refiners and changes to the definition of transfer facility.

Today's rule amends § 279.41 to provide that transporters of used oil that is removed from oil-bearing transformers and turbines and filtered by a transporter or at a transfer facility before being returned to its original use are not subject to the used oil processor and re-refiner requirements. As previously discussed, during routine maintenance of oil-bearing transformers and turbines (or similar equipment), the oil in the electrical equipment is removed so that repairs/ maintenance can be performed. In some cases, the used oil is removed from the transformers or turbines in the field and then transported separately in a tanker truck (subject to the used oil transporter standards) to a central location where it is filtered and put back into electrical equipment. As discussed above, under today's rule the filtering of the used oil would not be considered used oil processing provided that the filtered oil is reused in the same or similar manner. And, in these cases (i.e., where the used oil is removed from the equipment and transported to a separate location for filtering), the location at which the oil is filtered would be considered a transfer facility provided that the used oil is stored for more than 24 hours and less than 35 days. If, as sometimes occurs, the used oil is filtered within 24 hours of being stored at the central location (i.e., during transport) the only applicable standards would be the part 279 standards for used oil transporters (i.e., the § 279.45 requirements for used oil storage at transfer facilities would not apply).

Section 279.41(c) of today's rule provides conforming changes to the used oil transportation standards to allow transporters or transfer facilities to filter the used oil without being subject to the used oil processor standards. It should be clearly noted, however, that if the used oil is stored at a site for more than 35 days, greater environmental concerns may be present, so the site would no longer be considered a transfer facility and the processor standards would apply.

In addition, this rule expands the definition of transfer facility to allow used oil to be held at a location (i.e., a transfer facility) temporarily prior to activities that are exempt from or

performed pursuant to the part 279 standards as a result of today's rulemaking. Under today's revised definition, used oil can be held at a transfer facility for more than 24 hours but less than 35 days prior to an activity and performed pursuant to § 279.20(b)(2). As a result of this change, a site where used oil that has been drained from oil-bearing transformers and turbines is held for more than 24 hours and less than 35 days prior to being filtered for reuse would be considered a transfer facility.

G. Section 279.46—Tracking Today's rule revises the § 279.46 tracking requirements as they apply to rail transporters. Under amended § 279.46, a signature is not required on records of acceptance or records of delivery of used oil shipments that are exchanged between rail transporters. The Agency is making this change in response to comments submitted by the railroad industry regarding the impracticability of requiring signed receipts when used oil is transferred from one rail transporter to another. EPA is aware that rail cars are typically transferred from one railroad company to another without the face-to-face contact that occurs in, for example, the motor carrier industry. The Agency also recognizes that, unlike non-rail transporters, railroads rely on sophisticated electronic tracking and information systems for recording rail-to-rail transfer of cargo. Given these unique circumstances, and in light of the fact that 40 CFR 263.20(f) regulations for hazardous waste transporters do not include signature requirements for intermediate rail carriers, EPA agrees that the signature requirements are unduly burdensome and unnecessary when applied to intermediate used oil rail transporters. EPA is therefore revising the used oil regulations to eliminate the § 279.46 signature requirements between intermediate rail carriers.

H. Corrections to the Regulatory Language

1. Requirements for Enforcement Authority

The Agency published a correction notice on May 3, 1993, which amended several sections of the part 279 used oil management standards that were originally promulgated on September 10, 1992. In the May 3, 1993, correction notice, EPA incorrectly amended regulatory § 271.16, that addressed the requirements for States to have adequate criminal enforcement authority for hazardous waste. EPA amended the regulation to include enforcement authority for used oil handlers that manage used oil incorrectly, but EPA inadvertently deleted from § 271.16 enforcement authority for the improper management of hazardous waste. Therefore, today's rule corrects this section to include enforcement authority for the improper management of both hazardous waste and used oil.

2. Rebuttable Presumption

The final used oil regulations published on September 10, 1992, allow persons to rebut the presumption that used oil containing more than 1,000 ppm total halogens is a hazardous waste by using an analytical method from SW–846, Third Edition, to show that the used oil does not contain hazardous waste. In the regulations, the Agency provided information on the cost of SW–846, Edition III and how to obtain it. However, the Agency misquoted the cost of the document. The actual cost was $319.00 rather than $110.00 as quoted throughout the September 10, 1992, regulations. To avoid having to amend the regulations as a result of future changes in the cost of the document, the Agency is deleting reference to the cost of SW–846, Edition III from the used oil regulations.

3. Characteristic Hazardous Waste

Today's rule revises § 279.10(b)(2)(iii) by deleting reference to the listing status (under part 261, subpart D) of a hazardous waste that is mixed with used oil. This change is necessary to correct a contradiction in the regulations regarding applicability of the used oil management standards to mixtures of used oil and hazardous waste that is listed in subpart D solely because it exhibits one or more of the characteristics of hazardous waste identified in subpart C. In technical corrections to the used oil management standards published on May 3, 1993, (57 FR 26420), EPA amended § 279.10(b)(2) to correct an error in the September 10, 1992, standards regarding how these mixtures are regulated. At that time, conforming changes should have been, but were not made to § 279.10(b)(2)(iii). As amended by today's rule, § 279.10(b)(2)(iii) correctly provides that mixtures of used oil and hazardous waste that solely exhibits one or more hazardous waste characteristic and mixtures of used oil and hazardous waste that is listed in subpart D solely because it exhibits one or more subpart C hazardous characteristics are regulated as used oil if the mixture is of used oil and a waste which is hazardous solely because it exhibits the characteristic of ignitability and the resultant mixture does not exhibit the characteristic of ignitability.

IV. State Authorization

As explained in the preamble to the May 3, 1993, Technical Correction to the September 10, 1992, rule, EPA is treating the majority of the final used oil management standards in the same manner as "non-HSWA" Subtitle C requirements. The used oil management standards became effective on March 8, 1993, only in those States and Territories that do not have RCRA base program authorization and on Indian lands. States are required to revise their Subtitle C base programs to adopt the new used oil requirements (including those promulgated in today's rule) by July 1, 1994, or by July 1, 1995, if a statutory change is necessary. See 58 FR 26420 and 57 FR 41605.

Authorized States are only required to modify their programs when EPA promulgates Federal standards that are more stringent or broader in scope than the existing Federal standards. Section 3009 of RCRA allows States to impose standards more stringent than those in the Federal program. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. See 40 CFR 271.1(k). Except for the amendments made to § 279.20(b), the standards promulgated today are less stringent than or reduce the scope of the existing Federal requirements. The amendments made to § 279.20(b) merely provide clarification of the existing used oil regulations and are therefore not considered to be less stringent than the current Federal program. Therefore, with the exception of the provisions added at § 279.20(b)(2)(i), authorized States would not be required to modify their programs to adopt requirements equivalent to or substantially equivalent to the provision listed above.

V. Executive Order 12866

Under Executive Order 12866, 58 FR 51735 (October 4, 1993) the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipient thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the "Executive Order."

OMB has exempted this regulatory action from E.O. 12866 review.

VI. Paperwork Reduction Act

The reporting and recordkeeping requirements of part 279 have been approved by OMB and generally assigned the control number 2050–0124 (See 58 FR 34374 (June 25, 1993)), which remains in effect. As today's rule does not impose any new such requirements, a separate information collection request was not prepared.

VII. Regulatory Flexibility Act

Today's rule does not impose any new regulatory requirements, and indeed, decreases the costs of compliance for a number of facilities. I therefore certify that today's rule will not have a significant impact or a substantial number of small entities.

VIII. Administrative Procedures Act

Today's rule takes final action on EPA's 1985 and 1991 proposals to exempt used oil inserted into primary refining processes from the used oil management standards. EPA did not address these issues in its September 10, 1992, final rule, and therefore those proposals remained outstanding until today's rule. Since these issues were fully addressed in those proposals, further public comment on today's rule is unnecessary. The other changes being made in today's rule either correct errors or clarify the language contained in the September 10, 1992 rule. No comment is necessary on these provisions.

List of Subjects

40 CFR Part 271

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indians—lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

40 CFR Part 279

Petroleum, Recycling, Reporting and recordkeeping requirements, Used oil.

Dated: February 25, 1994.

Carol M. Browner,

Administrator.

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

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.16 is amended by revising paragraph (a)(3)(ii) to read as follows:

§ 271.16 Requirements for enforcement authority.

(a) * * *

(3) * * *

(ii) Criminal remedies shall be obtainable against any person who knowingly transports any hazardous waste to an unpermitted facility; who treats, stores, or disposes of hazardous waste without a permit; who knowingly transports, treats, stores, disposes, recycles, causes to be transported, or otherwise handles any used oil regulated by EPA under section 3014 of RCRA that is not listed or identified as a hazardous waste under the state's hazardous waste program in violation of standards or regulations for management of such used oil; or who makes any false statement, or representation in any application, label, manifest, record, report, permit or other document filed, maintained, or used for purposes of program compliance (including compliance with any standards or regulations for used oil regulated by EPA under section 3014 of RCRA that is not listed or identified as hazardous waste). Criminal fines shall be recoverable in at least the amount of $10,000 per day for each violation, and imprisonment for at least six months shall be available.

* * * * *

PART 279—STANDARDS FOR THE MANAGEMENT OF USED OIL

3. The authority citation for part 279 continues to read as follows:

Authority: Sections 1006, 2002(a), 3001 through 3007, 3010, 3014, and 7004 of the Solid Waste Disposal Act, as amended (42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930, 6934, and 6974); and sections 101(37) and 114(c) of CERCLA (42 U.S.C. 9601(37) and 9614(c)).

4. In § 279.1 the definition of "Petroleum refining facility" is added in alphabetical order and the definition of "Used oil transfer facility" is revised to read as follows:

§ 279.1 Definitions.

* * * * *

Petroleum refining facility means an establishment primarily engaged in producing gasoline, kerosine, distillate fuel oils, residual fuel oils, and lubricants, through fractionation, straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes (i.e., facilities classified as SIC 2911).

* * * * *

Used oil transfer facility means any transportation related facility including loading docks, parking areas, storage areas and other areas where shipments of used oil are held for more than 24 hours and not longer than 35 days during the normal course of transportation or prior to an activity performed pursuant to § 279.20(b)(2). Transfer facilities that store used oil for more than 35 days are subject to regulation under subpart F of this part.

§ 279.10 [Amended]

5. Section 279.10(b)(1)(ii) is amended by removing the phrase "for the cost of $110.00."

6. Section 279.10 is amended by revising paragraphs (b)(2)(iii) and (g) to read as follows:

§ 279.10 Applicability.

* * * * *

(b) * * *

(2) * * *

(iii) Regulation as used oil under this part, if the mixture is of used oil and a waste which is hazardous solely because it exhibits the characteristic of ignitability (e.g., ignitable-only mineral spirits), provided that the resultant mixture does not exhibit the characteristic of ignitability under § 261.21 of this chapter.

* * * * *

(g) *Used oil introduced into crude oil pipelines or a petroleum refining facility.* (1) Used oil mixed with crude oil or natural gas liquids (e.g., in a production separator or crude oil stock tank) for insertion into a crude oil pipeline is exempt from the requirements of this part. The used oil is subject to the requirements of this part prior to the mixing of used oil with crude oil or natural gas liquids.

(2) Mixtures of used oil and crude oil or natural gas liquids containing less than 1% used oil that are being stored or transported to a crude oil pipeline or petroleum refining facility for insertion into the refining process at a point prior to crude distillation or catalytic cracking

are exempt from the requirements of this part.

(3) Used oil that is inserted into the petroleum refining facility process before crude distillation or catalytic cracking without prior mixing with crude oil is exempt from the requirements of this part provided that the used oil constitutes less than 1% of the crude oil feed to any petroleum refining facility process unit at any given time. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of this part.

(4) Except as provided in paragraph (g)(5) of this section, used oil that is introduced into a petroleum refining facility process after crude distillation or catalytic cracking is exempt from the requirements of this part only if the used oil meets the specification of § 279.11. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of this part.

(5) Used oil that is incidentally captured by a hydrocarbon recovery system or wastewater treatment system as part of routine process operations at a petroleum refining facility and inserted into the petroleum refining facility process is exempt from the requirements of this part. This exemption does not extend to used oil which is intentionally introduced into a hydrocarbon recovery system (e.g., by pouring collected used oil into the waste water treatment system).

(6) Tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil or natural gas liquids are exempt from the requirements of this part.

* * * * *

7. Section 279.20 is amended by revising paragraph (b)(2) to read as follows:

§ 279.20 Applicability.

* * * * *

(b) * * *

(2) (i) Except as provided in paragraph (b)(2)(ii) of this section, generators who process or re-refine used oil must also comply with subpart F of this part.

(ii) Generators who perform the following activities are not processors provided that the used oil is generated on-site and is not being sent off-site to a burner of on- or off-specification used oil fuel.

(A) Filtering, cleaning, or otherwise reconditioning used oil before returning it for reuse by the generator;

(B) Separating used oil from wastewater generated on-site to make the wastewater acceptable for discharge or reuse pursuant to section 402 or section 307(b) of the Clean Water Act or other applicable Federal or state regulations governing the management or discharge of wastewaters;

(C) Using oil mist collectors to remove small droplets of used oil from in-plant air to make plant air suitable for continued recirculation;

(D) Draining or otherwise removing used oil from materials containing or otherwise contaminated with used oil in order to remove excessive oil to the extent possible pursuant to § 279.10(c); or

(E) Filtering, separating or otherwise reconditioning used oil before burning it in a space heater pursuant to § 279.23.

* * * * *

8. Section 279.41 is amended by adding paragraph (c) to read as follows:

§ 279.41 Restrictions on transporters who are not also processors or re-refiners.

* * * * *

(c) Transporters of used oil that is removed from oil bearing electrical transformers and turbines and filtered by the transporter or at a transfer facility prior to being returned to its original use are not subject to the processor/re-refiner requirements in subpart F of this part.

§ 279.44 [Amended]

9. Section 279.44(c) introductory text is amended by removing the phrase "for the cost of $110.00."

10. Section 279.46 is amended by revising paragraphs (a)(5) and (b)(5) to read as follows:

§ 279.46 Tracking.

* * * * *

(a) * * *

(5) (i) Except as provided in paragraph (a)(5)(ii) of this section, the signature, dated upon receipt of the used oil, of a representative of the generator, transporter, or processor/re-refiner who provided the used oil for transport.

(ii) Intermediate rail transporters are not required to sign the record of acceptance.

(b) * * *

(5) (i) Except as provided in paragraph (b)(5)(ii) of this section, the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter.

(ii) Intermediate rail transporters are not required to sign the record of delivery.

* * * * *

§ 279.53 [Amended]

11. Section 279.53(c) introductory text is amended by removing the phrase "for the cost of $110.00."

§ 279.63 [Amended]

12. Section 279.63(c) is amended by removing the phrase "for the cost of $110.00."

[FR Doc. 94-4918 Filed 3-3-94; 8:45 am]
BILLING CODE 6560-50-P

Revision Checklist 131 Summary

Rule Title:	Recordkeeping Instructions
Checklist Title:	Recordkeeping Instructions; Technical Amendment
Reference:	59 FR 13891-13893
Promulgation Date:	March 24, 1994
Effective Date:	March 24, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Non-HSWA
Linkage:	None
Optional:	No

Summary: This rule amends the recordkeeping instructions in Appendix I of Part 264 and Appendix I of Part 265 so that unit of measurement codes and handling codes, used by hazardous waste treatment, storage and disposal facilities to maintain records on-site, match the codes used by these facilities on the Part A Permit Application Form. This technical amendment also adds handling codes for the proper recording of those processes relating to Boilers and Industrial Furnaces and Miscellaneous Units facilities. The Agency intends this amendment to encourage the consistent recordkeeping and reporting of information by hazardous waste treatment, storage and disposal facilities.

State Authorization: This rule is placed in RCRA Cluster IV; the changes addressed by it were promulgated under non-HSWA authority. Thus, this regulation is immediately applicable only in states that do not have final authorization for a base RCRA program. For states that are authorized for a base program, these changes do not go into effect until States become authorized for them. Only final authorization is available. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary).

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 131, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following entry should be placed at Subsection VII F in the Model Revision Attorney General's Statement.

> F. State statutes and regulations incorporate updates to the recordkeeping instructions so that the codes used by hazardous waste treatment, storage and disposal facilities to maintain records on-site match the codes used by these facilities on the Part A Permit Application Form as indicated on Revision Checklist 131. The new handling codes for Miscellaneous Units and Boilers and Industrial Furnaces, addressed by Checklist 131, are also incorporated into the statutes and regulations.
>
> Federal Authority: RCRA §§ 3004 and 3005; 40 CFR 264 Appendix I, 265 Appendix I as amended March 24, 1994 (59 FR 13891).
>
> Citation of Laws and Regulations; Date of Enactment and Adoption
>
> Remarks of the Attorney General

Revision Checklist 131 Summary (cont'd)

RCRA REVISION CHECKLIST 131

Recordkeeping Instructions; Technical Amendment
59 FR 13891-13893
March 24, 1994
(RCRA Cluster IV, Non-HSWA provisions)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES						
APPENDIX I TO PART 264						
RECORDKEEPING INSTRUCTIONS						
replace Table 1 to paragraph (2) with the following table:	Appendix I/Table 1					

Table 1

Unit of measure	Code[1]
Gallons	G
Gallons per Hour	E
Gallons per Day	U
Liters	L
Liters per Hour	H
Liters per Day	V
Short Tons per Hour	D
Metric Tons per Hour	W
Short Tons per Day	N
Metric Tons per Day	S
Pounds per Hour	J
Kilograms per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

FOOTNOTE: [1]Single digit symbols are used here for data processing purposes.

replace Table 2 to paragraph (3) with the following table:	Appendix I/Table 2					

DCL131.15 - Revised: 05/02/94
Printed: 12/21/94

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

Table 2.-Handling Codes for Treatment, Storage and Disposal Methods

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store or dispose of each quantity of hazardous waste received.

1. Storage

S01	Container (barrel, drum, etc.)
S02	Tank
S03	Waste Pile
S04	Surface Impoundment
S05	Drip Pad
S06	Containment Building (Storage)
S99	Other Storage (specify)

2. Treatment

(a) Thermal Treatment--

T06	Liquid injection incinerator
T07	Rotary kiln incinerator
T08	Fluidized bed incinerator
T09	Multiple hearth incinerator
T10	Infrared furnace incinerator
T11	Molten salt destructor
T12	Pyrolysis
T13	Wet air oxidation
T14	Calcination
T15	Microwave discharge
T18	Other (specify)

(b) Chemical Treatment--

T19	Absorption mound
T20	Absorption field
T21	Chemical fixation
T22	Chemical oxidation
T23	Chemical precipitation
T24	Chemical reduction
T25	Chlorination
T26	Chlorinolysis
T27	Cyanide destruction
T28	Degradation
T29	Detoxification
T30	Ion exchange
T31	Neutralization
T32	Ozonation
T33	Photolysis
T34	Other (specify)

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		(c) Physical Treatment--				
		(1) Separation of components:				
	T35	Centrifugation				
	T36	Clarification				
	T37	Coagulation				
	T38	Decanting				
	T39	Encapsulation				
	T40	Filtration				
	T41	Flocculation				
	T42	Flotation				
	T43	Foaming				
	T44	Sedimentation				
	T45	Thickening				
	T46	Ultrafiltration				
	T47	Other (specify)				
		(2) Removal of Specific Components:				
	T48	Absorption-molecular sieve				
	T49	Activated carbon				
	T50	Blending				
	T51	Catalysis				
	T52	Crystallization				
	T53	Dialysis				
	T54	Distillation				
	T55	Electrodialysis				
	T56	Electrolysis				
	T57	Evaporation				
	T58	High gradient magnetic separation				
	T59	Leaching				
	T60	Liquid ion exchange				
	T61	Liquid-liquid extraction				
	T62	Reverse osmosis				
	T63	Solvent recovery				
	T64	Stripping				
	T65	Sand filter				
	T66	Other (specify)				
		(d) Biological Treatment				
	T67	Activated sludge				
	T68	Aerobic lagoon				
	T69	Aerobic tank				
	T70	Anaerobic tank				
	T71	Composting				
	T72	Septic tank				
	T73	Spray irrigation				
	T74	Thickening filter				
	T75	Tricking filter				
	T76	Waste stabilization pond				
	T77	Other (specify)				
	T78	[Reserved]				
	T79	[Reserved]				

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROAD IN SCOPE
	(e) Boilers and Industrial Furnaces					
	T80 Boiler					
	T81 Cement Kiln					
	T82 Lime Kiln					
	T83 Aggregate Kiln					
	T84 Phosphate Kiln					
	T85 Coke Oven					
	T86 Blast Furnace					
	T87 Smelting, Melting, or Refining Furnace					
	T88 Titanium Dioxide Chloride Process Oxidation Reactor					
	T89 Methane Reforming Furnace					
	T90 Pulping Liquor Recovery Furnace					
	T91 Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid					
	T92 Halogen Acid Furnaces					
	T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)					
	(f) Other Treatment					
	T94 Containment Building (Treatment)					
	3. Disposal					
	D79 Underground Injection					
	D80 Landfill					
	D81 Land Treatment					
	D82 Ocean Disposal					
	D83 Surface Impoundment (to be closed as a landfill)					
	D99 Other Disposal (specify)					
	4. Miscellaneous (Subpart X)					
	X01 Open Burning/Open Detonation					
	X02 Mechanical Processing					
	X03 Thermal Unit					
	X04 Geologic Repository					
	X99 Other Subpart X (specify)					

PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

APPENDIX I TO PART 265

RECORDKEEPING INSTRUCTIONS

replace Table 1 to paragraph (2) with the following table:	Appendix I/Table 1					

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

Table 1

Unit of measure	Code[1]
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds per Hour	J
Kilograms Per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

FOOTNOTE: [1]Single digit symbols are used here for data processing purposes.

replace Table 2 to paragraph (3) with the following table:	Appendix I/Table 2					

Table 2.-Handling Codes for Treatment, Storage and Disposal Methods

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store or dispose of each quantity of hazardous waste received.

1. Storage

S01	Container (barrel, drum, etc.)
S02	Tank
S03	Waste Pile
S04	Surface Impoundment
S05	Drip Pad
S06	Containment Building (Storage)
S99	Other Storage (specify)

2. Treatment

(a) Thermal Treatment--

T06	Liquid injection incinerator
T07	Rotary kiln incinerator
T08	Fluidized bed incinerator
T09	Multiple hearth incinerator
T10	Infrared furnace incinerator
T11	Molten salt destructor

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
	T12 Pyrolysis					
	T13 Wet Air oxidation					
	T14 Calcination					
	T15 Microwave discharge					
	T18 Other (specify)					
	(b) Chemical Treatment--					
	T19 Absorption mound					
	T20 Absorption field					
	T21 Chemical fixation					
	T22 Chemical oxidation					
	T23 Chemical precipitation					
	T24 Chemical reduction					
	T25 Chlorination					
	T26 Chlorinolysis					
	T27 Cyanide destruction					
	T28 Degradation					
	T29 Detoxification					
	T30 Ion exchange					
	T31 Neutralization					
	T32 Ozonation					
	T33 Photolysis					
	T34 Other (specify)					
	(c) Physical Treatment--					
	(1) Separation of components					
	T35 Centrifugation					
	T36 Clarification					
	T37 Coagulation					
	T38 Decanting					
	T39 Encapsulation					
	T40 Filtration					
	T41 Flocculation					
	T42 Flotation					
	T43 Foaming					
	T44 Sedimentation					
	T45 Thickening					
	T46 Ultrafiltration					
	T47 Other (specify)					
	(2) Removal of Specific Components					
	T48 Absorption-molecular sieve					
	T49 Activated carbon					
	T50 Blending					
	T51 Catalysis					
	T52 Crystallization					
	T53 Dialysis					
	T54 Distillation					
	T55 Electrodialysis					
	T56 Electrolysis					
	T57 Evaporation					
	T58 High gradient magnetic separation					
	T59 Leaching					
	T60 Liquid ion exchange					
	T61 Liquid-liquid extraction					
	T62 Reverse osmosis					
	T63 Solvent recovery					

RCRA REVISION CHECKLIST 131: Recordkeeping Instructions; Technical Amendment (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
	T64 Stripping					
	T65 Sand filter					
	T66 Other (specify)					
	(d) Biological Treatment					
	T67 Activated sludge					
	T68 Aerobic lagoon					
	T69 Aerobic tank					
	T70 Anaerobic tank					
	T71 Composting					
	T72 Septic tank					
	T73 Spray irrigation					
	T74 Thickening filter					
	T75 Tricking filter					
	T76 Waste stabilization pond					
	T77 Other (specify)					
	T78 [Reserved]					
	T79 [Reserved]					
	(e) Boilers and Industrial Furnaces					
	T80 Boiler					
	T81 Cement Kiln					
	T82 Lime Kiln					
	T83 Aggregate Kiln					
	T84 Phosphate Kiln					
	T85 Coke Oven					
	T86 Blast Furnace					
	T87 Smelting, Melting, or Refining Furnace					
	T88 Titanium Dioxide Chloride Process Oxidation Reactor					
	T89 Methane Reforming Furnace					
	T90 Pulping Liquor Recovery Furnace					
	T91 Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid					
	T92 Halogen Acid Furnaces					
	T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)					
	(f) Other Treatment					
	T94 Containment Building (Treatment)					
	3. Disposal					
	D79 Underground Injection					
	D80 Landfill					
	D81 Land Treatment					
	D82 Ocean Disposal					
	D83 Surface Impoundment (to be closed as a landfill)					
	D99 Other Disposal (specify)					
	4. Miscellaneous (Subpart X)					
	X01 Open Burning/Open Detonation					
	X02 Mechanical Processing					
	X03 Thermal Unit					
	X04 Geologic Repository					
	X99 Other Subpart X (specify)					

Hearing Clerk, at the address given above (40 CFR 178.20). A copy of the objections and/or hearing requests filed with the Hearing Clerk should be submitted to the OPP docket for this rulemaking. The objections submitted must specify the provisions of the regulation deemed objectionable and the grounds for the objections (40 CFR 178.25). Each objection must be accompanied by the fee prescribed by 40 CFR 180.33(i). If a hearing is requested, the objections must include a statement of the factual issue(s) on which a hearing is requested, the requestor's contentions on such issues, and a summary of any evidence relied upon by the objector (40 CFR 178.27). A request for a hearing will be granted if the Administrator determines that the material submitted shows the following: There is a genuine and substantial issue of fact; there is a reasonable possibility that available evidence identified by the requestor would, if established, resolve one or more of such issues in favor of the requestor, taking into account uncontested claims or facts to the contrary; and resolution of the factual issue(s) in the manner sought by the requestor would be adequate to justify the action requested (40 CFR 178.32).

Under Executive Order 12866 (58 FR 51735, Oct. 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. Under section 3(f), the order defines a "significant regulatory action" as an action that is likely to result in a rule (1) having an annual effect on the economy of $100 million or more, or adversely and materially affecting a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities (also referred to as "economically significant"); (2) creating serious inconsistency or otherwise interfering with an action taken or planned by another agency; (3) materially altering the budgetary impacts of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raising novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

Pursuant to the terms of the Executive Order, EPA has determined that this rule is not "significant" and is therefore not subject to OMB review.

Pursuant to the requirements of the Regulatory Flexibility Act (Pub. L. 96-354, 94 Stat 1164, 5 U.S.C. 601-612), the Administrator has determined that regulations establishing new tolerances or raising tolerance levels or establishing exemptions from tolerance requirements do not have a significant economic impact on a substantial number of small entities. A certification statement to this effect was published in the Federal Register of May 4, 1981 (46 FR 24950).

List of Subjects in 40 CFR Part 180

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: March 14, 1994.

Douglas D. Campt,

Director, Office of Pesticide Programs.

Therefore, 40 CFR part 180 is amended as follows:

PART 180—[AMENDED]

1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 346a and 371.

2. In § 180.428, paragraph (a) table is amended by adding and alphabetically inserting the raw agricultural commodity sugarcane, to read as follows:

§ 180.428 Metsulfuron methyl; tolerances for residues.

(a) * * *

Commodity	Parts per million
* * * * *	
Sugarcane	0.05
* * * * *	

* * * * *

[FR Doc. 94-6954 Filed 3-23-94; 8:45 am]

BILLING CODE 6560-50-F

40 CFR Parts 264 and 265

[FRL-4852-6]

Recordkeeping Instructions

AGENCY: Environmental Protection Agency.

ACTION: Technical amendment.

SUMMARY: EPA is amending recordkeeping instructions in order to match those unit of measurement codes and handling codes used by hazardous waste treatment, storage and disposal facilities to report to EPA on the Part A Permit Application Form with the codes used to maintain records on-site by these facilities. This technical amendment also adds additional handling codes to allow for the proper recording of those processes relating to Boilers and Industrial Furnaces and Miscellaneous Units (subpart X) facilities. This amendment will encourage the consistent recordkeeping and reporting of information by hazardous waste treatment, storage and disposal facilities.

EFFECTIVE DATE: March 24, 1994.

ADDRESSES: All comments concerning this technical amendment should be addressed to Jeffrey Gaines, Assistance Branch, Permits and State Program Division (5303W), Office of Solid Waste, U.S. EPA, 401 M Street, SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: Liza Hearns, (202) 260-3393.

SUPPLEMENTARY INFORMATION: For several years, the disposal process codes listed in Appendix I of 40 CFR parts 264 and 265 have been different from those listed on the *Part A Permit Application* form. In consultation with State, Regional and Headquarters personnel, it was determined that changing the CFR to match the forms was the appropriate step to take. Therefore, the Office of Solid Waste has prepared this technical amendment to appendix I of 40 CFR parts 264 and 265 to modify those process codes (also referred to as handling codes) listed in the CFR so that they match those codes used on the *Part A Permit Application* form.

List of Subjects in 40 CFR Parts 264 and 265

Hazardous waste, Reporting and recordkeeping requirements.

Dated: March 15, 1994.

Elliott P. Laws,

Assistant Administrator, Office of 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 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

1. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924 and 6925.

2. Appendix I is amended by revising Table 1 to paragraph (2) and Table 2 to paragraph (3) to read as follows:

Appendix I to Part 264—Recordkeeping Instructions

* * * * *

(2) * * *

TABLE 1

Unit of measure	Code [1]
Gallons	G
Gallons per Hour	E
Gallons per Day	U
Liters	L
Liters per Hour	H
Liters per Day	V
Short Tons per Hour	D
Metric Tons per Hour	W
Short Tons per Day	N
Metric Tons per Day	S
Pounds per Hour	J
Kilograms per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

[1] Single digit symbols are used here for data processing purposes.

(3) * * *

TABLE 2.—HANDLING CODES FOR TREATMENT, STORAGE AND DISPOSAL METHODS

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store or dispose of each quantity of hazardous waste received.

1. Storage

S01 Container (barrel, drum, etc.)
S02 Tank
S03 Waste Pile
S04 Surface Impoundment
S05 Drip Pad
S06 Containment Building (Storage)
S99 Other Storage (specify)

2. Treatment

(a) Thermal Treatment—

T06 Liquid injection incinerator
T07 Rotary kiln incinerator
T08 Fluidized bed incinerator
T09 Multiple hearth incinerator
T10 Infrared furnace incinerator
T11 Molten salt destructor
T12 Pyrolysis
T13 Wet air oxidation
T14 Calcination
T15 Microwave discharge
T16 Other (specify)

(b) Chemical Treatment—

T19 Absorption mound
T20 Absorption field
T21 Chemical fixation
T22 Chemical oxidation
T23 Chemical precipitation
T24 Chemical reduction
T25 Chlorination
T26 Chlorinolysis
T27 Cyanide destruction
T28 Degradation
T29 Detoxification
T30 Ion exchange
T31 Neutralization
T32 Ozonation
T33 Photolysis
T34 Other (specify)

(c) Physical Treatment—

(1) Separation of components:

T35 Centrifugation
T36 Clarification
T37 Coagulation
T38 Decanting
T39 Encapsulation
T40 Filtration
T41 Flocculation
T42 Flotation
T43 Foaming
T44 Sedimentation
T45 Thickening
T46 Ultrafiltration
T47 Other (specify)

(2) Removal of Specific Components:

T48 Absorption-molecular sieve
T49 Activated carbon
T50 Blending
T51 Catalysis
T52 Crystallization
T53 Dialysis
T54 Distillation
T55 Electrodialysis
T56 Electrolysis
T57 Evaporation
T58 High gradient magnetic separation
T59 Leaching
T60 Liquid ion exchange
T61 Liquid-liquid extraction
T62 Reverse osmosis
T63 Solvent recovery
T64 Stripping
T65 Sand filter
T66 Other (specify)

(d) Biological Treatment

T67 Activated sludge
T68 Aerobic lagoon
T69 Aerobic tank
T70 Anaerobic tank
T71 Composting
T72 Septic tank
T73 Spray irrigation
T74 Thickening filter
T75 Tricking filter
T76 Waste stabilization pond
T77 Other (specify)
T78 [Reserved]
T79 [Reserved]

(e) Boilers and Industrial Furnaces

T80 Boiler
T81 Cement Kiln
T82 Lime Kiln
T83 Aggregate Kiln
T84 Phosphate Kiln
T85 Coke Oven
T86 Blast Furnace
T87 Smelting, Melting, or Refining Furnace
T88 Titanium Dioxide Chloride Process Oxidation Reactor
T89 Methane Reforming Furnace
T90 Pulping Liquor Recovery Furnace
T91 Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid
T92 Halogen Acid Furnaces
T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)

(f) Other Treatment

T94 Containment Building (Treatment)

3. Disposal

D79 Underground Injection
D80 Landfill
D81 Land Treatment
D82 Ocean Disposal
D83 Surface Impoundment (to be closed as a landfill)
D99 Other Disposal (specify)

4. Miscellaneous (Subpart X)

X01 Open Burning/Open Detonation
X02 Mechanical Processing
X03 Thermal Unit
X04 Geologic Repository
X99 Other Subpart X (specify)

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

1. The authority citation for part 265 continues to read as follows:

Authority: 42 USC 6905, 6912(a), 6924 and 6925.

2. Appendix I is amended by revising Table 1 to paragraph (2) and revising Table 2 to paragraph (3) to read as follows:

Appendix I to Part 265—Recordkeeping Instructions

* * * * *

(2) * * *

TABLE 1

Unit of measure	Code [1]
Gallons	G
Gallons per Hour	E
Gallons per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

[1] Single digit symbols are used here for data processing purposes.

(3) * * *

TABLE 2.—HANDLING CODES FOR TREATMENT, STORAGE AND DISPOSAL METHODS

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store or dispose of each quantity of hazardous waste received.

1. Storage

S01 Container (barrel, drum, etc.)
S02 Tank
S03 Waste Pile
S04 Surface Impoundment
S05 Drip Pad
S06 Containment Building (Storage)
S99 Other Storage (specify)

2. Treatment

(a) Thermal Treatment—

T06 Liquid injection incinerator
T07 Rotary kiln incinerator
T08 Fluidized bed incinerator
T09 Multiple hearth incinerator
T10 Infrared furnace incinerator
T11 Molten salt destructor
T12 Pyrolysis
T13 Wet Air oxidation
T14 Calcination
T15 Microwave discharge
T18 Other (specify)

(b) Chemical Treatment—

T19 Absorption mound
T20 Absorption field
T21 Chemical fixation
T22 Chemical oxidation
T23 Chemical precipitation
T24 Chemical reduction
T25 Chlorination
T26 Chlorinolysis
T27 Cyanide destruction
T28 Degradation
T29 Detoxification
T30 Ion exchange
T31 Neutralization
T32 Ozonation
T33 Photolysis
T34 Other (specify)

(c) Physical Treatment—

(1) Separation of components

T35 Centrifugation
T36 Clarification
T37 Coagulation
T38 Decanting
T39 Encapsulation
T40 Filtration
T41 Flocculation
T42 Flotation
T43 Foaming
T44 Sedimentation
T45 Thickening
T46 Ultrafiltration
T47 Other (specify)

(2) Removal of Specific Components

T48 Absorption-molecular sieve
T49 Activated carbon
T50 Blending
T51 Catalysis
T52 Crystallization
T53 Dialysis
T54 Distillation
T55 Electrodialysis
T56 Electrolysis
T57 Evaporation
T58 High gradient magnetic separation
T59 Leaching
T60 Liquid ion exchange
T61 Liquid-liquid extraction
T62 Reverse osmosis
T63 Solvent recovery
T64 Stripping
T65 Sand filter
T66 Other (specify)

(d) Biological Treatment

T67 Activated sludge
T68 Aerobic lagoon
T69 Aerobic tank
T70 Anaerobic tank
T71 Composting
T72 Septic tank
T73 Spray irrigation
T74 Thickening filter
T75 Tricking filter
T76 Waste stabilization pond
T77 Other (specify)
T78 [Reserved]
T79 [Reserved]

(e) Boilers and Industrial Furnaces

T80 Boiler
T81 Cement Kiln
T82 Lime Kiln
T83 Aggregate Kiln
T84 Phosphate Kiln
T85 Coke Oven
T86 Blast Furnace
T87 Smelting, Melting, or Refining Furnace
T88 Titanium Dioxide Chloride Process Oxidation Reactor
T89 Methane Reforming Furnace
T90 Pulping Liquor Recovery Furnace
T91 Combustion Device Used in the Recovery of Sulfur Values From Spent Sulfuric Acid
T92 Halogen Acid Furnaces
T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)

(f) Other Treatment

T94 Containment Building (Treatment)

3. Disposal

D79 Underground Injection
D80 Landfill
D81 Land Treatment
D82 Ocean Disposal
D83 Surface Impoundment (to be closed as a landfill)
D99 Other Disposal (specify)

4. Miscellaneous (Subpart X)

X01 Open Burning/Open Detonation
X02 Mechanical Processing
X03 Thermal Unit
X04 Geologic Repository
X99 Other Subpart X (specify)

[FR Doc. 94-6830 Filed 3-23-94; 8:45 am]

BILLING CODE 6560-50-P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Public Land Order 7034

[CO-932-4210-06; COC-28686]

Partial Revocation of Secretarial Order Dated December 8, 1909, Which Established Powersite Reserve No. 82; Colorado

AGENCY: Bureau of Land Management, Interior.

ACTION: Public Land Order.

SUMMARY: This order revokes a Secretarial order insofar as it affects 735.45 acres of National Forest System lands withdrawn for the Bureau of Land Management's Powersite Reserve No. 82. The Forest Service has requested this action to allow for disposal of the lands. These lands are no longer needed for waterpower purposes. The lands have been open to mining under the provisions of the Mining Claims Rights Restoration Act of 1955, and these provisions are no longer required. The lands have been and will remain open to mineral leasing.

EFFECTIVE DATE: April 25, 1994.

FOR FURTHER INFORMATION CONTACT:

Alexa Watson, BLM Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215-7076, 303-239-3796.

By virtue of the authority vested in the Secretary of the Interior by Section 204 of the Federal Land Policy and Management Act of 1976, 43 U.S.C. 1714 (1988), it is ordered as follows:

1. Secretarial Order dated December 8, 1909, which established Powersite Reserve No. 82, is hereby revoked insofar as it affects the following described lands:

Sixth Principal Meridian

Arapaho National Forest

T. 4 S., R. 73 W.,
Sec. 2, lots 1, 2, 3, 4, 5, 11, and 12;
Sec. 3, lots 6 to 16, inclusive;
Sec. 4, lots 9, 10, 15, and 16.

The areas described aggregate 735.45 acres of National Forest System lands in Clear Creek County.

2. At 9:00 a.m. on April 25, 1994, the lands described in paragraph 1 will be open to such forms of disposition as may by law be made of National Forest System lands, subject to valid existing rights, the provisions of existing withdrawals, and the requirements of applicable law.

The lands have been open to mining under the provisions of the Mining Claims Rights Restoration Act of 1955, 30 U.S.C. 621 (1988), and these provisions are no longer required.

Dated: March 14, 1994.

Bob Armstrong,

Assistant Secretary of the Interior.

[FR Doc. 94-6864 Filed 3-23-94; 8:45 am]

BILLING CODE 4310-JB-M

Revision Checklist 132 Summary

Rule Title:	Hazardous Waste Management System: Identification and Listing of Hazardous Wastes; Wastes from Wood Surface Protection; Correction
Checklist Title:	Wood Surface Protection; Correction
Reference:	59 FR 28484
Promulgation Date:	June 2, 1994
Effective Date:	June 2, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Non-HSWA
Linkage:	Revision Checklist 128
Optional:	No

Summary: This notice corrects inaccurate references to EPA Publication SW-846 in the final rule published January 4, 1994 (59 FR 458; Revision Checklist 128).

State Authorization: This rule is placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). This rule was promulgated under non-HSWA authority and the changes do not go into effect until States become authorized for them. Only final authorization is available.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 132, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The entry at Subsection I CC in the Model Revision Attorney General's Statement should be replaced with the following revised entry:

> CC. State statutes and regulations incorporation by reference "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, the Third Edition (November 1986), as amended by Updates I, II and IIA, as indicated in Revision Checklists 128 and 132.
>
> Federal Authority: RCRA §§2002(a), 3001(b), and 3001(e)(1); 40 CFR 260.11(a) as amended January 4, 1994 (59 FR 458) and June 2, 1994 (59 FR 28484).
>
> Citation of Laws and Regulations; Date of Enactment and Adoption
>
> Remarks of the Attorney General

RCRA REVISION CHECKLIST 132

Wood Surface Protection; Correction
59 FR 28484
June 2, 1994
(RCRA Cluster IV, Non-HSWA provisions)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL						
SUBPART B - DEFINITIONS						
REFERENCES						
after the first "Updates I" remove ", II"; remove the "s" in the second "Updates I" as well as "II, and IIA", which occurs immediately after; add new information on where Update II A may be found;	260.11(a)					

DCL132.15 - Revised: 07/01/94
Printed: 12/21/94

CL-132

new fee schedule will be published in the Federal Register as a Final Rule to become effective 30 days or more after publication, as specified in the rule. When changes are made based on periodic reviews, the changes will be subject to public comment.

[FR Doc. 94-13431 Filed 6-1-94; 8:45 am]
BILLING CODE 6560-50-F

40 CFR Part 260

[FRL-4889-7]

Hazardous Waste Management System; Identification and Listing of Hazardous Wastes; Wastes From Wood Surface Protection; Correction

AGENCY: Environmental Protection Agency.

ACTION: Final rule; correction.

SUMMARY: This notice contains corrections to the final regulation (FRL-4804-9) which was published Tuesday, January 4, 1994 ("Hazardous Waste Management System; Identification and Listing of Hazardous Wastes; Wastes from Wood Surface Protection; Final Rule", 59 FR 458). This notice corrects inaccurate references in that Final Rule to the EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

EFFECTIVE DATE: June 2, 1994.

FOR FURTHER INFORMATION CONTACT: Kim Kirkland at (202) 260-4761, Office of Solid Waste (Mailcode 5304), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

SUPPLEMENTARY INFORMATION:

Background

The final regulation that is the subject of this correction (January 4, 1994, 59 FR 458) amended the hazardous waste regulations by adding the sodium and potassium salts of pentachlorophenol and tetrachlorophenol to appendix VIII of 40 CFR part 261. The final regulations also amended EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," by adding Method 4010 to the Third Edition of SW-846 as Update IIA. SW-846 contains the analytical and test methods that EPA has evaluated and found to be among those acceptable for testing under Subtitle C of the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Agency added Method 4010 to SW-846 as an appropriate method, in general, for testing for the presence of the sodium and potassium salts of pentachlorophenol and tetrachlorophenol which, as noted above, were added by the final rule to appendix VIII of 40 CFR part 261.

In the final regulation of January 4, 1994 (59 FR 458), the Agency amended 40 CFR 260.11(a) to incorporate by reference both Update IIA (Method 4010) and Update II of SW-846; and to indicate that these updates are available from the U.S. Government Printing Office (GPO). These amendments to 40 CFR 260.11 contain two technical errors: (1) Update II of SW-846 is still being developed by EPA and was not promulgated by the final regulations of January 4, 1994, or by any other regulation to date, and is not available from GPO; and (2) Update IIA (Method 4010), although promulgated by the January 4, 1994 rule, is also not available from the GPO.

Need for Correction

As published, the final regulations of January 4, 1994 were in advertent error with respect to the incorporation by reference of Update II of SW-846, Third Edition, into the hazardous waste regulations at 40 CFR 260.11(a). The regulations were also in inadvertent error with respect to the availability of Updates II and IIA from the U.S. Government Printing Office. These errors, therefore, need correction. Because this action is a technical correction, prior notice and opportunity for comment is unnecessary, and good cause exists for this change to take effect immediately (see 5 U.S.C. 553(6)). Accordingly, the Agency is not seeking any comments based on today's notice.

Correction of Publication

Accordingly, the publication on January 4, 1994 of the final regulation, 59 FR 458, "Hazardous Waste Management System; Identification and Listing of Hazardous Wastes; Wastes from Wood Surface Protection; Final Rule" (FRL-4804-9), which was the subject of FR Doc. 93-32032, is corrected. Specifically, on page 468, in the third column, § 260.11(a) is corrected to read as follows:

§ 260.11 References [corrected].

(a) * * *

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846 [Third Edition (November, 1986), as amended by Updates I and IIA]. The Third Edition of SW-846 and Update I (document number 955-001-00000-1) are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 783-3238; and Update IIA is available from the Office of Solid Waste (Mailcode 5304), U.S. EPA, 401 M Street, SW., Washington, DC 20460 or by calling the Methods Information Communication Exchange (MICE) Service at (703) 821-4789. Copies may be inspected at the Library, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

* * * * *

Dated: May 17, 1994.

Elliott P. Laws,

Assistant Administrator.

[FR Doc. 94-13190 Filed 6-1-94; 8:45 am]
BILLING CODE 6560-50-P

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Part 65

Changes in Flood Elevation Determinations

AGENCY: Federal Emergency Management Agency (FEMA).

ACTION: Final rule.

SUMMARY: Modified base (100-year) flood elevations are finalized for the communities listed below. These modified elevations will be used to calculate flood insurance premium rates for new buildings and their contents.

EFFECTIVE DATES: The effective dates for these modified base (100-year) flood elevations are indicated on the following table and revise the Flood Insurance Rate Map(s) in effect for each listed community prior to this date.

ADDRESSES: The modified base flood elevations for each community are available for inspection at the office of the Chief Executive Officer of each community. The respective addresses are listed in the following table.

FOR FURTHER INFORMATION CONTACT: Michael K. Buckley, P.E., Chief, Hazard Identification Branch, Mitigation Directorate, 500 C Street SW., Washington, DC 20472, (202) 646-2756.

SUPPLEMENTARY INFORMATION: The Federal Emergency Management Agency makes the final determinations listed below of the final determinations of modified base (100-year) flood elevations for each community listed. These modified elevations have been published in newspapers of local circulation and ninety (90) days have elapsed since that publication. The Associate Director has resolved any appeals resulting from this notification.

The modified base (100-year) flood elevations are not listed for each community in this notice. However, this rule includes the address of the Chief Executive Officer of the community where the modified base (100-year)

Revision Checklist 133 Summary

Rule Title:	Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Underground Storage Tanks, and Underground Injection Control Systems; Financial Assurance; Letter of Credit
Checklist Title:	Letter of Credit Revision
Reference:	59 FR 29958-29960
Promulgation Date:	June 10, 1994
Effective Date:	August 9, 1994
Cluster:	RCRA IV
Provision Type:	Non-HSWA
Linkage:	None
Optional:	Yes

Summary: This rule amends regulations at 264.151(d) and (k) which cite the "Uniform Customs and Practice for Documentary Credits," published by the International Chamber of Commerce, by inserting the phrase "and copyrighted." Without this insert, it is not clear from the regulations that the International Chamber of Commerce publication is copyrighted material. Regulations associated with the UIC, UST and RCRA programs are affected. Only the change to the RCRA regulations are addressed by this checklist.

State Authorization: This rule is placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). This checklist has been designated as optional because it only revises the description of International Chamber of Commerce document and does not impose new duties on owners or operators that choose to rely on letters of credit. However, EPA encourages States to adopt this change. In states that are not yet authorized for RCRA, new letter of credit instruments will have to include this new language.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 133, other associated checklists and other application materials, i.e. a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: The following entry should be placed at Subsection XV U in the Model Revision Attorney General's Statement.

> U. [OPTIONAL: This is a reduced requirement.] State statutes and regulations indicate that the "Uniform Customs and Practice for Documentary Credits" is a copyrighted document of the International Chamber of Commerce as indicated in Revision Checklist 133.
>
> Federal Authority: RCRA 2002(a), 3004, 3005, and 3006; 40 CFR 264.151(d) & (k) as amended June 10, 1994 (59 FR 29958).
>
> Citation of Laws and Regulations; Date of Enactment and Adoption
>
> Remarks of the Attorney General

RCRA REVISION CHECKLIST 133

Letter of Credit Revision
59 FR 29958-29960
June 10, 1994
(RCRA Cluster VI, non-HSWA provisions)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES						
SUBPART H - FINANCIAL REQUIREMENTS						
WORDING OF THE INSTRUMENTS						
† after "published" insert "and copyrighted"	264.151(d)					
† after "published" insert "and copyrighted"	264.151(k)					

DCL133.15 - Revised: 07/07/94
Printed: 12/21/94

Statistical Area (CMSA); the Baltimore Oxygenate Gasoline Control Area—comprised of Baltimore City and the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's, all of which are included in the Baltimore Metropolitan Statistical Area (MSA); and the Washington Oxygenated Gasoline Control Area—comprised of the counties of Calvert, Charles, Frederick, Montgomery, and Prince George's, which comprise the Maryland portion of the Washington, DC MSA. The intended effect of this action is to approve these regulations to satisfy the requirements of the Clean Air Act as amended by the Clean Air Act Amendments of 1990 (the Act). This action is being taken under section 110 of the Clean Air Act.

EFFECTIVE DATE: This final rule will become effective on July 11, 1994.

ADDRESSES: Copies of the documents relevant to this action are available for public inspection during normal business hours at the Air, Radiation, and Toxics Division, U.S. Environmental Protection Agency, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania 19107; Air and Radiation Docket (6102), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460; and the Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland 21224.

FOR FURTHER INFORMATION CONTACT: Catherine L. Magliocchetti, (215) 597–6863 at the EPA address indicated in the **ADDRESSES** section.

SUPPLEMENTARY INFORMATION: On December 14, 1993, (58 FR 65309), EPA published a notice of proposed rulemaking (NPR) for the State of Maryland. The NPR proposed approval of an Oxygenated Gasoline Program in the State of Maryland. A formal SIP revision was submitted by the State of Maryland on November 13, 1992.

Specific requirements of the Oxygenated Gasoline Program and the rationale for EPA's proposed action are explained in the NPR and will not be restated here. No comments were received on the NPR.

Final Action

EPA is approving the SIP revision submitted by the State of Maryland on November 13, 1992, which implements an Oxygenated Gasoline Program in the State. The SIP revision consists of revisions to Code of Maryland Regulations (COMAR) 03.03.05, and COMAR 26.11.13 and new regulations codified at COMAR 03.03.06 and COMAR 26.11.20. Nothing in this action should be construed as permitting or allowing or establishing a precedent for any future request for revision to any state implementation plan. Each request for revision to the state implementation plan shall be considered separately in light of specific technical, economic, and environmental factors and in relation to relevant statutory and regulatory requirements.

This action was originally classified as a Table 2 action for signature by the Acting Regional Administrator under the procedures published in the Federal Register on January 19, 1989 (54 FR 2214–2225). However, in an October 4, 1993 memorandum, the Acting Assistant Administrator for Air and Radiation, Michael H. Shapiro, revised these SIP tables so that Table 2 final actions on which no adverse comments were received on the proposed rule may be delegated to Table 3 actions. No comments were received concerning this action; therefore, under the new guidelines, this final action may be classified as a Table 3 action. On January 6, 1989, the Office of Management and Budget (OMB) waived Table 2 and Table 3 SIP revisions from the requirements of section 3 of Executive Order 12291 for a period of two years. The USEPA has submitted a request for a permanent waiver for Table 2 and 3 SIP revisions. The OMB has agreed to continue the waiver until such time as it rules on USEPA's request. This request is still applicable under Executive Order 12866, which superseded Executive Order 12291 on September 30, 1993.

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action to approve Maryland's Oxygenated Gasoline Program must be filed in the United States Court of Appeals for the appropriate circuit by August 9, 1994. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (See section 307(b)(2) of the Clean Air Act.)

List of Subjects in 40 CFR part 52

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: May 13, 1994.

Stanley L. Laskowski,

Acting Regional Administrator, Region III.

40 CFR part 52 is amended as follows:

PART 52—[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart V—Maryland

2. Section 52.1070 is amended by adding paragraph (c)(101) and by removing and reserving paragraph (c)(88) to read as follows:

§ 52.1070 Identification of plan.

* * * * *

(c) * * *

(101) Revisions to the State of Maryland Regulations Oxygenated Gasoline Program regulations submitted on November 13, 1992 by the Maryland Department of the Environment. Effective date October 26, 1992.

(i) Incorporation by reference.

(A) Letter of November 13, 1992 from the Maryland Department of the Environment transmitting Oxygenated Gasoline Program regulations.

(B) The following State of Maryland regulations effective October 26, 1992:

(*1*) Amendments to COMAR 26.11.13.01 (Control of Gasoline and Volatile Organic Compound Storage and Handling).

(*2*) Deletion of Regulation .06 under COMAR 26.11.13 (Control of Gasoline and Volatile Organic Compound Storage and Handling).

(*3*) New Regulation COMAR 26.11.20.03 (Mobile Sources).

(*4*) COMAR 03.03.05.01, .01–1, .02–1, .05, .08, and .15 (Motor Fuel Inspection).

(*5*) COMAR 03.03.06.01 through .06 (Emissions Control Compliance).

(ii) The remainder of the November 13, 1992 submittal.

[FR Doc. 94–14071 Filed 6–9–94; 8:45 am]

BILLING CODE 6560–50–F

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40 CFR Parts 144, 264, and 280

[FRL–4894–3]

Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Underground Storage Tanks, and Underground Injection Control Systems; Financial Assurance; Letter of Credit

AGENCY: Environmental Protection Agency.

ACTION: Final rule; amendment.

SUMMARY: EPA is amending the regulations related to financial assurance promulgated under Subtitles C and I of the Resource Conservation and Recovery Act (RCRA). Those regulations cite the "Uniform Customs and Practice for Documentary Credits," published by the International Chamber of Commerce. This notice inserts the words "and copyrighted" into the letter of credit instrument to clarify that the International Chamber of Commerce publication is copyrighted material. As a result of this notice, owners and operators using the letter of credit instrument to demonstrate financial assurance must include this additional language.

EFFECTIVE DATE: August 9, 1994.

FOR FURTHER INFORMATION CONTACT: Tom Gorman at (202) 260–1339, Office of General Counsel, U.S. Environmental Protection Agency, 401 M St. SW., Washington, DC 20460.

SUPPLEMENTARY INFORMATION:

I. Authority

This amendment is promulgated under the authority of Sections 2002(a), 3004, 3005, and 3006 of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6912, 6924, 6925, 6926, and 6991, and under the authority of the Safe Drinking Water Act, 42 U.S.C. 300f *et seq.*

II. Background

Owners and operators of hazardous waste treatment, storage, and disposal facilities must demonstrate financial assurance for costs of closure, post-closure care, third-party liability and corrective action associated with their facilities. In subpart H of 40 CFR part 264, the Agency has established regulations regarding financial assurance for closure, post-closure care, and third party liability. Section 264.151 provides wording for the various financial instruments that owners and operators may use to demonstrate financial assurance. Section 264.151(d) provides wording for a letter of credit to demonstrate financial assurance for closure and post-closure care, and § 264.151(k) provides wording for a letter of credit to demonstrate financial assurance for third-party liability.

The RCRA regulations in 40 CFR part 280 impose similar requirements on owners and operators of underground storage tanks. Under those provisions, owners and operators of underground storage tanks must demonstrate financial assurance for taking corrective action and for third party liability. The regulations then establish a series of mechanisms that owners and operators can use. Section 280.99 provides the wording for a letter of credit, which is one of those allowable mechanisms.

Finally, the regulations at 40 CFR part 144, subpart F for the Underground Injection Control Program contain specific requirements for financial responsibility for Class I hazardous waste injection wells. Class I wells inject industrial and municipal wastes, including RCRA hazardous wastes, below the lowermost underground source of drinking water (USDW). 40 CFR part 144, subpart F, is directly applicable to owners and operators of all Class I hazardous waste injection wells.

III. Purpose of This Notice

The wording of the letter of credit instrument in §§ 144.70(d), 264.151 (d) and (k), and § 280.99 includes a reference to the "Uniform Customs and Practice for Documentary Credits," published by the International Chamber of Commerce. However, the language does not make it clear that the International Chamber of Commerce publication is copyrighted material.

This correction notice amends the letter of credit instrument in §§ 144.70(d), 264.151 (d) and (k), and 280.99 to clarify that the International Chamber of Commerce publication is copyrighted material by including the words "and copyrighted" in the wording of the letter of credit instrument. As a result of this change to the regulations, owners and operators who obtain a letter of credit to demonstrate financial assurance must use the revised language in § 264.151(d), 264.151(k), or 280.99(b), which includes the words "and copyrighted."

IV. Effect on State Authority To Administer Federal Programs

Since this amendment only revises the description of the document, and does not impose new duties on owners or operators that choose to rely on letters of credit, EPA will not require states to adopt this change as part of their approved UIC and UST programs or authorized RCRA programs. Therefore, owners and operators in authorized states that do not adopt this change will not be affected by this rule. However, EPA encourages states to adopt this change.

In states that adopt this change and in states without approved UIC or UST programs or states not authorized for the RCRA program, new letter of credit instruments will have to include this new language.

V. Administrative Procedures Act Requirements

Under 5 U.S.C. 553(b)(3)(B), a rule is exempt from notice and public comment requirements "when the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefore in the rules issues) that notice and public procedures thereon are impractical, unnecessary, or contrary to the public interest." EPA believes that comment is unnecessary because this amendment makes only a change in the wording of the letter of credit instrument, but does not change the requirements for using the letter of credit instrument to demonstrate financial assurance. Therefore, EPA believes there is good cause to make today's rule effective on August 9, 1994.

List of Subjects

40 CFR Part 144

Environmental protection, Administrative practice and procedure, Confidential Business Information, Hazardous waste, Indian—lands, Reporting and recordkeeping requirements, Surety bonds, Water supply.

40 CFR Part 264

Environmental protection, Air pollution control, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 280

Environmental protection, Hazardous substances, Insurance, Oil pollution, Reporting and recordkeeping requirements, Surety bonds, Water pollution control, Water supply.

Dated: April 15, 1994.

Elliott Laws,

Assistant Administrator, Office of Solid Waste and Emergency Response.

Dated: April 25, 1994.

Robert Perciasepe,

Assistant Administrator, Office of Water.

PART 144—UNDERGROUND INJECTION CONTROL PROGRAM

1. The authority citation for part 144 continues to read as follows:

Authority: Safe Drinking Water Act, 42 U.S.C. 300f *et seq.*; Resource Conservation and Recovery Act, 42 U.S.C. 6901 *et seq.*

2. In § 144.70, the last sentence in paragraph (d) is revised to read as follows:

§ 144.70 Wording of the instruments.

* * * * *

(d) * * * This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code"].

* * * * *

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6925.

2. In § 264.151, the last sentence in paragraphs (d) and (k) is revised to read as follows:

§ 264.151 Wording of the instruments.

* * * * *

(d) * * * This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code"].

* * * * *

(k) * * * This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code"].

* * * * *

PART 280—TECHNICAL STANDARDS AND CORRECTIVE ACTION REQUIREMENTS FOR OWNERS AND OPERATORS OF UNDERGROUND STORAGE TANKS (UST)

1. The authority citation for part 280 continues to read as follows:

Authority: 42 U.S.C. 6912, 6991, 6991a, 6991b, 6991c, 6991d, 6991e, 6991f, and 6991h.

2. In § 280.99, the last sentence of paragraph (b) is revised to read as follows:

§ 280.99 Letter of credit.

* * * * *

(b) * * * This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code"].

* * * * *

[FR Doc. 94-14171 Filed 6-9-94; 8:45 am]

BILLING CODE 6560-50-P

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

48 CFR Parts 1801, 1802, 1804, 1805, 1807, 1809, 1815, 1822, 1823, 1825, 1839, and 1852

[NASA FAR Supplement Directive 89-15]

RIN 2700-AB36

Acquisition Regulation; Miscellaneous Amendments to NASA FAR Supplement

AGENCY: Office of Procurement, Procurement Policy Division, National Aeronautics and Space Administration (NASA).

ACTION: Final rule.

SUMMARY: This document amends the NASA Federal Acquisition Regulation Supplement (NFS) to reflect a number of miscellaneous changes dealing with NASA internal or administrative matters, such as redesignation of NASA offices and delegation of authority within NASA.

EFFECTIVE DATE: June 30, 1994.

FOR FURTHER INFORMATION CONTACT: Mr. David K. Beck, (202) 358-0482.

SUPPLEMENTARY INFORMATION:

Availability of NASA FAR Supplement

The NASA FAR Supplement, of which this rule is a part, is available in its entirety on a subscription basis from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, telephone number (202) 783-3238. Cite GPO Subscription Stock Number 933-003-00000-1. It is not distributed to the public, either in whole or in part, directly by NASA.

Dryden Flight Research Center and Space Station Program Office

The following sections are changed as a result of the establishment of the Dryden Flight Research Center and Space Station Program Office: 1802.101, 1804.7102-4(a), 1804.7103-2, 1805.207, 1805.303-71(b)(1), 1807.7102(b), 1815.807-71, 1822.103-4, 1839.7003-5, and 1852.103.

Waiver of Certified Cost and Price Data for Canadian Commercial Corporation

An existing waiver in 1815.804 is extended. Subparagraph 1815.804-3(e)(4) is removed. It required NASA personnel to report use of the waiver to NASA Headquarters.

Delegation of Authority for Small Foreign Purchases

Changes to 1825.7003 and 1825.7004 delegate authority and describe internal procedures within NASA.

Reversion of Domestic Preference to Buy American Act

Subpart 1825.71 and clauses at 1852.225-74 and 1852.225-75 are removed because an appropriation act requirement for domestic preference was not extended beyond Fiscal Year 1991 funding. The domestic preference required by the Buy American Act, as implemented in (FAR) 48 CFR Subparts 25.1 and 25.2 and (NASA FAR Supplement) 48 CFR Subparts 1825.1 and 1825.2, remains in effect.

Additional Changes

Section 1815.805-5(b) is revised in order to complete an incomplete sentence. Section 1815.970-3(b) is revised in order to correct a cross-reference. A reference is corrected in 1822.870 regarding contractor EEO reports. A reference to Code FO is changed to Code UO and the division title is changed (section 1823.7002(c)). Section 1852.209-71 is revised in order to correct two cross-references. In addition, section references and subpart headings are revised to reflect corresponding changes in the Federal Acquisition Regulation.

Impact

NASA certifies that this regulation will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*).

List of Subjects in 48 CFR Parts 1801, 1802, 1804, 1805, 1807, 1809, 1815, 1822, 1823, 1825, 1839, and 1852

Government procurement.

Tom Luedtke,

Deputy Associate Administrator for Procurement.

Accordingly, 48 CFR parts 1801, 1802, 1804, 1805, 1807, 1809, 1815, 1822, 1823, 1825, 1839, and 1852 are amended as follows.

1. The authority citation for 48 CFR parts 1801, 1802, 1804, 1805, 1807, 1809, 1815, 1822, 1823, 1825, 1839, and 1852 continues to read as follows:

Authority: 42 U.S.C. 2473(c)(1).

Revision Checklist 134 Summary

Rule Title:	Hazardous Waste Management System; Correction of Listing of P015--Beryllium Powder
Checklist Title:	Correction of Beryllium Powder (P015) Listing
Reference:	59 FR 31551-31552
Promulgation Date:	June 20, 1994
Effective Date:	June 20, 1994
Cluster:	RCRA Cluster IV
Provision Type:	Non-HSWA
Linkage:	None
Optional:	No

Summary: On April 22, 1988, EPA published a technical correction to the lists of hazardous wastes in 40 CFR 261.33(e) and (f) (Revision Checklist 46, 53 FR 13382). In that notice, the word "dust" was inadvertently omitted from the P015 listing for "beryllium dust" in the 261.33(e) list of hazardous wastes. In addition, the sole manufacturer of this commercial chemical product has since indicated that the term "beryllium dust" is not used by the industry to describe this commercial chemical product; the actual term used by the industry is "beryllium powder". This technical correction, thus, adds "powder" to the P015 hazardous waste listing for "beryllium" and makes conforming changes to the list of hazardous constituents in Part 261 Appendix VIII and to Table 2 in § 268.42(a). Conforming changes were also made to the CERCLA list of hazardous substances, although only the changes to the RCRA regulations are addressed by this checklist.

State Authorization: This rule is placed in RCRA Cluster IV. The State modification deadline is July 1, 1995 (or July 1, 1996 if a State statutory change is necessary). These changes do not go into effect until States become authorized for them because this rule was promulgated under pre-HSWA authorities. Only final authorization is available.

The State Revision Application must include applicable regulations, AG statement addendum, Revision Checklist 134, other associated checklists and other application materials, i.e., a program description and an MOA, as determined by the Regional office.

Attorney General's Statement Entry: Subsection I A(28) in the Model Revision Attorney General's Statement should be added to read as follows:

> (28) Listing of Beryllium (P015) is amended to read "Beryllium powder," 40 CFR 261.33 and Part 261 Appendix VIII, as amended June 20, 1994 [59 FR 31551], Revision Checklist 134.

The following new entry should be placed at Subsection XXI P in the Model Revision Attorney General's Statement.

Revision Checklist 134 Summary (cont'd)

P. State statutes and regulations include a revision to P015 listing in the land disposal restrictions technology-based treatment standards as indicated on Revision Checklist 134.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 268.42(a)/Table 2, as amended June 20, 1994 (59 FR 31551).

Citation of Laws and Regulations: Date of Enactment and Adoption

Remarks of the Attorney General

RCRA REVISION CHECKLIST 134

Correction of Beryllium Powder (P015) Listing
59 FR 31551-31552
June 20, 1994
(RCRA Cluster IV, Non-HSWA provisions)

Note: On April 22, 1988, EPA published a technical correction to the lists of hazardous wastes in 40 CFR 261.33(e) and (f) (Revision Checklist 46, 53 FR 13382). In that notice, however, the word "dust" was inadvertently omitted from the P015 listing for "beryllium dust" in the 261.33(e) list of hazardous wastes. In addition, it became apparent that the term "beryllim dust" is not used by the industry to describe this commerical chemical product; the actual term used by the industry is "beryllium powder". This technical correction adds "powder" to the P015 hazardous waste listing for "beryllium" and makes conforming changes to the list of hazardous constituents in Part 261 Appendix VIII and to Table 2 in § 268.42(a).

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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						
correct the P015 listing as shown below	261.33(e)					

Hazardous Waste No.	Chemical abstracts No.	Substance
* * *	* * *	* * *
P015	7440-41-7	Berryllium powder
* * *	* * *	* * *

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
APPENDIX VIII TO PART 261						
HAZARDOUS CONSTITUENTS						
correct the P015 listing as shown below	Appendix VIII					

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Printed: 12/21/94

RCRA REVISION CHECKLIST 134: Correction of Beryllium Powder (P015 Listing) (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.			
* * *	* * *	* * *	* *	*	*	*
Beryllium powder	Same	7440-41-7	P015			
* * *	* * *	* * *	* *	*	*	*
PART 268 - LAND DISPOSAL RESTRICTIONS						
SUBPART D - TREATMENT STANDARDS						
TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES						
change the P015 entry's waste description from "beryllium dust" to "beryllium powder"	268.42(a)/Table 2					[redacted]

Subpart ZZ—Wyoming

2. Section 52.2620 is amended by adding paragraph (c)(23) to read as follows:

§ 52.2620 Identification of plan.

* * * * *

(c) * * *

(23) On November 1, 1993, the Governor of Wyoming submitted a plan for the establishment and implementation of a Small Business Assistance Program to be incorporated into the Wyoming State Implementation Plan as required by section 507 of the Clean air Act.

(i) Incorporation by reference.

(A) November 1, 1993 letter from the Governor of Wyoming submitting a Small Business Assistance Program plan to EPA.

(B) The State of Wyoming plan for the establishment and implementation of a Small Business Assistance Program, adopted September 16, 1993 by the Wyoming Environmental Quality Council.

[FR Doc. 94–14686 Filed 6–17–94; 8:45 am]

BILLING CODE 6560–50–P

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40 CFR Parts 261, 268, and 302

[FRL–4999–1]

Hazardous Waste Management System; Correction of Listing of P015—Beryllium Powder

AGENCY: Environmental Protection Agency.

ACTION: Technical correction amendment.

SUMMARY: The Environmental Protection Agency today is correcting the listing for "beryllium" in the list of commercial chemical products that are hazardous wastes when discarded or intended to be discarded. The listing description is corrected to read "Beryllium powder." Conforming changes also are being made to the RCRA list of hazardous constituents, the RCRA land disposal restrictions technology-based treatment standards, and to the CERCLA list of hazardous substances.

EFFECTIVE DATE: The amendment is effective June 20, 1994.

ADDRESSES: The Office of Solid Waste (OSW) RCRA Docket is located at the following address: EPA RCRA Docket Clerk, room 2616 (5305), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

The docket 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 202–260–9327. The public may copy 100 pages from the docket at no charge; additional copies are $0.15 per page.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline at 1–800–424–9346. For technical information contact Wanda L. Levine, Office of Solid Waste (5304), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, 202–260–7458.

SUPPLEMENTARY INFORMATION: On April 22, 1988, EPA published a technical corrections notice to make a number of corrections to 40 CFR 261.33(e) and (f) and to appendix VIII of 40 CFR part 261 (53 FR 13382). In that notice, the word "dust" was inadvertently omitted from the 40 CFR 261.33(e) listing, "P015—Beryllium dust," which was the original listing promulgated on May 19, 1980. There have been a number of inquiries since the April 22, 1988 correction notice as to the intent of this listing, and EPA has responded in each case by explaining that the word "dust" was mistakenly omitted, but the intent of the listing (*i.e.*, to list as hazardous the commercial chemical product, beryllium dust, when discarded or intended to be discarded) has remained. In fact, the land disposal restrictions refer to P015 as "Beryllium dust."

In addition, the sole manufacturer of the commercial chemical product has indicated that "beryllium powder" is the actual term used to describe their product. The term dust is not used by industry to describe the commercial chemical product.

For the purpose of clarification, EPA is adding the word "powder" to the P015 listing description. Since this change is only a clarification, the scope of the P015 hazardous waste listing is neither increased, diminished or otherwise affected by this technical correction amendment.

In order to rectify this confusion in the regulated community, the Agency today is correcting the Code of Federal Regulations by adding the word "powder" to the P015 listing for beryllium. Conforming changes also are being made to the RCRA list of hazardous constituents, the RCRA land disposal restrictions technology-based treatment standards, and to the CERCLA list of hazardous substances.

Because this action is a technical correction, prior notice and opportunity for comment is unnecessary, and good cause exists for this change to take effect immediately (see 5 U.S.C. 553(b)). Accordingly, the Agency is not seeking any comments based on today's notice.

List of Subjects

40 CFR Part 261

Environmental protection, Hazardous wastes, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 268

Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 302

Air pollution control, Chemicals, Emergency Planning and Community Right-to-Know Act, Extremely hazardous substances, Hazardous chemicals, Hazardous materials, Hazardous materials transportation, Hazardous substances, Hazardous wastes, Intergovernmental relations, Natural resources, Pesticides and pests, Reporting and recordkeeping requirements, Superfund, Waste treatment and disposal, Water pollution control, Water supply.

Dated: June 8, 1994.

Elliott P. Laws,

Assistant Administrator, Office of Solid Waste and Emergency Response.

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

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

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

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6938.

§ 261.33 [Amended]

2. In § 261.33 (e), the listing for P015 is revised to read as follows:

Hazardous waste No.	Chemical abstracts No.	Substance
*	*	*
P015	7440–41–7	Beryllium powder
*	*	*

Appendix VIII [Amended]

3. In appendix VIII, the listing for Beryllium is revised to read as follows:

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
*	*	*	*
Beryllium powder.	Same	7440–41–7	P015
		*	*

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, 6924.

§ 268.42 [Amended]

2. In § 268.42 revise the "Wastes descriptions and/or treatment subcategory" entry for Waste Code P015 to read "Beryllium powder."

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. 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]

2. In § 302.4, in the table in paragraph (b), the listing for "Beryllium" is removed and under the column heading "Hazardous substances", "Beryllium dust" is revised to read "Beryllium powder".

Appendix A [Amended]

3. In appendix A the listing for 7440417 is revised to read "Beryllium powder".

[FR Doc. 94-14535 Filed 6-17-94; 8:45 am]
BILLING CODE 6560-50-M

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 73 and 74

[MM Docket No. 93-114, FCC 94-120]

Radio Broadcast Services; Low Power Television Service; Application Acceptance Standard; Four-Letter Call Signs

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission amended its rules governing the low power television (LPTV) service in three respects. First, the Commission relaxed its strict acceptance standard for new and major change applications. Second, the Commission expanded the waiver policy regarding terrain shielding. Third, the Commission will now permit LPTV operators to request four-letter call signs with the suffix "LP" rather than the current five-character call signs consisting of letters and numbers. The Commission declined to adopt a proposal to narrow the definition of what constitutes a major LPTV station modification, stating that this issue requires further consideration and will be resolved at a later date. A summary of the Notice of Proposed Rulemaking initiating this proceeding may be found at 58 FR 25,794 (April 28, 1993).

EFFECTIVE DATES: The revisions to §§ 73.3564 and 73.3591 relieve existing restrictions and as such, they are exempt from the effective date requirements of the Administrative Procedure Act, 5 U.S.C. 553(d)(1), and will become effective June 20, 1994. The revisions to § 73.3522 will become effective August 19, 1994. The revisions to §§ 73.3550, 74.780, 74.783 and to the Commission's terrain shielding policy in the LPTV service will become effective August 19, 1994.

FOR FURTHER INFORMATION CONTACT: Keith A. Larson, Mass Media Bureau, Video Services Division, Low Power Television Branch, (202) 632-3894.

SUPPLEMENTARY INFORMATION: The following is a synopsis of the Commission's First Report and Order, MM Docket No. 93-114, adopted May 19, 1994, and released June 2, 1994. The full text of this decision is available for inspection and copying during normal business hours in the FCC's Reference Center (room 239), 1919 M Street, NW., Washington, DC. The complete text of this decision may also be purchased from the Commission's copy contractors, International Transcription Service, Inc. (202) 857-3800, 2100 M Street, NW., Suite 140, Washington, DC 20037.

Synopsis of First Report and Order

Introduction

1. On April 22, 1993, the Commission released its *Notice of Proposed Rule Making* in MM Docket No. 93-114, 8 FCC Rcd 2770 (1993). In the *Notice*, the Commission proposed to amend the rules and policies governing the low power television (LPTV) service, which includes LPTV stations and television translator stations. Specifically, we proposed to modify our current standard for acceptance of applications and to expand our waiver policy regarding terrain shielding. We also proposed to permit LPTV operators to use four-letter call signs rather than the current five-character call signs consisting of letters and numbers. These proposals raised little disagreement among commenters and are adopted in this *First Report and Order*. In addition, the *Notice* proposed to narrow the definition of what constitutes a major LPTV station modification. That issue generated significantly more diverse comment and requires further consideration. It will be resolved at a later date so as not to delay implementation of the changes we adopt herein.

Application Acceptance Standards

2. In the *Notice*, the Commission noted that the volume of LPTV applications has decreased and the quality of those submissions has improved as a result of the strict standard requiring that an LPTV applicant be "complete and sufficient" (*i.e.*, "letter perfect") at the close of an LPTV filing window.[1] We pointed out that currently, applications that are not letter perfect are returned, forcing applicants to wait until the Commission opens a subsequent filing window to correct their submissions. *See* 47 CFR 73.3564(a)(2). The *Notice* concluded that the strict standard has achieved its purpose of encouraging applicants to submit complete and carefully prepared applications, so as to alleviate the LPTV application backlog with which the Commission was faced. We therefore proposed that applications be judged on a "substantially complete" basis similar to that used in processing full-power television applications, whereby applications are considered acceptance if they are not patently defective. As an alternative to the substantially complete standard, the *Notice* suggested a mid-level acceptance standard requiring the application to be more than substantially complete but less than letter perfect.

3. The commenters in this proceeding, who include LPTV licensees, consulting engineers, other broadcasters, law firms and educational institutions, overwhelmingly support adoption of a relaxed standard for acceptance of applications. They agree with the *Notice* that the letter perfect standard is no longer necessary due to the decreased volume of LPTV applications. They also assert that the letter perfect requirement unfairly forces LPTV applicants filing defective applications to wait to refile in the next filing window, which sometimes does not open for a year. Further, commenters assert that a relaxed standard is more appropriate in

[1] Applications for LPTV construction permits and major changes to existing LPTV facilities are accepted during finite filing windows by the Commission.

ATTACHMENT B

Updates to the State Authorization Manual (SAM)

Model Revision Attorney General's Statement

The following pages (numbered 9 through 67)
should replace pages 9 through 63 of
SAM Appendix E

MODEL REVISION ATTORNEY GENERAL'S STATEMENT FOR FINAL AUTHORIZATION FOR CHANGES TO THE FEDERAL RCRA PROGRAM FROM JANUARY 1983 THROUGH JUNE 1994

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 that 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, from June 13, 1991 to December 24, 1992, 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] and December 24, 1992 [57 FR 61492], Revision Checklists 91 and 120.

(23) Listing of seven wastes (K141, K142, K143, K144, K145, K147, and K148) generated during the production, recovery and refining of coke by-products produced from coal, 40 CFR 261.32, and Part 261 Appendix VII as amended August 18, 1992 [57 FR 37284], Revision Checklist 110.

(24) Listing of three wastes (K149, K150, and K151) from the production of chlorinated toluenes, 40 CFR 261.32 and Part 261 Appendix VII, as amended October 15, 1992 [57 FR 47376], Revision Checklist 115.

(25) [OPTIONAL: This is a reduced requirement.] Exceptions to listings of F032, F034, and F035 for wastewaters that have not come into contact with process contaminants, 40 CFR 261.31 as amended December 24, 1992 [57 FR 61492], Revision Checklist 120.

(26) [OPTIONAL: This is a reduced requirement.] Exception to listing of F032 for potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), and where the generator does not reserve or initiate the use of chlorophenolic formulations, 40 CFR 261.31 as amended December 24, 1992 [57 FR 61492], Revision Checklist 120.

(27) Listing of three chemicals from wood surface protection processes, 40 CFR 261 Appendix VIII, as amended January 4, 1994 [59 FR 458], Revision Checklist 128.

(28) Listing of Beryllium (P015) is amended to read "Beryllium powder," 40 CFR 261.33 and Part 261, Appendix VIII, as amended June 20, 1994 [59 FR 31551], Revision Checklist 134.

Federal Authority: RCRA §3001(b).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

F. State statutes and regulations incorporate the second 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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Checklists 74, 108 and 117B. 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), June 29, 1990 (55 FR 26986), June 1, 1992 (57 FR 23062), and July 10, 1992 (57 FR 30657).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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)(11) 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 Adoption and Effective Date

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 Adoption and Effective Date

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 Checklists 82 and 92.

Federal Authority: RCRA §3001; 40 CFR 261.4(a)(9) as amended December 6, 1990 (55 FR 50450) and July 1, 1991 (56 FR 30192).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Checklists 82 and 92.

Federal Authority: RCRA §3001; 40 CFR 261.35 as amended December 6, 1990 (55 FR 50450) and July 1, 1991 (56 FR 30192).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

U. State statutes and regulation 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 Adoption and Effective Date

Remarks of the Attorney General

V. [OPTIONAL: This is a reduced requirement.] State statutes and regulations which exclude from being a hazardous waste certain nonwastewater residues resulting from high temperature metals recovery of K061 provided the conditions in 261.3(c)(2)(ii)(C) are met as indicated in Revision Checklist 95.

Federal Authority: RCRA §§3001, 3004(d)-(k) and (m); 40 CFR 261.3(c)(2)(ii)(C) as amended August 19, 1991 (56 FR 41164).

Citation of Laws and Regulations: Date of Adoption and Effective Date

Remarks of the Attorney General

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
12	**SUBPART DD - CONTAINMENT BUILDINGS**							
	APPLICABILITY							
	applies to owners/operators storing or treating hazardous waste in units designed and operated under 264.1101; effective February 18, 1993, but may notify Regional Administrator of earlier time; not subject to definition of land disposal in RCRA 3004(k) provided unit:	109	264.1100					
	is a completely enclosed, self-supporting structure designed and constructed as specified	109	264.1100(a)					
	has a primary barrier designed to withstand movement of personnel, wastes and handling equipment within unit	109	264.1100(b)					
	if used to manage liquids:	109	264.1100(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
primary barrier designed and constructed to prevent migration of hazardous constituents into barrier	109	264.1100(c)(1)					
liquid collection system to minimize accumulation of liquid on primary barrier	109	264.1100(c)(2)					
secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified; variance under 264.1101(b)(4)	109	264.1100(c)(3)					
controls to prevent fugitive dust emissions to meet 264.1101(c)(1)(iv) standards	109	264.1100(d)					
designed and operated to ensure containment and prevent tracking of materials from unit by personnel or equipment	109	264.1100(e)					
DESIGN AND OPERATING STANDARDS							
all containment buildings must comply with following design standards:	109	264.1101(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
completely enclosed as specified	109	264.1101(a)(1)					
design and construction of floor, containment walls and secondary containment system; unit of sufficient structural strength to prevent collapse or failure; chemically compatible surfaces; standards for judging structural integrity requirements; when exception for light-weight doors and windows will apply:	109	264.1101(a)(2)					
provide effective barrier against fugitive dust emissions under 264.1101(c)(1)(iv)	109	264.1101(a)(2)(i)					
unit designed and operated so that wastes do not contact openings	109	264.1101(a)(2)(ii)					
no placement of incompatible wastes or treatment reagents that could cause unit or secondary containment system to leak, corrode or otherwise fail	109	264.1101(a)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
must have primary barrier designed to withstand movement of personnel, waste and handling equipment in unit during unit operating life, as appropriate for waste characteristics	109	264.1101(a)(4)					
requirements for hazardous waste containing free liquids or treated with free liquids:	109	264.1101(b)					
primary barrier to prevent migration of hazardous constituents into the barrier	109	264.1101(b)(1)					
liquid collection and removal system to minimize accumulation of liquid on primary barrier:	109	264.1101(b)(2)					
primary barrier sloped to drain liquids to collection system	109	264.1101(b)(2)(i)					
liquids and waste collected and removed to minimize hydraulic head on containment system at earliest practicable time	109	264.1101(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified	109	264.1101(b)(3)					
what must be installed at a minimum to satisfy leak detection component of secondary containment system	109	264.1101(b)(3)(i)					
constructed with 1% or greater bottom slope	109	264.1101(b)(3)(i)(A)					
granular, synthetic, or geonet drainage materials as specified	109	264.1101(b)(3)(i)(B)					
if treatment conducted in building, treatment area designed to prevent releases to other portions of building	109	264.1101(b)(3)(ii)					
secondary containment construction materials specifications; requirements for use of containment building as tank secondary containment system	109	264.1101(b)(3)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	for existing units other than 90-day generator units, Regional Administrator delay of secondary containment requirement if demonstrated that unit substantially meets Subpart DD standards; for demonstration, owner/operator must:	109	264.1101(b)(4)					
13	provide written notice by February 18, 1993; what notice must contain	109	264.1101(b)(4)(i)					
	respond to Regional Administrator comments within 30 days	109	264.1101(b)(4)(ii)					
	if approved, fulfill terms of revised plans	109	264.1101(b)(4)(iii)					
	owners and operators of all containment buildings must:	109	264.1101(c)					
	use controls and practices to ensure containment of hazardous waste within unit; at a minimum:	109	264.1101(c)(1)					
	maintain primary barrier as specified	109	264.1101(c)(1)(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
maintain level of stored/treated hazardous waste as specified	109	264.1101(c)(1) (ii)					
take measures to prevent tracking of hazardous waste out of unit; equipment decontamination area; rinsate collection and management	109	264.1101(c)(1) (iii)					
take measures to control fugitive dust emissions; maintain particulate collection devices as specified; when "no visible emissions" must be maintained	109	264.1101(c)(1) (iv)					
certification by qualified registered professional engineer; for units in operation prior to February 18, 1993, certification placed in operating record or on-site files no later than 60 days after date of initial operation; after February 18, 1993, PE certification required prior to operation of unit	109	264.1101(c)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	prompt repairs of unit throughout active life as specified, according to the following procedures:	109	264.1101(c)(3)					
14	detection of condition that has led to a release; leakage from primary barrier; owner or operator must:	109	264.1101(c)(3)(i)					
	enter record of discovery in facility operating record	109	264.1101(c)(3)(i)(A)					
	immediately remove portion of containment building affected by the condition from service	109	264.1101(c)(3)(i)(B)					
	determine steps to be taken for repair, remove leakage from secondary collection system and establish schedule for cleanup and repairs	109	264.1101(c)(3)(i)(C)					
	within 7 days, notify Regional Administrator of condition; within 14 working days, provide written notice to Regional Administrator; what written notice must include	109	264.1101(c)(3)(i)(D)					

W. [OPTIONAL: This is a reduced requirement.] State statutes and regulations which exclude from being a solid waste, nonwastewater splash condenser dross residue from the treatment of K061 in high temperature metals recovery units provided the requirements of 261.4(a)(11) are met as indicated in Revision Checklist 95.

Federal Authority: RCRA §§3001, 3004(d)-(k) and (m); 40 CFR 261.4(a)(11) as amended August 19, 1991 (56 FR 41164).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

X. [OPTIONAL: This is a reduced requirement.] State statutes and regulations exempt, from the definition of hazardous, used oil filters meeting the 40 CFR 261.4(b)(15) criteria as indicated in Revision Checklists 104 and 107.

Federal Authority: RCRA §§1004, 1006, 2002, 3001 and 3014; 40 CFR 261.4(b)(15) as amended May 20, 1992 (57 FR 21524) and July 1, 1992 (57 FR 29220).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

Y. [OPTIONAL: This is a reduced requirement.] State statutes and regulations exclude from being a solid waste K060, K087, K141, K142, K143, K144, K145, K147 and K148, and those coke by-product residues that are hazardous only because they exhibit the Toxicity Characteristic when, subsequent to generation, these wastes are recycled by being returned to coke ovens, to the tar recovery process as a feedstock to produce coal tar, or mixed with coal tar as specified in Revision Checklists 105 and 110.

Federal Authority: RCRA §§3001(e)(2) and (h); 40 CFR 261.4(a)(10) as amended June 22, 1992 (57 FR 27880) and August 18, 1992 (57 FR 37284).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

Z. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain reissued mixture and derived-from rules as indicated in Revision Checklist 117 A.

Federal Authority: RCRA §§1006, 2002(a), and 3001-3005; 40 CFR 261.3, as amended March 3, 1992 (57 FR 7628), June 1, 1992 (57 FR 23062) and October 30, 1992 (57 FR 49278).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

AA. [OPTIONAL: This is a reduced requirement.] State statutes and regulations do not require the use of the spike recovery correction as part of the Toxicity Characteristic Leaching Procedure as indicated in Revision Checklist 119.

Federal Authority: RCRA §§1006, 2002, 3001, 3002 and 3006; 40 CFR 261, Appendix II, as amended November 24, 1992 (57 FR 55114) and February 2, 1993 (58 FR 6854).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

BB. State statutes and regulations replace the current Second Edition (including Updates I and II) of the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, by incorporating by reference the Third Edition (and its first update) of this test methods manual. Throughout the State's code, references to test methods directly refer to the methods as they are found in SW-846, as indicated in Revision Checklist 126.

Federal Authority: RCRA §§1006; 2002, 3001, 3002, 3004, 3005, 3006, 3010, and 3014; 40 CFR 260.11(a); 260.22(d)(1)(i); 261.22(a)(1)&(2); 261.24(a); 261 Appendices II, III, and X; 264.190(a); 264.314(c); 265.190(a); 265.314(d); 268.7(a); 268.40(a); 268.41(a); 268 Appendices I & IX; 270.6(a); 270.19(c)(1)(iii)&(iv); 270.62(b)(2)(i)(C)&(D); and 270.66(c)(2)(i)&(ii) as amended August 31, 1993 (58 FR 46040).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

CC. State statutes and regulations incorporate by reference "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, the Third Edition (November 1986), as amended by Updates I, II and IIA, as indicated in Revision Checklists 128 and 132.

Federal Authority: RCRA §§2002(a), 3001(b), and 3001(e)(1); 40 CFR 260.11(a) as amended January 4, 1994 (59 FR 458) and June 2, 1994 (59 FR 28484).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

DD. [OPTIONAL: This is a reduced requirement.] State statutes and regulations increase the quantity and time limits for contaminated media used in treatability studies, as indicated in Revision Checklist 129.

Federal Authority: RCRA §3001; 40 CFR 261.4(e)(2)(i)&(ii), (e)(3), (f)(3), (f)(4), and (f)(5) as amended February 18, 1994 (59 FR 8362).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

B. State statutes and regulations include as solid waste secondary materials, 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 Checklists 85, 96, and 111.

Federal Authority: RCRA §3001; 40 CFR Part 261.2(d)(2) and (e)(2)(iv) as amended February 21, 1991 (56 FR 7134), August 27, 1991 (56 FR 42504) and August 25, 1992 (57 FR 38558).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

F. State statutes and regulations incorporate updates to the recordkeeping instructions so that the codes used by hazardous waste treatment, storage and disposal facilities to maintain records on-site match the codes used by these facilities on the Part A Permit Application Form as indicated on Revision Checklist 131. The new handling codes for Miscellaneous Units and Boilers and Industrial Furnaces, addressed by Checklist 131, are also incorporated into the statutes and regulations.

Federal Authority: RCRA §§ 3004 and 3005; 40 CFR 264 Appendix I, 265 Appendix I as amended March 24, 1994 (59 FR 13891).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

B. State statutes and regulations prohibit the disposal, in hazardous waste landfills, of liquids that have been sorbed in materials that are biodegradable or that release liquids during routine landfill operations, as indicated in Revision Checklist 118.

Federal Authority: RCRA §3004(c); 40 CFR 260.10, 264.13, 264.314, 264.316, 265.13, 265.314, and 265.316 as amended November 18, 1992 (57 FR 54452).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

B. [OPTIONAL: This is a reduced requirement.] State statutes and regulations may allow variances from the ground-water monitoring requirements as provided in §3004(p). However, those variances must be restricted as provided in RCRA §3004(p) as indicated in Revision Checklist 17 I.

Federal Authority: RCRA §3004(p); 40 CFR 264.90(b) as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

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[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.

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 Adoption and Effective Date

Remarks of the Attorney General

E. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow owners and operators to demonstrate that an alternate hydraulically downgradient monitoring well location will meet 40 CFR 265.91(a)(3)(i)-(iii) criteria as specified in Revision Checklist 99.

Federal Authority: RCRA §§1006, 2002(a), 3001, 3004, 3005 and 3015; 40 CFR 264.10, and 264.91(a)(3) as amended December 23, 1991 (56 FR 66365).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

G. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain remediation waste management provisions for corrective action management units (CAMUs) and temporary units (TUs) at RCRA facilities, as indicated in Revision Checklist 121.

Federal Authority: RCRA §§1006, 2002(a), 3004(u), 3004(v), 3005(c), 3007, and 3008(h); 40 CFR 260.10, 264.3, 264.101(b), 264.552, 264.553, 265.1(b), 268.2(c), 270.2 and Appendix I to 270.42, as amended February 16, 1993 (58 FR 8658).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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, 48, and 97 (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), July 19, 1988 (53 FR 27164), and September 4, 1991 (56 FR 45704).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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.

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 Adoption and Effective Date

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.

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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); 40 CFR 264.18 and 265.18 as amended July 15, 1985 (50 FR 28702).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Checklists 82, 92 and 120.

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), July 1, 1991 (56 FR 30192), and December 24, 1992 (57 FR 61492).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

M. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain an administrative stay, from June 13, 1991 to December 24, 1992, for the requirement that new drip pads be impermeable as indicated in Revision Checklists 91 and 120.

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) and December 24, 1992 (57 FR 61492).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

N. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain an administrative stay, until October 30, 1992, for the requirement that existing drip pads be impermeable as indicated in Revision Checklist 101.

Federal Authority: 5 U.S.C. 705; RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 264.573(a)(4), and 265.443(a)(4) as amended February 18, 1992 (57 FR 5859).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

O. [OPTIONAL: This is a reduced requirement.] State statutes and regulations allow the use of additional financial instruments (letter of credit, a surety bond, a guarantee, trust fund, and purchase of insurance by other firms) to meet the liability coverage requirements as specified in Revision Checklist 113.

Federal Authority: RCRA §§2002(a), 3004 and 3005; 40 CFR 264.141, 264.147, 264.151, 265.141, 265.147 and 265.151 as amended September 1, 1988 (53 FR 33938), July 1, 1991 (56 FR 30200), and September 16, 1992 (57 FR 42832).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

P. [OPTIONAL: This is a reduced requirement.] State statutes and regulations include conforming changes to 264.147(f)(6) and 265.147(f)(6) to expand the instruments available to owners and operators that no longer meet the requirements of the financial test for liability coverage as indicated in Revision Checklist 113.

Federal Authority: RCRA §3004; 40 CFR 264.147(f)(6) and 265.147(f)(6) as amended September 16, 1992 (57 FR 42832).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

Q. State statutes and regulations require reporting of third-party claims against an owner's or operator's liability coverage as indicated by Revision Checklist 113.

Federal Authority: RCRA §§2002(a), 3004 and 3005; 40 CFR 264.147(a)(7)&(b)(7) and 265.147(a)(7)&(b)(7) as amended September 1, 1988 (53 FR 33938) and September 16, 1992 (57 FR 42832)

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

R. State statutes and regulations require owners or operators of new drip pads to have either 1) a surface protection system meeting the hydraulic conductivity, material chemical compatibility, and assessment requirements of 264.573(a)(4) or 265.443(a)(4), or 2) a liner and leak detection system below the pad as well as a leak collection system as specified in Revision Checklist 120.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 264.572, 265.573, 265.442 and 265.443 as amended December 24, 1992 (57 FR 61492).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

S. State statutes and regulations require owners or operators of existing drip pads to meet the hydraulic conductivity, material chemical compatibility, and assessment requirements of 264.573(a)(4) or 265.443(a)(4), as specified in Revision Checklist 120.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 264.571, 264.573, 265.441 and 265.443 as amended December 24, 1992 (57 FR 61492).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

T. State statutes and regulations contain requirements for the management of infrequent and incidental drippage in storage yards as indicated in Revision Checklist 120.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 264.570(c) and 265.440(c) as amended December 24, 1992 (57 FR 61492).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

U. [OPTIONAL: This is a reduced requirement.] State statutes and regulations indicate that the "Uniform Customs and Practice for Documentary Credits" is a copyrighted document of the International Chamber of Commerce as indicated in Revision Checklist 133.

Federal Authority: RCRA 2002(a), 3004, 3005, and 3006; 40 CFR 264.151(d) & (k) as amended June 10, 1994 (59 FR 29958).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

W. State statutes and regulations contain Special Part B information requirements for drip pads as indicated in Revision Checklists 82 and 92.

Federal Authority: RCRA §§2002(a) and 3001(b)&(e)(l); 40 CFR 270.22 as amended December 6, 1990 (55 FR 50450) and July 1, 1991 (56 FR 30192).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Checklists 85 and 94.

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) and July 17, 1991 (56 FR 32688).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

Y. State statutes and regulations include specific Part B information requirements for surface impoundments, waste piles and landfills regarding liners; leachate collection, detection, and removal systems; and the construction quality assurance program requirements as indicated in Revision Checklist 100.

Federal Authority: RCRA §§3004, 3005, 3006 and 3015; 40 CFR 270.4(a), 270.17(b)&(c), 270.18(c)&(d), and 270.21(b)&(c) as amended January 29, 1992 (57 FR 3462).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

C. State statutes and regulations require owners and operators of new units, expansions, and replacement units at surface impoundments, waste piles, and landfills to meet the monitoring and inspection Construction Quality Assurance (CQA) program, double liner, leachate collection and removal systems, leak detection systems, action leakage, response action plan and closure/post-closure care requirements as indicated in Revision Checklist 100.

Federal Authority: RCRA §§3004, 3005, 3006 and 3015; 40 CFR 264.19, 264.221-264.223, 264.226, 264.228, 264.251-264.254, 264.301-264.304, 264.310, 265.19, 265.221-265.223, 265.226-265.228, 265.254, 265.255, 265.259, 265.260, 265.301-265.304 and 265.310 as amended January 29, 1992 (57 FR 3462).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

XX. STANDARDS FOR THE MANAGEMENT OF WASTE FUEL AND USED OIL AND FOR THE BURNING OF THESE MATERIALS 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 Adoption and Effective Date

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 Adoption and Effective Date

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 Checklists 85, 94, 96, 111, and 114. Hazardous waste storage units at regulated burners are subject to the 40 CFR Part 264 requirements.

Federal Authority: RCRA §§1006, 2002, 3001 through 3007, 3010 and 7004; 40 CFR 260.10, 260.11, 260.20, 261.3, 261.6, 264.1, 264.112, 264.340, 265.1, 265.112, 265.113, 265.340, 265.370, Part 266 Subpart H, and Part 266 Appendices I-X as amended February 21, 1991 (56 FR 7134), July 17, 1991 (56 FR 32688), August 27, 1991 (56 FR 42504), August 25, 1992 (57 FR 38558), and September 30, 1992 (57 FR 44999).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

D. [OPTIONAL: This is a reduced requirement.] State statutes and regulations contain an administrative stay until June 22, 1992, of the permitting standards for boilers and industrial furnaces as they apply to coke ovens burning certain hazardous wastes from the coke by-products recovery process as indicated in Revision Checklists 98 and 105.

Federal Authority: 5 U.S.C. 705; RCRA §§2002(a) and 3001(b)&(e)(1); 40 CFR 266.100(a) as amended September 5, 1991 (56 FR 43874) and June 22, 1992 (57 FR 27880).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

E. State statutes and regulations provide used oil management standards for used oil generators, transporters, processors, re-refiners, burners, and marketers as indicated in Revision Checklists 112, 122 and 130.

Federal Authority: Federal Authority: RCRA §§1004, 1006, 2002, 3001, 3014 and 7004; 40 CFR Parts 260, 261, 266 and 279 as amended September 10, 1992 (57 FR 41566), May 3, 1993 (58 FR 26420) and March 4, 1994 (58 FR 10550).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

F. State statutes and regulations are amended such that the procedures for conducting air quality modeling and screening for boilers and industrial furnaces burning hazardous wastes reference the method recommended in Appendix W of 40 CFR Part 51. State regulations and statutes also incorporate by reference the October 1992 edition of "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" as indicated in Revision Checklist 125.

Federal Authority: §§1006, 2002, 3001 through 3007, 3010 and 7004; 40 CFR 260.11(a), 266.104(e)(3), 266.106(h) and Part 266 Appendix X, as amended July 20, 1993 (58 FR 38816).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

G. [OPTIONAL: *This is a reduced requirement.*] State statutes and regulations contain an administrative stay, until further administrative action is taken, that replaces the current limits needed to qualify for the Bevill exemption under test number 2 with the land disposal restriction limits for underlying constituents as indicated in Revision Checklist 127.

Federal Authority: RCRA §§1006, 2002(a), 3004, and 3014; 40 CFR 266.112(b)(2)(i) and Part 266 Appendix VII, as amended November 9, 1993 (58 FR 59598).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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 Adoption and Effective Date

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, 83 and 102.

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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), January 31, 1991 (56 FR 3864) and March 6, 1992 (57 FR 8086).

Citation of Laws and Regulations; Date of Adoption and Effective Date

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 Adoption and Effective Date

Remarks of the Attorney General

H. State statutes and regulations contain treatment standards under the land disposal restrictions program for K061 as indicated in Revision Checklist 95.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 268.41 and 268.42 as amended August 19, 1991 (56 FR 41164).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

I. State statutes and regulations provide an extension of the land disposal restriction effective date for hazardous waste debris until May 8, 1994, as indicated in Revision Checklists 103, 116, and 123.

Federal Authority: RCRA §3004(h)(3); 40 CFR 268.35(c)-(e) as amended May 15, 1992 (57 FR 20766); October 20, 1992 (57 FR 47772); and May 14, 1993 (58 FR 28506).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

J. State statutes and regulations provide an extension of the land disposal restriction effective date, until May 8, 1993, for D008 lead-bearing hazardous materials stored

before secondary smelting, provided the owner/operator meets the requirements specified at 40 CFR 268.35(k), as indicated in Revision Checklist 106.

Federal Authority: RCRA §3004(h)(3); 40 CFR 268.35(c) and (k) as amended June 26, 1992 (57 FR 28628).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

K. State statutes and regulations provide land disposal treatment standards for certain hazardous wastes listed after November 8, 1984 as well as treatment standards for debris contaminated with listed hazardous wastes or debris that exhibit certain hazardous waste characteristics as indicated in Revision Checklist 109.

Federal Authority: RCRA §§3004(d)-(k) and (m); 40 CFR 261.3(f), 268.2, 268.5, 268.7, 268.14, 268.36, 268.40, 268.41, 268.42, 268.43, 268.45, 270.13 and 270.14, as amended August 18, 1992 (57 FR 37194).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

L. State statutes and regulations include revisions to existing land disposal restrictions including revision of F001-F005 spent solvents treatment standards, conversion of wastewater standards for twenty-four "F" and "K" water codes based on scrubber standards; revisions to K061, K062 and F006 treatment standards; change of recordkeeping requirements; and clarification of rules related to wastes listed because they exhibit a characteristic as indicated in Revision Checklist 109.

Federal Authority: RCRA §§3004(d)-(k) and (m); 40 CFR 261.3(a)&(c), 268.9, 268.41, 268.42, 268.43 and 268.46, as amended August 18, 1992 (57 FR 37194).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

M. State statutes and regulations allow storage and treatment in containment buildings as indicated in Revision Checklist 109.

Federal Authority: RCRA §§3004(d)-(k) and (m); 40 CFR 260.10, 262.34, 264.110, 264.111, 264.112, 264.140, 264.142, 264 Subpart DD, 265.110, 265.111, 265.112, 265.140, 265.142, 265.221, 265 Subpart DD, 268.50, 270.42 and 270.72, as amended August 18, 1992 (57 FR 37194).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

N. State statutes and regulations provide a case-by-case extension of the land disposal effective date until May 8, 1994 for Third Third hazardous soils whose best demonstrated available technology (BDAT) was incineration, retorting or vitrification, as well as for Third Third soils contaminated with radioactive mixed waste as indicated in Revision Checklists 116 and 123.

Federal Authority: RCRA §3004(h)(3); 40 CFR 268.35(c)-(e) as amended October 20, 1992 (57 FR 47772) and May 14, 1993 (57 FR 28506).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

O. State statutes and regulations include land disposal restrictions and treatment standards for certain ignitable and corrosive characteristic wastes whose treatment standards were vacated, as indicated in Revision Checklist 124.

Federal Authority: RCRA §3004(d),(e)&(g); 40 CFR 268.37 as amended on May 24, 1993 (58 FR 29860).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

P. State statutes and regulations include a revision to P015 listing in the land disposal restrictions technology-based treatment standards as indicated on Revision Checklist 134.

Federal Authority: RCRA §3004(d)-(k) and (m); 40 CFR 268.42(a)/Table 2, as amended June 20, 1994 (59 FR 31551).

Citation of Laws and Regulations; Date of Adoption and Effective Date

Remarks of the Attorney General

XXII. MEMORANDUM OF AGREEMENT (MOA)

[If the State uses the MOA to satisfy Federal procedural requirements, the Attorney General must certify the following:

(1) The State has the authority to enter into the agreement,

(2) The State has the authority to carry out the agreement, and

(3) No applicable State statute (including the State Administrative Procedure Act) requires that the procedure be promulgated as a rule in order to be binding.]

Seal of Office

_____
Signature

_____
Name (Type or Print)

_____
Title

_____
Date

I. Index to the checklist entries found in the Model Revision Attorney General's Statement

Revision checklist number/name		Subsections pertaining to checklist
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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
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15.	Interim Status Standards for Treatment, Storage, and Disposal Facilities	XV E
16.	Paint Filter Test	VI A
17 A.	Small Quantity Generators (Superceded: See Checklist 23)	I B
17 B.	Delisting	I C
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)

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

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17 K. Fuel Labeling	XII A(2)
17 L. Corrective Action	XIII A(1),(2),(3)&(4); XVI H
17 M. Pre-construction Ban	XVI A
17 N. Permit Life	XVI B
17 O. Omnibus Provision	XVI C
17 P. Interim Status	XVI D(1),(2),(3)&(4); XVI E & F
17 Q. Research & Development Permits	XVI G
17 R. Hazardous Waste Exports	XIV A
17 S. Exposure Information	XVIII A
18. Listing of TDI, TDA, DNT	I A(3)
19. Burning of Waste Fuel and Used Oil	XX A
20. Spent Solvents Listing	I A(4)
21. EDB Waste Listing	I A(5)
22. Four Spent Solvents Listing	I A(6)
23. Small Quantity Generators	I B
24. Financial Responsibility: Settlement Agreement	XV F
25. Paint Filter Test - Correction	VI A; 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;	

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

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39. California List Waste Restrictions	XXI A; 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	See Revision Checklist 113

I. Index to the checklist entries found in the Model Revision Attorney General's Statement (cont'd)

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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)

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 B; 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)

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
92.	Wood Preserving Corrections	I Q & R; XV L; XVI W
93.	Liability Requirements; Technical Amendments	See Revision Checklist 113
94.	Boilers and Industrial Furnaces Correction/Technical Amendment I	XVI X; XX C
95.	Land Disposal Restrictions for Electric Arc Furnace Dust (K061)	I V & W; XXI H
96.	Boilers and Industrial Furnaces Technical Amendments II	II B; XX C
97.	Exports of Hazardous Waste; Technical Correction	XIV A
98.	Administrative Stay for Certain Coke Ovens	XX D
99.	Amendments to Interim Status Standards for Downgradient Ground-Water Monitoring Well Locations	XI E
100.	Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units	XVI Y; XVII C
101.	Administrative Stay for the Requirement that Existing Drip Pads be Impermeable	XV N
102.	Second Correction to the Third Third Land Disposal Restrictions	XXI F
103.	Hazardous Debris Case-by-Case Capacity Variance	XXI I
104.	Used Oil Filter Exclusion	I X
105.	Recycled Coke By-Product Exclusion	I Y; XX D
106.	Lead-Bearing Hazardous Materials Case-by-Case Capacity	XXI J

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
107. Used Oil Filter Exclusion; Technical Corrections	I X
108. Toxicity Characteristic Revisions; Technical Corrections	I L
109. Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris	XXI K, L & M
110. Coke By-Products Listings	I A(23); I Y
111. Burning of Hazardous Waste in Boilers and Industrial Furnaces; Technical Amendment III	II B; XX C
112. Recycled Used Oil Management Standards	XX E
113. Consolidated Liability Requirements	XV O, P & Q
114. Burning of Hazardous Waste in Boilers and Industrial Furnaces; Technical Amendment IV	XX C
115. Chlorinated Toluenes Production Waste Listing	I A(24)
116. Hazardous Soil Case-by-Case Capacity Variance	XXI I & N
117A. Mixture and Derived-From Rules Reissuance	I Z
117B. Toxicity Characteristic Amendment	I L
118. Liquids in Landfills II	X B
119. Toxicity Characteristic Revision; TCLP Correction	I AA
120. Wood Preserving; Amendments to Listings and Technical Requirements	I A(22), (25) & (26); XV L, M, R, S & T
121. Corrective Action Management Units and Temporary Units	XIII G
122. Recycled Used Oil Management Standards; Technical Amendments and Corrections	XX E
123. Land Disposal Restrictions; Renewal of the Hazardous Waste Debris Case-by-Case Capacity Variance	XXI I & N
124. Land Disposal Restrictions for Ignitable	

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
and Corrosive Characteristic Wastes Whose Treatment Standards Were Vacated	XXI O
125. Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations	XX F
126. Testing and Monitoring Activities	I BB
127. Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues	XX G
128. Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection	I A(27);I CC
129. Revision of Conditional Exemption for Small Scale Treatability Studies	I DD
130. Recycled Used Oil Management Standards; Technical Amendments and Corrections II	XX E
131. Recordkeeping Instructions; Technical Amendment	VII F
132. Wood Surface Protection; Correction	I CC
133. Letter of Credit Revision	XV U
134. Correction of Beryllium Powder (P015) Listing	I A(28);XXI P

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 a State adopts an analog to 40 CFR 268.4, per the Land Disposal Restriction checklists.

Tables G-1 and G-2

The following pages (numbered 4 through 31)
should replace pages 4 through 30 of
SAM Appendix G

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER
Through June 30, 1994

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
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

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
		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
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	9/2[illegible]

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
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

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
		See Revision Checklist 113, Consolidated Liability Requirements, in RCRA Cluster III (formerly withheld Revision Checklist 51)	53 FR 33938	9/1/88
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

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
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

Continued...

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
	(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
	(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

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
		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 1978	1/14/85
		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
		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

Continued...

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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		
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

Continued...

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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 2702	1/21/86
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
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

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
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		

Continued...

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
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
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
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

Continued...

TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
77	77	HSWA Codification Rule; Double Liners; Correction	55 FR 19262	5/9/90
78H	78[3/]	Land Disposal Restrictions for Third Third Scheduled Wastes (See Revision Checklist 78 in Non-HSWA Cluster VI)	55 FR 22520	6/1/90
66.1	(66)	[Land Disposal Restrictions; Correction (Included on Revision Checklist 66 in HSWA Cluster II)]	55 FR 23935	6/13/90
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	1/31/91
80.1	(80)	[Toxicity Characteristic; Hydrocarbon Recovery Operations (Included on Revision Checklist 80 in RCRA Cluster I)]	56 FR 3978	2/01/91

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
84	†84	Toxicity Characteristic; Chlorofluorocarbon Refrigerants (HSWA)	56 FR 5910	2/13/91
85	85	Burning of Hazardous Waste in Boilers and Industrial Furnaces (HSWA/Non-HSWA)	56 FR 7134	2/21/91
86	86[8/]	Removal of Strontium Sulfide From the List of Hazardous Waste; Technical Amendment (Non-HSWA)	56 FR 7567	2/25/91
80.2	(80)	[Toxicity Characteristic; Hydrocarbon Recovery Operations (See Revision Checklist 80 in RCRA Cluster I)]	56 FR 13406	4/02/91
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	4/26/91
88	†88	Administrative Stay for K069 Listing (Non-HSWA)	56 FR 19951	5/01/91
89	†89	Revision to F037 and F038 Listings (See Revision Checklist 81 in RCRA Cluster I) (HSWA)	56 FR 21955	5/13/91
90	90	Mining Exclusion III (Non-HSWA)	56 FR 27300	6/13/91
91	†91	Administrative Stay for F032, F034, and F035 Listings (HSWA/Non-HSWA)	56 FR 27332	6/13/91
RCRA Cluster II (July 1, 1991 - June 30, 1992; Due Date - July 1, 1993[1/])				
92	92	Wood Preserving Listings; Technical Corrections (HSWA/Non-HSWA)	56 FR 30192	7/01/91
		See Revision Checklist 113, Consolidated Liability Requirements, in RCRA Cluster III (formerly withheld Revision Checklist 93)	56 FR 30200	7/01/91
94	94	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Corrections and Technical Amendments I (HSWA/Non-HSWA)	56 FR 32688	7/17/91
95	95	Land Disposal Restrictions for Electric Arc Furnace Dust (K061) (HSWA)	56 FR 41164	8/19/91

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
96	96	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Technical Amendments II (HSWA/Non-HSWA)	56 FR 42504	8/27/91
97	97	Exports of Hazardous Waste; Technical Correction (HSWA)	56 FR 43704	9/04/91
98	†98	Coke Ovens Administrative Stay (HSWA)	56 FR 43874	9/05/91
99	†99	Amendments to Interim Status Standards for Downgradient Ground-Water Monitoring Well Locations (Non-HSWA)	56 FR 66365	12/23/91
100	100	Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units (HSWA/Non-HSWA)	57 FR 3462	1/29/92
101	†101	Administrative Stay for the Requirement That Existing Drip Pads be Impermeable (HSWA/Non-HSWA)	57 FR 5859	2/18/92
102	102	Second Correction to the Third Third Land Disposal Restrictions (HSWA)	57 FR 8086	3/06
103	103	Hazardous Debris Case-by-Case Capacity Variance (HSWA)	57 FR 20766	5/15/92
104	†104	Oil Filter Exclusion (HSWA)	57 FR 21524	5/20/92
105	†105	Recycled Coke By-Product Exclusion (HSWA)	57 FR 27880	6/22/92
106	106	Lead-Bearing Hazardous Materials Case-by-Case Capacity Variance (HSWA)	57 FR 28628	6/26/92
		RCRA Cluster III (July 1, 1992 - June 30, 1993; Due Date - July 1, 1994[2/])		
107	†107	Used Oil Filter Exclusion Corrections (HSWA)	57 FR 29220	7/01/92
108	108	Toxicity Characteristic Revisions (HSWA)	57 FR 30657	7/10/92
109	109	Land Disposal Restrictions for Newly Listed Waste and Hazardous Debris (HSWA)	57 FR 37194	8/18/92
110	110	Coke-By-Products Listings (HSWA)	57 FR 37284	8/18/92

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
111	111	Boilers and Industrial Furnaces; Technical Amendment III (HSWA/Non-HSWA)	57 FR 38558	8/25/92
112	112	Recycled Used Oil Management Standards (HSWA/Non-HSWA)	57 FR 41566	9/10/92
	113	Consolidated Liability Requirements:		
113	(113)	Financial Responsibility for Third-Party Liability, Closure, and Post-Closure (Non-HSWA)	57 FR 42832	9/16/92
113.1	(113)	Liability Coverage (Non-HSWA) (formerly withheld Revision Checklist 51)	53 FR 33938	9/1/88
113.2	(113)	Liability Requirements; Technical Amendment (Non-HSWA) (formerly withheld Revision Checklist 93)	56 FR 30200	7/1/91
114	114	Boilers and Industrial Furnaces; Technical Amendment IV (HSWA/Non-HSWA)	57 FR 44999	9/30/92
115	115	Chlorinated Toluenes Production Waste Listing (HSWA)	57 FR 47376	10/15/92
116	116	Hazardous Soil Case-by-Case Capacity Variance (HSWA)	57 FR 47772	10/20/92
	†117 A	Reissuance of the "Mixture" and "Derived-From" Rules (Non-HSWA/HSWA)		
117A	(117 A)	"Mixture" and "Derived-From" Rules; Response to Court Remand	57 FR 7628	3/3/92
117A.1	(117 A)	"Mixture" and "Derived-From" Rules; Technical Correction	57 FR 23062	6/1/92
117A.2	(117 A)	"Mixture" and "Derived-From" Rules; Final Rule	57 FR 49278	10/20/92
117B	117B	Toxicity Characteristic Amendment (HSWA)	57 FR 23062	6/1/92

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
118	118	Liquids in Landfills II (HSWA)	57 FR 54452	11/18/92
119	†119	Toxicity Characteristic Revision; TCLP Correction (HSWA)	57 FR 55114	11/24/92
120	120	Wood Preserving; Amendments to Listings and Technical Requirements (HSWA/Non-HSWA)	57 FR 61492	12/24/92
119.1	†(119)[11/]	[Toxicity Characteristic Revision; TCLP Correction (included on Revision Checklist 119 in RCRA Cluster III)]	58 FR 6854	2/2/93
121	†121	Corrective Action Management Units and Temporary Units (HSWA)	58 FR 8658	2/16/93
122	122	Recycled Used Oil Management Standards; Technical Amendments and Corrections (HSWA/Non-HSWA)	58 FR 26420	5/3/93
123	123	Land Disposal Restrictions; Renewal of the Hazardous Waste Debris Case-by-Case Capacity Variance (HSWA)	58 FR 28506	5/14/93
124	124	Land Disposal Restrictions for Ignitable and Corrosive Characteristic Wastes Whose Treatment Standards Were Vacated (HSWA)	58 FR 29860	5/24/93
122.1	(122)	[Recycled Used Oil Management Standards; Correction (Included on Revision Checklist 122 in RCRA Cluster III)	58 FR 33341	6/17/93
		RCRA Cluster IV (July 1, 1993 - June 30, 1994; Due Date - July 1, 1995[2/])		
125	125	Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations (HSWA/Non-HSWA)	58 FR 38816	7/20/93
126	126	Testing and Monitoring Activities (HSWA/Non-HSWA)	58 FR 46040	8/31/93
†127	127	Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues (HSWA)	58 FR 59598	11/9/93

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

StATS[1/] Rule Code	Revision Checklist Number	Federal Requirement	HSWA or FR Reference	Promulgation or HSWA Date
128	128	Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection (Non-HSWA)	59 FR 458	1/4/94
†129	129	Revision of Conditional Exemption for Small Scale Treatability Studies (Non-HSWA)	59 FR 8362	2/18/94
130	130	Recycled Used Oil Management Standards; Technical Amendments and Corrections II (HSWA/Non-HSWA)	59 FR 10550	3/04/94
131	131	Recordkeeping Instructions; Technical Amendment (Non-HSWA)	59 FR 13891	3/24/94
132	132	Wood Surface Protection; Correction (Non-HSWA)	59 FR 28484	6/02/94
†133	133	Letter of Credit Revision (Non-HSWA)	59 FR 29958	6/10/94
134	134	Correction of Beryllium Powder (P015) Listing (Non-HSWA)	59 FR 31551	6/20/94

† 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.

[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 7.

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TABLE G-1. LIST OF REVISION CHECKLISTS BY CLUSTER (cont'd)
Through June 30, 1994

[6]Note that, unlike other checklists which address more than one final rule, Revision Checklist 70 is not presented by each of these rules individually in StATS. Instead, it is represented only once as Revision Checklist 70. This checklist is different from other checklists because it represents an accumulation of small changes to Part 124, relating to the RCRA program, which were missed because they were often presented as relating to other permit programs. Effectively, this checklist is a "catch-up" checklist, with the many rules it represents spanning a six-year period from 1983 to 1989. To simplify an already complicated and confusing matter, it was decided to only represent this checklist as one entry, rather than five separate entries.

[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]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 that 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.

[10]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.

[11]This is a conditionally optional rule; if a State chooses to adopt the November 24, 1992 (57 FR 55114) rule, it must make this change.

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER
Through June 30, 1993

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
†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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
10	Interim Status Standards - Applicability	Non-HSWA Cluster I
11	Corrections to Test Methods Manual	Non-HSWA Cluster I
†12	Satellite Accumulation	Non-HSWA Cluster I
13	Definition of Solid Waste	Non-HSWA Cluster I
14	Dioxin Waste Listing and Management Standards	HSWA Cluster I
15	Interim Status Standards for Treatment, Storage, and Disposal Facilities	Non-HSWA Cluster I
16	Paint Filter Test	HSWA Cluster I
17	HSWA Codification Rule	HSWA Cluster I
	17 A - Small Quantity Generators	
†	17 B - Delisting	
†	17 C - Household Waste	
	17 D - Waste Minimization	
	17 E - Location Standards for Salt Domes, Salt Beds, Underground Mines and Caves	
	17 F - Liquids in Landfills	
	17 G - Dust Suppression	
	17 H - Double Liners	
	17 I - Ground-Water Monitoring	
	17 J - Cement Kilns	
	17 K - Fuel Labeling	
	17 L - Corrective Action	
	17 M - Pre-construction Ban	
	17 N - Permit Life	
	17 O - Omnibus Provision	
	17 P - Interim Status	
†	17 Q - Research and Development Permits	
	17 R - Hazardous Waste Exports	
	17 S - Exposure Information	
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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
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
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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
†43[3/]	Liability Requirements for Hazardous Waste Facilities; Corporate Guarantee	Non-HSWA Cluster IV
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
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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
55	Statistical Methods for Evaluating Ground-Water Monitoring Data from Hazardous Waste Facilities	Non-HSWA Cluster V
†56	Identification and Listing of Hazardous Waste; Removal of Iron Dextran from the List of Hazardous Wastes	Non-HSWA Cluster V
†57	Identification and Listing of Hazardous Waste; Removal of Strontium Sulfide from the List of Hazardous Wastes	Non-HSWA Cluster V
†58	Standards for Generators of Hazardous Waste; Manifest Renewal	Non-HSWA Cluster V
59	Hazardous Waste Miscellaneous Units; Standards Applicable to Owners and Operators	Non-HSWA Cluster V
60	Amendment to Requirements for Hazardous Waste Incinerator Permits	Non-HSWA Cluster V
†61	Changes to Interim Status Facilities for Hazardous Waste Management Permits; Modifications of Hazardous Waste Management Permits; Procedures for Post-Closure Permitting	Non-HSWA Cluster V
62	Land Disposal Restriction Amendments to First Third Scheduled Wastes	HSWA Cluster II
63	Land Disposal Restrictions for Second Third Scheduled Wastes	HSWA Cluster II
†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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
†72	Modification of F019 Listing	Non-HSWA Cluster VI
73	Testing and Monitoring Activities; Technical Corrections	Non-HSWA Cluster VI
74	Toxicity Characteristics Revision	HSWA Cluster II
75	Listing of 1,1-Dimethylhydrazine Production Wastes	HSWA Cluster II
†76	Criteria for Listing Toxic Wastes; Technical Amendment	Non-HSWA Cluster VI
77	HSWA Codification Rule, Double Liners; Correction	HSWA Cluster II
78[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
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

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
†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
92	Wood Preserving Listings; Technical Corrections	RCRA II, HSWA/Non-HSWA
93	Liability Requirements; Technical Amendment [withheld until all of the settlement agreement provisions have been promulgated]	RCRA II, Non-HSWA
94	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Corrections and Technical Amendments I	RCRA II, HSWA/Non-HSWA
95	Land Disposal Restrictions for Electric Arc Furnace Dust (K061)	RCRA II, HSWA
96	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Technical Amendments II	RCRA II, HSWA/Non-HSWA
97	Exports of Hazardous Waste; Technical Correction	RCRA II, HSWA
†98	Coke Ovens Administrative Stay	RCRA II, HSWA
†99	Amendments to Interim Status Standards for Downgradient Ground-Water Monitoring Well Locations	RCRA II, Non-HSWA
100	Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units	RCRA II, HSWA/Non-HSWA
†101	Administrative Stay for the Requirement That Existing Drip Pads be Impermeable	RCRA II, HSWA/Non-HSWA
102	Second Correction to the Third Third Land Disposal Restrictions	RCRA II, HSWA
103	Hazardous Debris Case-by-Case Capacity Variance	RCRA II, HSWA
†104	Oil Filter Exclusion	RCRA II, HSWA
†105	Coke By-Product Exclusion	RCRA II, HSWA
106	Lead-Bearing Hazardous Materials Case-by-Case Capacity Variance	RCRA II, HSWA

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd)
Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
107	Used Oil Filter Exclusion; Technical Corrections	RCRA III, HSWA
108	Toxicity Characteristics Revisions; Technical Corrections	RCRA III, HSWA
109	Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris	RCRA III, HSWA
110	Coke By-Products Listings	RCRA III, HSWA
111	Boilers and Industrial Furnaces; Technical Amendment III	RCRA III, HSWA/Non-HSWA
112	Recycled Used Oil Management Standards	RCRA III, HSWA/Non-HSWA
113	Consolidated Liability Requirements	RCRA III, Non-HSWA
114	Boilers and Industrial Furnaces; Technical Amendment IV	RCRA III, HSWA/Non-HSWA
115	Chlorinated Toluenes Production Waste Listing	RCRA III, HSWA
116	Hazardous Soil Case-by-Case Capacity Variance	RCRA III, HSWA
†117 A	Reissuance of the "Mixture" and "Derived-From" Rules	RCRA III, HSWA/Non-HSWA
117 B	Toxicity Characteristic Revision	RCRA III, HSWA
118	Liquids in Landfills II	RCRA III, HSWA
†119	Toxicity Characteristic Revision; TCLP Correction	RCRA III, HSWA
120	Wood Preserving; Amendments to Listings and Technical Corrections	RCRA III, HSWA/Non-HSWA
†121	Corrective Action Management Units and Temporary Units	RCRA III, HSWA
122	Recycled Used Oil Management Standards; Technical Amendments and Corrections	RCRA III, HSWA/Non-HSWA
123	Land Disposal Restrictions; Renewal of the Hazardous Debris Case-by-Case Capacity Variance	RCRA III, HSWA
124	Land Disposal Restrictions for Ignitable and Corrosive Characteristic Wastes Whose Treatment Standards Were Vacated	RCRA III, HSWA
125	Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations	RCRA IV, HSWA/Non-HSWA

Continued...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

Revision Checklist Number	Federal Requirement	Cluster
126	Testing and Monitoring Activities	RCRA IV, HSWA/Non-HSWA
†127	Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues	RCRA IV, HSWA
128	Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection	RCRA IV, Non-HSWA
†129	Revision of Conditional Exemption for Small Scale Treatability Studies	RCRA IV, Non-HSWA
130	Recycled Used Oil Management Standards; Technical Amendments and Corrections II	RCRA IV, HSWA/Non-HSWA
131	Recordkeeping Instructions; Technical Amendment	RCRA IV, Non-HSWA
132	Wood Surface Protection; Correction	RCRA IV, Non-HSWA
†133	Letter of Credit Revision	RCRA IV, Non-HSWA
134	Correction of Beryllium Powder (P015) Listing	RCRA IV, 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...

TABLE G-2. NUMERICAL LISTING OF REVISION CHECKLISTS AND CORRESPONDING CLUSTER (cont'd) Through June 30, 1994

[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 that are hazardous wastes when discarded or intended to be discarded. States that 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 that choose to remove strontium sulfide must adopt the provisions addressed by Revision checklist 86 to be sure that material has been properly removed from the State's lists and appendices.

Checklist Linkage Table

The following pages (numbered 3 through 9)
should replace pages 3 through 9 of
SAM Appendix H

Revision Checklist Linkage Table as of June 30, 1994

	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	35,67,73,126	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	118	Liquids in Landfills
	17 G	---	Dust Suppression
	17 H	77,100	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

LINK15 - 7/29/94 Continued...

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

	Revision Checklist Number	Linked Checklists	Topic or Explanation
	17 P	---	Interim Status
	17 Q	---	Research and Development Permits
	17 R[4]	31,48,97	Hazardous Waste Exports
	17 S	---	Exposure Information
*	18	---	TDI, TDA, & DNT Listing
	19[5]	85,104,107,112,122,130	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[6]	52	Hazardous Waste Tank Systems
*	29[7]	46	Listings - 261.33(e)&(f) and Associated Appendices
	30	1,17 D	Biennial Report
	31	17 R,48,97	Exports of Hazardous Waste
	32	5,17 D,58	National Uniform Hazardous Waste Manifest
*	33	---	EDBC Listing
	34	39,50,63,78,109	Solvents & Dioxins Land Disposal Restrictions
	35	11,67,73,126	Corrections - Test Methods Manual
	36	---	Surface Impoundments: Closure/Post Closure Care
	37	13	Definition of Solid Waste
	38	---	Part B Information Requirements Amendment
	39	34,50,63,78,109	California List Waste Land Disposal Restrictions
	40	---	List of Hazardous Constituents for Ground-Water Monitoring

LINK15 - 7/29/94 Continued...

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

	Revision Checklist Number	Linked Checklists	Topic or Explanation
	41	---	Container/Liner Residues
	42	17 A,23,47	Small Quantity Generators
	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,31,97	Hazardous Waste Exports
	49	129	Sample Exemption
	50	34,39,62,63,66,78,95,109	Third Third Land Disposal Restrictions
	51	93	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	50,66,109	First Third Land Disposal Restriction Correction
	63	34,39,50,78,109	Second Third Land Disposal Restrictions

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

	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	50,62,109	First Third Land Disposal Restriction Correction
	67	11,35,73,126	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	11,35,67,126	Analytical Test Methods
	74	80,84,108,117 B,119	Toxicity Characteristic Revisions
*	75	---	1,1-Dimethylhydrazine Production Wastes Listing
	76	---	Criteria for Listing Toxic Wastes
	77	17 H,100	Corrections - Double Liners
*	78	34,39,50,83,100,102,103,106, 109,116,123,124	Third Third Land Disposal Restrictions
	79	87	Organic Air Emission Standards for Process Vents and Equipment Leaks
	80	74,84,108	Toxicity Characteristic; Hydrocarbon Recovery Operations
*	81	89	Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)
*	82	91,92,101,120	Wood Preserving Listings
	83	78,102,103,106,109,116 123,124	Third Third Land Disposal Restriction Correction
	84	74,80,108	Toxicity Characteristic
	85	19,94,96,105,110,111,114, 125,127	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

LINK15 - 7/29/94 Continued...

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

	Revision Checklist Number	Linked Checklists	Topic or Explanation
*	88	---	Administrative Stay for K069 Listing
*	89	81	Revision to F037 and F038 Listing
	90	65,71	Mining Waste III
*	91	82,92,101,120	Administrative Stay for Wood Preserving Wastes
	92	82,91,101,120	Wood Preserving Listings; Technical Corrections
	93	51	Liability Requirements; Technical Amendment
	94	19,85,96,111,114,125,127	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Corrections and Technical Amendments
	95	50	Finalization of treatment standards for the K061 nonwastewaters in the high zinc subcategory
	96	85,94,98,111,114	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Technical Amendments II
	97	17 R,31,48	Exports of Hazardous Waste; Technical Correction
	98	85,96,105,110	Burning of Hazardous Waste in Boilers and Industrial Furnaces; Administrative Stay of Applicability and Technical Amendment
	99	---	Amendments to Interim Status Standards for Downgradient Ground-Water Monitoring Well Locations
	100	17 H,77	Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units
	101	82,91,92,120	Existing Drip Pad Administrative Stay
	102	78,83	Second Correction to the Third Third Land Disposal Restrictions
	103	78,83,109,116,123	Hazardous Debris Case-by-Case Capacity Variance
	104	107,112	Used Oil Filter Exclusion
	105	85,98,110	Recycled Coke By-Product Exclusion

LINK15 - 7/29/94 Continued...

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

	Revision Checklist Number	Linked Checklists	Topic or Explanation
	106	78,83,109,116	Lead-Bearing Hazardous Materials Case-by-Case Capacity Variance
	107	104	Used Oil Filter Exclusion Corrections
	108	74,117 B,119	Toxicity Characteristic Revisions
	109	34,39,50,63,78,103,106	Newly Listed Wastes and Hazardous Debris Land Disposal Restrictions
	110	85,98,105	Coke By-Products Listings
	111	85,94,96,114,127	Boilers and Industrial Furnaces; Technical Amendment III
	112	19,104,107,122,130	Recycled Used Oil Management Standards
	113	---	Liability Coverage and Financial Responsibility
	114	85,94,96,111	Boilers and Industrial Furnaces; Technical Amendment IV
*	115	---	Chlorinated Toluenes Production Waste Listing
	116	78,83,103,106,123	Hazardous Soil Case-by-Case Capacity Variance
	117 A	---	"Mixture" and "Derived-from" Rules
	117 B	74,108,119	Toxicity Characteristic Revision
	118	17 F	Liquids in Landfills II
	119	74,108,117 B	Toxicity Characteristic Revision; TCLP Correction
*	120	82,91,92,101	Wood Preserving; Amendments to Listings and Technical Requirements
	121	---	Corrective Action Management Units and Temporary Units
	122	19,112,130	Recycled Used Oil Management Standards; Technical Amendments and Corrections
	123	78,83,103,116	Hazardous Waste Debris Case-by-Case Capacity Variance Renewal
	124	78,83	Land Disposal Restrictions for Ignitable and Corrosive Characteristic Wastes Whose Treatment Standards Were Vacated
	125	85,94	Boilers and Industrial Furnaces; Changes for Consistency with New Air Regulations

LINK15 - 7/29/94 Continued...

Revision Checklist Linkage Table as of June 30, 1994 (cont'd)

Revision Checklist Number	Linked Checklists	Topic or Explanation
126	11,35,67,73	Testing and Monitoring Activities
127	85,94,111	Boilers and Industrial Furnaces; Administrative Stay and Interim Standards for Bevill Residues
128	132	Wastes From the Use of Chlorophenolic Formulations in Wood Surface Protection
129	49	Revision of Conditional Exemption for Small Scale Treatability Studies
130	19,112,122	Recycled Used Oil Management Standards; Technical Amendments and Corrections II
131	---	Recordkeeping Instructions; Technical Amendment
132	128	Wood Surface Protection; Correction
133	---	Letter of Credit Revision
134	---	Correction of Beryllium Powder (P015) Listing

* 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] Superseded by Revision Checklists 85 and 112.

[6] Contains sections superseded by Revision Checklist 52.

[7] Superseded by Revision Checklist 46.

Revision Checklist 49

The following version of Revision Checklist 49
should replace the existing version in
SAM Appendix J

RCRA REVISION CHECKLIST 49

Identification and Listing of Hazardous Waste;
Treatability Studies Sample Exemption
53 FR 27290-29302
July 19, 1988
(Non-HSWA Cluster V)

Note: The standards addressed by 261.4(e) and (f) are less stringent than existing Federal requirements; thus, authorized States are not required to adopt them. EPA strongly encourages States to do so, however, to facilitate evaluating remediation alternatives for CERCLA clean-ups and for the RCRA Corrective Action Program. This rule will also speed research and development for treatment alternatives to land disposal and waste minimization, recycling, and reuse. This rule was amended by a February 18, 1994 rule (59 FR 8362-8366; Revision Checklist 129) which increases the quantity and time limits for contaminated media to be used in treatability studies. States which are not authorized for Revision Checklist 49 and who choose to adopt this checklist are encouraged to adopt the revisions addressed in Revision Checklist 129 at the same time the requirements addressed by Revision Checklist 49 are adopted.

	FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL						
	SUBPART B - DEFINITIONS						
	DEFINITIONS						
†	add "treatability study"	260.10					
	PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE						
	SUBPART A - GENERAL						
†	**EXCLUSIONS**						
	regulation of treatability study samples and relation to quantity determination of 261.5 and 262.34(d)	261.4(e)(1)					
	collection and preparation of sample for transport	261.4(e)(1)(i)					

RCRA REVISION CHECKLIST 49: Identification and Listing of Hazardous Waste; Treatability Studies Sample Exemption (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
accumulation or storage of sample prior to transport	261.4(e)(1)(ii)					
transport of sample to laboratory or testing facility	261.4(e)(1)(iii)					
introductory paragraph regarding provisions for exemption under (e)(1)	261.4(e)(2)					
sample size limit by hazardous waste type for sample collector	261.4(e)(2)(i)					
weight limit for each sample shipment	261.4(e)(2)(ii)					
packaging requirements for sample	261.4(e)(2)(iii)					
compliance with U.S. DOT, USPS or other for transport	261.4(e)(2)(iii)(A)					
information required if DOT, USPS, or other do not apply to shipment	261.4(e)(2)(iii)(B)(1)-(5)					
laboratory or testing facility requirements	261.4(e)(2)(iv)					
3-year maintenance of specified records	261.4(e)(2)(v)					
records which must be maintained	261.4(e)(2)(v)(A)-(C)					
biennial report requirements	261.4(e)(2)(vi)					

RCRA REVISION CHECKLIST 49: Identification and Listing of Hazardous Waste; Treatability Studies Sample Exemption (cont'd)

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
granting of requests for additional quantities; application procedure	261.4(e)(3)					
reason for request and additional quantity needed	261.4(e)(3)(i)					
required documentation	261.4(e)(3)(ii)					
description of technical modifications	261.4(e)(3)(iii)					
equipment and mechanical failure information	261.4(e)(3)(iv)					
other information	261.4(e)(3)(v)					
requirements for samples undergoing treatability studies at labs and testing facilities	261.4(f)					
notification requirements	261.4(f)(1)					
EPA identification number of laboratory or testing facility	261.4(f)(2)					
single day quantity restrictions on initiation of treatment studies	261.4(f)(3)					
limitations on storage of treatability study samples	261.4(f)(4)					
exclusion of treatability study residues	261.4(f)(4)(i)					

RCRA REVISION CHECKLIST 49: Identification and Listing of Hazardous Waste; *Treatability Studies Sample Exemption (cont'd)*

FEDERAL REQUIREMENTS	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS:			
			EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
exclusion of added treatment materials	261.4(f)(4)(ii)					
90 days/1 year limitations on duration of exemption	261.4(f)(5)					
land placement and open burning of study samples not allowed	261.4(f)(6)					
3-year maintenance and storage of treatability study records	261.4(f)(7)					
list of specific information needed for each treatability study	261.4(f)(7)(i)-(vii)					
3-year maintenance of shipping records and treatability study contract	261.4(f)(7)					
laboratory or treatability study facility annual report requirement	261.4(f)(9)					
required annual report information	261.4(f)(9)(i)-(vii)					
hazardous waste determination for unused samples by facility	261.4(f)(10)					
notification when facility discontinues treatability studies	261.4(f)(11)					

ATTACHMENT C

Consolidated Checklists as of June 30, 1994

Consolidated Checklist for the Land Disposal Restrictions as of June 30, 1994

The following consolidated checklist should replace the existing version in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Land Disposal Restrictions as of June 30, 1994

Note: 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)];
- Revision Checklist 83 [56 FR 3864 (January 31, 1991)];
- Revision Checklist 95 [56 FR 41164 (August 19, 1991)];
- Revision Checklist 102 [57 FR 8086 (March 6, 1992)];
- Revision Checklist 103 [57 FR 20766 (May 15, 1992)];
- Revision Checklist 106 [57 FR 28628 (June 26, 1992)];
- Revision Checklist 109 [57 FR 37194 (August 18, 1992)];
- Revision Checklist 116 [57 FR 47772 (October 20, 1992)];
- Revision Checklist 123 [58 FR 28506 (May 14, 1993)]; and
- Revision Checklist 124 [58 FR 29860 (May 24, 1993)].

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 occurs to specify the effect which the Toxicity Characteristics Rule had on the TCLP procedure. Because the TCLP procedure is integral to the Third Third Rule requirements (see Note 6 below), the changes made by Revision Checklist 74, non-LDR checklists, are noted in the LDR checklist reference column. Explanatory footnotes are 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 nondelegable 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.

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 forth in 268.42(b)" should not be replaced in 268.40(b) 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. States do need to adopt, however, requirements equivalent to 268.14. Such requirements address the length of time interim status impoundments can be used to receive or generate newly identified or listed hazardous wastes and resolve the potential conflicts between RCRA §§3004(h)(4), 3005(j)(6) and 3004(j)(11) [see the discussion in the Federal Register for Revision Checklist 109, pp. 37218-37221].

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

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 ? 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).

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.

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
SUBPART A - GENERAL							
PURPOSE, SCOPE, AND APPLICABILITY							
insert "and 268"	34	260.1(a)					
insert "and 268"	34	260.1(b)(1)					
insert "and 268"	34	260.1(b)(2)					
insert "and 268"	34	260.1(b)(3)					
insert "and 268"	34	260.1(b)(4)					
AVAILABILITY OF INFORMATION; CONFIDENTIALITY OF INFORMATION							
insert "and 268"	34	260.2(a)					
insert "and 268"	34	260.2(b)					
USE OF NUMBER AND GENDER							
insert "and 268"	34	260.3					

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CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART B - DEFINITIONS							
	DEFINITIONS							
	insert "and 268" to introductory text	34	260.10					
	add "containment building"	109	260.10					
	revise "miscellaneous unit"	109	260.10					
	revise "pile"	109	260.10					
	REFERENCES							
1,2	Parts 260 through 270	39	260.11(a)					
	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							
	insert "of this part" after the first "subpart C"; insert "," before "or unless"; add a sentence addressing the relationship of nonwastewater mixtures and the Part 268 requirements	109	261.3(a)(2)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
†,3 split paragraph into two subparagraphs, (C)(*1*)&(*2*), with the second subparagraph addressing the notification for HTMR residues; in first subparagraph, insert ", K062 or F006" after "K061"; replace "(as defined in 40 CFR 260.10(6), (7), and (12))" with "(as defined in paragraphs (6), (7), and (13) of the definition for 'Industrial Furnace' in 40 CFR 260.10)"; replace "identified below" with "identified in the tables in this paragraph"; replace "The generic exclusion levels are:" with a sentence addressing burden of proof for persons claiming this exclusion in an enforcement action; replace single table with the two tables indicated at 57 FR 37264	95,109	261.3(c)(2)(ii)(C)(*1*)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
†,3 completely revise requirements addressing notification and certification; one-time notification and certification for K061, K062 or F006 HTMR residues, which meet generic exclusion levels and exhibit no characteristics, that are sent to Subtitle D units; update of notification and certification; annual EPA/State notification; deadline for submission to EPA/State; what the notification must include; certification signed by authorized representative and what it must state	95,109	261.3(c)(2)(ii)(C)(2)					
add parenthetical phrase regarding characteristic waste, no longer exhibiting a characteristic, that still may be subject to 268 requirements	83	261.3(d)(1)					
add new paragraph and subparagraphs addressing debris that is excluded from regulation provided it meets specified criteria:	109	261.3(f)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
Part 268-defined hazardous debris treated using a specified 268.45, Table 1, extraction or destruction technology; burden of proof on claimant in an enforcement action	109	261.3(f)(1)					
Part 268-defined debris determined by Regional Administrator to no longer be contaminated with hazardous waste	109	261.3(f)(2)					
EXCLUSIONS							
† add new paragraph which excludes as solid waste nonwastewater splash condenser dross residue from the treatment of K061 in high temperature metals recovery units, provided it is shipped in drums and not land disposed before recovery	95	261.4(a)(11)					
insert "268,"	34	261.4(c)					
remove "267" and insert "268"	34	261.4(d)(1)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					
4 insert ", 268,"	34	261.5(f)(2)					
insert ", 268,"	34	261.5(g)(2)					
REQUIREMENTS FOR RECYCLABLE MATERIALS							
insert "268,"	34	261.6(a)(3)					
insert "268,"	34	261.6(c)(1)					
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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	CHARACTERISTIC OF IGNITABILITY							
	remove ", but is not listed as a hazardous waste in Subpart D,"	78	261.21(b)					
	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							
5	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 alpha-numeric order to list	78,83	261.31(a)					
	DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF							
6	insert "or (f)" after "(e)"; change "261.7(b)(3)" to "261.7(b)"	78	261.33(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
APPENDIX VII, PART 261							
BASIS FOR LISTING HAZARDOUS WASTE							
add "F039" to list in alphanumeric order	78	Appendix VII					
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)					
add new paragraph regarding possible exclusions or restrictions in Parts 264, 265 or 268	34	262.11(d)					
SUBPART C - PRE-TRANSPORT REQUIREMENTS							
ACCUMULATION TIME							
replace ";" at the end of text with a ":"	109	262.34(a)(1)(iii)					
replace "." with "; and/or"	109	262.34(a)(1)(iii) (B)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new subparagraphs addressing waste placed in containment buildings; compliance with 265, Subpart DD; professional engineer certification of compliance with 265.1101 design standards placed in operating record no later than 60 days after the date of initial unit operation; requirements after February 18, 1993; records which must be maintained	109	262.34(a)(1)(iv)					
written description of procedures to ensure each waste volume remains in unit for no more than 90 days; written description of waste generation and management practices for the facility showing that they are consistent with respecting the 90-day limit; documentation that procedures are complied with	109	262.34(a)(1)(iv)(A)					
documentation that unit is emptied at least once every 90 days	109	262.34(a)(1)(iv)(B)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
7	remove first paragraph numbered (a)(2) (including (a)(2)(i)&(ii)); remove unnumbered paragraph following (a)(2)(ii)	109	262.34(a)(2)					
	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 requirements" with ";" and add "the requirements of 40 CFR 268.7(a)(4)"	83	262.34(d)(4)					
	SUBPART G - FARMERS							
	FARMERS							
8	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					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES							
	SUBPART A - GENERAL							
	PURPOSE, SCOPE AND APPLICABILITY							
	change "." to ","; add phrase regarding compliance with 264.17(b) if owner or operator is diluting hazardous ignitable wastes or corrosive wastes to remove the characteristic before land disposal	124	264.1(g)(6)					
9	add new paragraph regarding facilities to which Part 264 applies	34	264.1(h)					
	SUBPART B - GENERAL FACILITY STANDARDS							
	GENERAL WASTE ANALYSIS							
9,10	insert "Part 268"; add sentence regarding what information, at a minimum, the waste analysis must contain	34,102	264.13(a)(1)					
	revise comment following paragraph (a)(2) as follows: remove "or all" after "supply part"; add ", except as otherwise specified in 40 CFR 268.7(b) and (c)." to the second sentence	78	264.13(a)(2)					
	insert "268.7"	34	264.13(b)(6)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph and subparagraphs regarding exempted surface impoundment plan specifications	34	264.13(b)(7)					
sampling impoundment 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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph; 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)					
add new paragraph; off-site treatment facility requirements	34,50	264.73(b)(11)					
add new paragraph; on-site treatment facility requirements	34,50	264.73(b)(12)					
add new paragraph; off-site land disposal facility requirements	34,50	264.73(b)(13)					
9 add new paragraph; on-site land disposal facility requirements	34,50	264.73(b)(14)					
add new paragraph; off-site storage facility requirements	50	264.73(b)(15)					
add new paragraph; on-site storage facility requirements	50	264.73(b)(16)					
SUBPART G - CLOSURE AND POST-CLOSURE							
APPLICABILITY							
remove "and" from the end of paragraph	109	264.110(b)(1)					
replace "." with ";"	109	264.110(b)(2)					
replace "." with "; and"	109	264.110(b)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph addressing containment buildings that are required under 264.1102 to meet the requirements for landfills	109	264.110(b)(4)					
CLOSURE PERFORMANCE STANDARD							
change ", and 264.601 through 264.603" to ", 264.601 through 264.603, and 264.1102"	109	264.111(c)					
CLOSURE PLAN; AMENDMENT OF PLAN							
replace "264.90 et seq." with "subpart F of this part"; change "and 264.601" to ", 264.601 and 264.1102"	109	264.112(a)(2)					
SUBPART H - FINANCIAL REQUIREMENTS							
APPLICABILITY							
replace ", and" with ";"	109	264.140(b)(1)					
replace "." with ";"	109	264.140(b)(2)					
replace "." with "; and"	109	264.140(b)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph regarding containment buildings that are required under 264.1102 to meet the requirements for landfills	109	264.140(b)(4)					
COST ESTIMATE FOR CLOSURE							
change ", and 264.601 through 264.603" to ", 264.601 through 264.603, and 264.1102"	109	264.142(a)					
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					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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					
	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)							
†,11	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 as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
12	**SUBPART DD - CONTAINMENT BUILDINGS**							
	APPLICABILITY .							
	applies to owners/operators storing or treating hazardous waste in units designed and operated under 264.1101; effective February 18, 1993, but may notify Regional Administrator of earlier time; not subject to definition of land disposal in RCRA 3004(k) provided unit:	109	264.1100					
	is a completely enclosed, self-supporting structure designed and constructed as specified	109	264.1100(a)					
	has a primary barrier designed to withstand movement of personnel, wastes and handling equipment within unit	109	264.1100(b)					
	if used to manage liquids:	109	264.1100(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
primary barrier designed and constructed to prevent migration of hazardous constituents into barrier	109	264.1100(c)(1)					
liquid collection system to minimize accumulation of liquid on primary barrier	109	264.1100(c)(2)					
secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified; variance under 264.1101(b)(4)	109	264.1100(c)(3)					
controls to prevent fugitive dust emissions to meet 264.1101(c)(1)(iv) standards	109	264.1100(d)					
designed and operated to ensure containment and prevent tracking of materials from unit by personnel or equipment	109	264.1100(e)					
DESIGN AND OPERATING STANDARDS							
all containment buildings must comply with following design standards:	109	264.1101(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
completely enclosed as specified	109	264.1101(a)(1)					
design and construction of floor, containment walls and secondary containment system; unit of sufficient structural strength to prevent collapse or failure; chemically compatible surfaces; standards for judging structural integrity requirements; when exception for light-weight doors and windows will apply:	109	264.1101(a)(2)					
provide effective barrier against fugitive dust emissions under 264.1101(c)(1)(iv)	109	264.1101(a)(2)(i)					
unit designed and operated so that wastes do not contact openings	109	264.1101(a)(2)(ii)					
no placement of incompatible wastes or treatment reagents that could cause unit or secondary containment system to leak, corrode or otherwise fail	109	264.1101(a)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
must have primary barrier designed to withstand movement of personnel, waste and handling equipment in unit during unit operating life, as appropriate for waste characteristics	109	264.1101(a)(4)					
requirements for hazardous waste containing free liquids or treated with free liquids:	109	264.1101(b)					
primary barrier to prevent migration of hazardous constituents into the barrier	109	264.1101(b)(1)					
liquid collection and removal system to minimize accumulation of liquid on primary barrier:	109	264.1101(b)(2)					
primary barrier sloped to drain liquids to collection system	109	264.1101(b)(2)(i)					
liquids and waste collected and removed to minimize hydraulic head on containment system at earliest practicable time	109	264.1101(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified	109	264.1101(b)(3)					
what must be installed at a minimum to satisfy leak detection component of secondary containment system	109	264.1101(b)(3)(i)					
constructed with 1% or greater bottom slope	109	264.1101(b)(3)(i)(A)					
granular, synthetic, or geonet drainage materials as specified	109	264.1101(b)(3)(i)(B)					
if treatment conducted in building, treatment area designed to prevent releases to other portions of building	109	264.1101(b)(3)(ii)					
secondary containment construction materials specifications; requirements for use of containment building as tank secondary containment system	109	264.1101(b)(3)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	for existing units other than 90-day generator units, Regional Administrator delay of secondary containment requirement if demonstrated that unit substantially meets Subpart DD standards; for demonstration, owner/operator must:	109	264.1101(b)(4)					
13	provide written notice by February 18, 1993; what notice must contain	109	264.1101(b)(4)(i)					
	respond to Regional Administrator comments within 30 days	109	264.1101(b)(4)(ii)					
	if approved, fulfill terms of revised plans	109	264.1101(b)(4)(iii)					
	owners and operators of all containment buildings must:	109	264.1101(c)					
	use controls and practices to ensure containment of hazardous waste within unit; at a minimum:	109	264.1101(c)(1)					
	maintain primary barrier as specified	109	264.1101(c)(1)(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
maintain level of stored/treated hazardous waste as specified	109	264.1101(c)(1)(ii)					
take measures to prevent tracking of hazardous waste out of unit; equipment decontamination area; rinsate collection and management	109	264.1101(c)(1)(iii)					
take measures to control fugitive dust emissions; maintain particulate collection devices as specified; when "no visible emissions" must be maintained	109	264.1101(c)(1)(iv)					
certification by qualified registered professional engineer; for units in operation prior to February 18, 1993, certification placed in operating record or on-site files no later than 60 days after date of initial operation; after February 18, 1993, PE certification required prior to operation of unit	109	264.1101(c)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	prompt repairs of unit throughout active life as specified, according to the following procedures:	109	264.1101(c)(3)					
14	detection of condition that has led to a release; leakage from primary barrier; owner or operator must:	109	264.1101(c)(3)(i)					
	enter record of discovery in facility operating record	109	264.1101(c)(3)(i)(A)					
	immediately remove portion of containment building affected by the condition from service	109	264.1101(c)(3)(i)(B)					
	determine steps to be taken for repair, remove leakage from secondary collection system and establish schedule for cleanup and repairs	109	264.1101(c)(3)(i)(C)					
	within 7 days, notify Regional Administrator of condition; within 14 working days, provide written notice to Regional Administrator; what written notice must include	109	264.1101(c)(3)(i)(D)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
Regional Administrator must review notice, determine extent to which unit must be removed from service during repairs, and notify owner/operator of determination and rationale in writing	109	264.1101(c)(3)(ii)					
written notification to Regional Administrator on completion of repair and cleanup; verification by a qualified, registered professional engineer that repairs and cleanup are in compliance with 264.1101(c)(3)(i)(D) plan	109	264.1101(c)(3)(iii)					
what must be inspected and recorded in facility's operating records, at least once every seven days	109	264.1101(c)(4)					
for containment buildings that contain areas both with and without secondary containment, the owner/operator must:	109	264.1101(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
design and operate each area in accordance with 264.1101(a)-(c) requirements	109	264.1101(d)(1)					
take measures to prevent release of liquids or wet materials into areas without secondary containment	109	264.1101(d)(2)					
maintain in facility's operating log a written description of operating procedures used to maintain integrity of areas without secondary containment	109	264.1101(d)(3)					
Regional Administrator waiver of secondary containment requirements; what owner/operator must demonstrate	109	264.1101(e)					
CLOSURE AND POST-CLOSURE CARE							
what must be done at closure; closure plan, closure activities, cost estimates, and financial responsibility must meet all 264 Subpart G & H requirements	109	264.1102(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	if 264.1102(a) requirements met and not all contaminated subsoils can be removed or decontaminated, close facility and perform post-closure care as for landfill under 264.310; owner/operator must meet 264 Subpart G & H requirements for landfills	109	264.1102(b)					
	reserved	109	264.1103-264.1110					
	PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES							
	SUBPART A - GENERAL							
	PURPOSE, SCOPE, AND APPLICABILITY							
	change "." to ","; add phrase regarding compliance with 265.17(b) if owner or operator is diluting hazardous ignitable wastes or corrosive wastes to remove characteristic before land disposal	124	265.1(c)(10)					
9	add new paragraph regarding facilities to which Part 265 applies; Part 268 standards are material conditions of the 265 standards	34,78	265.1(e)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART B - GENERAL FACILITY STANDARDS							
	GENERAL WASTE ANALYSIS							
10	insert "Part 268"; add sentence regarding what information, at a minimum, the waste analysis must contain	34,102	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)					
	add new paragraph and subparagraphs regarding 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)					
	do not meet treatment standards of Part 268, Subpart D	50	265.13(b)(7)(iii)(A)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					
add new paragraph; 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)					
add new paragraph; off-site treatment facility requirements	34,50	265.73(b)(9)					
add new paragraph; on-site treatment facility requirements	34,50	265.73(b)(10)					
add new paragraph; off-site land disposal facility requirements	34,50	265.73(b)(11)					
add new paragraph; on-site land disposal facility requirements	34,50	265.73(b)(12)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph; off-site storage facility requirements	50	265.73(b)(13)					
add new paragraph; on-site storage facility requirements	50	265.73(b)(14)					
SUBPART G - CLOSURE AND POST-CLOSURE							
APPLICABILITY							
remove "and" from end of paragraph	109	265.110(b)(1)					
remove "and" from end of paragraph	109	265.110(b)(2)					
replace "." with "; and"	109	265.110(b)(3)					
add new paragraph addressing containment buildings that are required under 265.1102 to meet the requirements for landfills	109	265.110(b)(4)					
CLOSURE PERFORMANCE STANDARD							
change "and 265.404" to ", 265.404, and 264.1102"	109	265.111(c)					
CLOSURE PLAN; AMENDMENT OF PLAN							
15 replace "§§ 265.90 et seq." with "subpart F of this part, §§"; change ", and 265.404" to ", 265.404, and 264.1102"	109	265.112(d)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART H - FINANCIAL REQUIREMENTS							
APPLICABILITY							
in 265.140(b) insert ":" after "of"; reorganize rest of paragraph after "apply to" into 265.140(b)(1) [disposal facilities] and 265.140(b)(2) [tank systems]; add 265.140(b)(3) addressing containment buildings	109	265.140(b) 265.140(b)(1) 265.140(b)(2) 265.140(b)(3)					
COST ESTIMATE FOR CLOSURE							
replace "of §§ 265.178" with "in §§ 265.178"; change "and 265.404" to ", 265.404 and 265.1102"	109	265.142(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART K - SURFACE IMPOUNDMENTS							
DESIGN AND OPERATING REQUIREMENTS							
add new paragraph regarding surface impoundments newly subject to RCRA §3005(j)(1) must be in compliance with 265.221(a),(c)&(d) no later than 48 months after additional characteristic or listing promulgation; Part 268 land disposal prohibitions or an extension to an effective date, within the 48-month period, shall not cut short compliance period	109	265.221(h)					
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					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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					
	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)							
†,11	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
12	**SUBPART DD - CONTAINMENT BUILDINGS**							
	APPLICABILITY							
	applies to owners/operators storing or treating hazardous waste in units designed and operated under 265.1101; effective February 18, 1993, but may notify Regional Administrator of earlier time; not subject to definition of land disposal in RCRA 3004(k) provided unit:	109	265.1100					
	is a completely enclosed, self supporting structure designed and constructed as specified	109	265.1100(a)					
	has a primary barrier designed to withstand movement of personnel, wastes and handling equipment within unit	109	265.1100(b)					
	if used to manage liquids:	109	265.1100(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	primary barrier designed and constructed to prevent migration of hazardous constituents into barrier	109	265.1100(c)(1)					
	liquid collection system to minimize accumulation of liquid on primary barrier	109	265.1100(c)(2)					
	secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified; variance under 265.1101(b)(4)	109	265.1100(c)(3)					
16	controls to prevent fugitive dust emissions	109	265.1100(d)					
	designed and operated to ensure containment and prevent tracking of materials from unit by personnel or equipment	109	265.1100(e)					
	DESIGN AND OPERATING STANDARDS							
	all containment buildings must comply with following design standards:	109	265.1101(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
completely enclosed as specified	109	265.1101(a)(1)					
design and construction of floor, containment walls and secondary containment system; unit of sufficient structural strength to prevent collapse or failure; chemically compatible surfaces; standards for judging structural integrity requirements; when exception for light-weight doors and windows will apply:	109	265.1101(a)(2)					
provide effective barrier against fugitive dust emissions under 265.1101(c)(1)(iv)	109	265.1101(a)(2)(i)					
unit designed and operated so that wastes do not contact openings	109	265.1101(a)(2)(ii)					
no placement of incompatible wastes or treatment reagents that could cause unit or secondary containment system to leak, corrode or otherwise fail	109	265.1101(a)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
must have primary barrier designed to withstand movement of personnel, waste and handling equipment in unit during unit operating life, as appropriate for waste characteristics	109	265.1101(a)(4)					
requirements for hazardous waste containing free liquids or treated with free liquids:	109	265.1101(b)					
primary barrier to prevent migration of hazardous constituents into the barrier	109	265.1101(b)(1)					
liquid collection and removal system to prevent accumulation of liquid on primary barrier:	109	265.1101(b)(2)					
primary barrier sloped to drain liquids to collection system	109	265.1101(b)(2)(i)					
liquids and waste collected and removed to minimize hydraulic head on containment system at earliest practicable time to protect human health and environment	109	265.1101(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
secondary containment system to prevent hazardous constituent migration into barrier; leak detection and liquid collection as specified	109	265.1101(b)(3)					
what must be installed at a minimum to satisfy leak detection component of secondary containment system	109	265.1101(b)(3)(i)					
construct with 1% or greater bottom slope	109	265.1101(b)(3)(i)(A)					
granular, synthetic, or geonet drainage materials as specified	109	265.1101(b)(3)(i)(B)					
if treatment conducted in building, treatment area designed to prevent releases to other portions of building	109	265.1101(b)(3)(ii)					
secondary containment construction materials specifications; requirements for use of containment building as tank secondary containment system	109	265.1101(b)(3)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
for existing units other than 90-day generator units, Regional Administrator delay of secondary containment requirement if demonstrated that unit substantially meets Subpart DD standards; for demonstration, owner/operator must:	109	265.1101(b)(4)					
provide written notice by February 18, 1993; what notice must contain	109	265.1101(b)(4)(i)					
respond to Regional Administrator comments within 30 days	109	265.1101(b)(4)(ii)					
if approved, fulfill terms of revised plans	109	265.1101(b)(4)(iii)					
owners and operators of all containment buildings must:	109	265.1101(c)					
use controls and practices to ensure containment of hazardous waste within unit; at a minimum:	109	265.1101(c)(1)					
maintain primary barrier as specified	109	265.1101(c)(1)(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
maintain level of stored/treated hazardous waste as specified	109	265.1101(c)(1) (ii)					
take measures to prevent tracking of hazardous waste out of unit; equipment decontamination area; rinsate collection and management	109	265.1101(c)(1) (iii)					
take measures to control fugitive dust emissions; maintain particulate collection devices as specified; when "no visible emissions" must be maintained	109	265.1101(c)(1) (iv)					
certification by qualified registered professional engineer; for units in operation prior to February 18, 1993, certification placed in operating record or on-site files no later than 60 days after date of initial operation; after February 18, 1993, PE certification required prior to operation of unit	109	265.1101(c)(2)					
prompt repairs of unit throughout active life, according to the following procedures:	109	265.1101(c)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
detection of condition that has led to a release; leakage from primary barrier; owner or operator must:	109	265.1101(c)(3)(i)					
enter record of discovery in facility operating record	109	265.1101(c)(3)(i)(A)					
immediately remove portion of containment building affected by the condition from service	109	265.1101(c)(3)(i)(B)					
determine steps to be taken for repair; remove leakage from secondary collection system and establish schedule for cleanup and repairs	109	265.1101(c)(3)(i)(C)					
within 7 days, notify Regional Administrator of condition; within 14 working days, provide written notice to Regional Administrator; what written notice must include	109	265.1101(c)(3)(i)(D)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
Regional Administrator must review notice, determine extent to which unit must be removed from service during repairs, and notify owner/operator of determination and rationale in writing	109	265.1101(c)(3)(ii)					
written notification of Regional Administrator on completion of repair and cleanup; verification by a qualified, registered professional engineer that repairs and cleanup are in compliance with 265.1101(c)(3)(i)(D) plan	109	265.1101(c)(3)(iii)					
what must be inspected and recorded in facility's operating records, at least once every seven days	109	265.1101(c)(4)					
for containment building that contains both areas with and without secondary containment, the owner/operator must:	109	265.1101(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
design and operate each area in accordance with 265.1101(a)-(c) requirements	109	265.1101(d)(1)					
take measures to prevent release of liquids or wet materials into areas without secondary containment	109	265.1101(d)(2)					
maintain in facility's operating log a written description of operating procedures used to maintain integrity of areas without secondary containment	109	265.1101(d)(3)					
Regional Administrator waiver of secondary containment requirements; what owner/operator must demonstrate	109	265.1101(e)					
CLOSURE AND POST-CLOSURE CARE							
what must be done at closure; closure plan, closure activities, cost estimates, and financial responsibility must meet all 265 Subparts G & H requirements	109	265.1102(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
if 265.1102(a) requirements met and not all contaminated soils can be removed or decontaminated, close facility and perform post-closure care as for landfill under 265.310; owner/operator must meet 265 Subparts G & H requirements for landfills	109	265.1102(b)					
reserved	109	265.1103-265.1110					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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 RCRA 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)					
PART 268 - LAND DISPOSAL RESTRICTIONS							
SUBPART A - GENERAL							
PURPOSE, SCOPE AND APPLICABILITY							
purpose	34	268.1(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	applicability	34	268.1(b)					
	conditions for continued land disposal:	34,66	268.1(c)					
9	persons with an extension	34	268.1(c)(1)					
9	persons with an exemption	34	268.1(c)(2)					
17	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)					
18	removed	34,39, 50,66	268.1(c)(4)					
19	removed	39,48, 50,78	268.1(c)(5)					
	preserve waiver availability under 121(d)(4) of CERCLA	50	268.1(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	wastes which are not subject to any provisions of Part 268:	66	268.1(e)					
	wastes generated by generators of less than 100 kg of hazardous waste or less than 1 kg of acute hazardous waste, as defined in 261.5	66	268.1(e)(1)					
	waste pesticides that a farmer disposes pursuant to 262.70	66	268.1(e)(2)					
	wastes identified or listed as hazardous after November 8, 1984 for which EPA has not promulgated land disposal prohibitions or treatment standards	66	268.1(e)(3)					
20	*de minimis* losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable or corrosive, and that contain underlying hazardous constituents as defined in 268.2, are not considered to be prohibited wastes; *de minimis* defined	124	268.1(e)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
land disposal prohibitions do not apply to laboratory wastes displaying the characteristic of ignitability or corrosivity that are commingled with other plant wastewaters under designated circumstances: such wastes at facilities whose ultimate discharge is subject to regulation under the CWA, provided the annualized flow of laboratory wastewater into facility's headwork does not exceed 1%, or provided that the laboratory wastes' combined annualized average concentration does not exceed one part per million in the facility's headwork	124	268.1(e)(5)					
DEFINITIONS APPLICABLE TO THIS PART							
introductory paragraph regarding definitions	78	268.2					
"halogenated organic compounds" or "HOCs"	39,78	268.2(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
21	"hazardous constituent or constituents"	34,78	268.2(b)					
21, 22	"land disposal"	34, 39,78	268.2(c)					
	"nonwastewaters"	78,83	268.2(d)					
23	"polychlorinated biphenyls" or "PCBs"	39,78	268.2(e)					
	"wastewaters"	78	268.2(f)					
	"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)					
	"debris"	78, 83,109	268.2(g)					
24	removed	78, 83,109	268.2(g)(1)-(8)					
	"hazardous debris"	109	268.2(h)					
	"underlying hazardous constituent"	124	268.2(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	DILUTION PROHIBITED AS A SUBSTITUTE FOR TREATMENT							
25	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)					
	permissible forms of dilution related to Sections 307 or 402 of the CWA; exception for D003 reactive cyanide wastewater or nonwastewater	78,102	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
sampling and testing requirements for wastes with and without treatment standards; supernatant and sludge samples tested separately	50	268.4(a)(2)(i)					
annual removal of specific residues; residues subject to valid certification; flow-through standard of removal for supernatant	50	268.4(a)(2)(ii)					
requirements for subsequent management of treatment residues in another impoundment; prohibited unless certification under 268.8 and standards of 268.8(a) are met	50	268.4(a)(2)(iii)					
recordkeeping requirements must be specified in the facility's waste analysis plan	50	268.4(a)(2)(iv)					
9 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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	conditions under which Administrator grants waiver of requirements; meets RCRA §3005(j)(2)	34	268.4(a)(3)(ii)					
			268.4(a)(3)(ii)(A)					
			268.4(a)(3)(ii)(B)					
			268.4(a)(3)(ii)(C)					
9	modification granted on basis of a demonstration of no migration into groundwater or surface water at any future time; satisfies RCRA §3005(j)(11) no migration	34	268.4(a)(3)(iii)					
9	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)					

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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
good-faith effort to locate and contract with treatment, recovery, or disposal facilities nationwide to manage waste according to Subpart C effective date	34	268.5(a)(1)					
binding contractual commitment to construct or provide alternate treatment, recovery (e.g., recycling), or disposal capacity that meets Subpart D treatment standards; requirements when no treatment standards	34,39	268.5(a)(2)					
demonstration that alternative capacity cannot reasonably be available by effective date due to circumstances beyond applicant's control; how this must be demonstrated	34	268.5(a)(3)					
capacity being constructed or provided by applicant must be sufficient to manage entire quantity of waste	34	268.5(a)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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)					
	interim status landfill requirements	34	268.5(h)(2)(i)					
	permitted landfill requirements	34,109	268.5(h)(2)(ii)					
	interim status surface impoundment requirements	34,39	268.5(h)(2)(iii)					
	permitted surface impoundment requirements	34,109	268.5(h)(2)(iv)					
26	surface impoundments newly subject to RCRA 3006(j); compliance with 265 Subpart F within 12 months and with 265.221(a), (c), and (d) within 48 months; effect of a national capacity variance	109	268.5(h)(2)(v)					
26	requirements for landfills disposing of specified PCB waste	39,109	268.5(h)(2)(vi)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					
monitoring plan detecting migration at the earliest time	50	268.6(a)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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)					
27	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
type of monitoring	50	268.6(c)(1)(ii)					
monitoring station location	50	268.6(c)(1)(iii)					
monitoring interval	50	268.6(c)(1)(iv)					
specific hazardous constituents to be monitored	50	268.6(c)(1)(v)					
monitoring program implementation schedule	50	268.6(c)(1)(vi)					
monitoring station equipment	50	268.6(c)(1)(vii)					
sampling and analytical techniques employed	50	268.6(c)(1)(viii)					
data recording/reporting procedures	50	268.6(c)(1)(ix)					
268.6(c)(1) monitoring program must be in place by Administrator-specified time period, as part of approval of the petition, prior to prohibited waste receipt at unit	50	268.6(c)(2)					
268.6(c)(1) monitoring data sent to Administrator according to monitoring plan must be according to approved format and schedule	50	268.6(c)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	monitoring data as per 268.6(c)(1) monitoring plan must be kept in on-site operating record	50	268.6(c)(4)					
	criteria the 268.6(c)(1) monitoring program must meet:	50	268.6(c)(5)					
	Administrator approval for all sampling, testing, and analytical data; data accurate and reproducible	50	268.6(c)(5)(i)					
	Administrator approval of all estimation and monitoring techniques	50	268.6(c)(5)(ii)					
	QA/QC plan for all aspects of monitoring program provided to and approved by Administrator	50	268.6(c)(5)(iii)					
27, 28	petition submitted to Administrator	34,50	268.6(d)					
29	reporting of changes at unit and/or surrounding environment that significantly depart from variances and affect migration potential	50	268.6(e)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	changes to unit design, construction or operation proposed in writing and a demonstration to Administrator 30 days prior to change; Administrator makes determination if petition is invalidated and determines appropriate response; Administrator approval before changes can be made	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)					
30	owner/operator responsibilities if hazardous waste migration:	50	268.6(f)					
	immediate suspension of prohibited waste receipt	50,66	268.6(f)(1)					
	within 10 days written notification to Administrator	50	268.6(f)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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)					
31	signed statement	34,50	268.6(g)					
31	Administrator may request additional information	34,50	268.6(h)					
31	waste unit to which petition applies	34,50	268.6(i)					
31	Administrator gives public notice in Federal Register; final decision in Federal Register	34,50	268.6(j)					
31	term of petition	34,50	268.6(k)					
31	requirements prior to Administrator's decision	34,50	268.6(l)					
31	petition granted by Administrator does not relieve responsibilities under RCRA	34,50	268.6(m)					
32	noneligibility of certain liquid PCB wastes for "no migration" petitions under 268.6	39,50	268.6(n)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	WASTE ANALYSIS AND RECORDKEEPING							
9, 33	generator determines whether listed waste is a restricted waste; 268.32 exception; if characteristic is exhibited, test extract using 268, Appendix IX Method or use knowledge of waste to determine whether restricted from land disposal; what the generator must do if he determines that his waste displays characteristic of ignitability or corrosivity and is prohibited under 268.37	34,39, 50,83, 124	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
34, 35		34	268.7(a)(1)(i)					
		34,39, 78,83, 124	268.7(a)(1)(ii)					
		34,109	268.7(a)(1)(iii)					
		109	268.7(a)(1)(iv)					
	information the notice must include	34,109	268.7(a)(1)(v)					
9	if managing restricted waste that can be land disposed without further treatment, notice and certification to treatment, storage, or land disposal facility; generators of hazardous debris that is excluded from the definition of hazardous waste under 261.3(e)(2) not subject to notice and certification	34,39, 50,109	268.7(a)(2)					
			268.7(a)(2)(i)					
		34	268.7(a)(2)(i)(A)					
	information required in notice to treatment, storage or land disposal facility	34,39, 78,83	268.7(a)(2)(i)(B)					
			268.7(a)(2)(i)(C)					
		34	268.7(a)(2)(i)(D)					
	certification signature/statement	34,39	268.7(a)(2)(ii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	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)					
36		50	268.7(a)(3)(i)					
		50, 78,83	268.7(a)(3)(ii)					
		50	268.7(a)(3)(iii)					
		50,109	268.7(a)(3)(iv)					
		109	268.7(a)(3)(v)					
	information the notice must include	50,109	268.7(a)(3)(vi)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
37	for prohibited waste managed in tanks, containers, or containment buildings under 262.34 and treated to meet 268 Subpart D standards, waste analysis plan to be developed, followed and kept on-site; generators treating hazardous debris under 268.45, Table 1 alternative treatment standards not subject to analysis requirements	50,66, 78,109	268.7(a)(4)					
38	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)					
38	file plan with EPA Regional Administrator or authorized State 30 days prior to treatment; delivery verified	50,78	268.7(a)(4)(ii)					
38	compliance with 268.7(a)(2) notification requirements for wastes shipped off-site	50,78	268.7(a)(4)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
38	removed	50,78	268.7(a)(4)(iv)					
9,39	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)					
40	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
†, 11, 40	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)					
†, 11, 40	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)					
40	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	testing of 268.32 or RCRA 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)					
41	notice with each shipment by treatment facility to land disposal facility; however, debris excluded from the hazardous waste definition at 261.3(e) is subject to notification and certification under 268.7(d)	34, 50,109	268.7(b)(4)					
41, 34		34,50	268.7(b)(4)(i)					
		34,39, 50, 78,83, 124	268.7(b)(4)(ii)					
	information the notice must include	34,50	268.7(b)(4)(iii)					
			268.7(b)(4)(iv)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
42	certification of each shipment; however, debris excluded from the definition of hazardous waste under 261.3(e) is subject to notification and certification under 268.7(d)	34,39, 50,109	268.7(b)(5)					
42	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)					
42	certification requirements for wastes with treatment standards expressed as technologies	34,50	268.7(b)(5)(ii)					
	certification requirements for wastes with treatment standards expressed as concentrations in the waste pursuant to 268.43	78	268.7(b)(5)(iii)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	compliance with generator notice and certification requirements if waste sent offsite	50	268.7(b)(6)					
43	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)					
44	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)					
44	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)					
44	test of waste or extract; applicable treatment standards to be met; frequency of testing	39,50	268.7(c)(2)					
45	removed	50,78	268.7(c)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
45	removed	66,78	268.7(c)(4)					
	notification and certification requirements for generators or treaters who first claim that hazardous debris is excluded from the definition of hazardous waste under 261.3(e)	109	268.7(d)					
	one-time notification including specified information	109	268.7(d)(1)					
			268.7(d)(1)(i)					
			268.7(d)(1)(ii)					
			268.7(d)(1)(iii)					
	when notification must be updated	109	268.7(d)(2)					
	how the owner or operator must document and certify compliance with Table 1, 268.45 treatment standards	109	268.7(d)(3)					
			268.7(d)(3)(i)					
			268.7(d)(3)(ii)					
			268.7(d)(3)(iii)					
	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 after May 8, 1990	50,78	268.8(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
good faith generator effort to contract with treatment and recovery facilities providing greatest environmental benefit	50	268.8(a)(1)					
specific requirements for generator if no practically available treatment for waste:	50,66	268.8(a)(2)					
prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	50,66	268.8(a)(2)(i)					
for initial shipment, demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	50,66	268.8(a)(2)(ii)					
specific requirements for generator if there are practically available treatments for waste:	50,66	268.8(a)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	prior to initial shipment, demonstration to Regional Administrator containing specified lists and written discussion; certification; waste shipment	66	268.8(a)(3)(i)					
	with initial shipment copy of demonstration and certification sent to receiving facilities; certification only for subsequent shipments; generator recordkeeping and five-year retention	66	268.8(a)(3)(ii)					
46	where there is practically available treatment for waste prior to disposal, copy of demonstration and certification submitted to receiving facility with initial shipment; certification only for subsequent shipments; generator recordkeeping and five-year retention	50	268.8(a)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					
receiving treatment, recovery or storage facilities keep copy of generator's demonstration and certification	50	268.8(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SPECIAL RULES REGARDING WASTES THAT EXHIBIT A CHARACTERISTIC							
determination of applicable treatment standards under Subpart D, Part 268 by initial generator of a solid waste; code designation and exceptions; conditions under which generator must determine what underlying hazardous characteristics are reasonably expected to be present in the waste	78,83, 124	268.9(a)					
the treatment standard for the waste code listed in 40 CFR Part 261, Subpart D will operate for wastes both listed under Subpart D, Part 261 and exhibit a characteristic under Subpart C, Part 261; conditions under which treatment standards for all applicable listed and characteristic waste codes must be met	78	268.9(b)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
no prohibited waste which exhibits a characteristic under 40 CFR Part 261, Subpart C may be land disposed unless waste complies with Part 268, Subpart D treatment standards	78	268.9(c)					
wastes that exhibit a characteristic are subject to 268.7 requirements; once wastes are no longer hazardous, place one-time notification and certification in generator's/treater's files and send to EPA region or authorized State; when notification and certification must be updated; annual EPA/ State notification if such changes occur, by December 31	78,109	268.9(d)					
information needed with each notification	78	268.9(d)(1)					
	78,109	268.9(d)(1)(i)					
	78, 83,109	268.9(d)(1)(ii)					
	78,109	268.9(d)(1)(iii)					
certification signed by authorized representative stating language found in 268.7(b)(5)	78,109	268.9(d)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART B - SCHEDULE FOR LAND DISPOSAL PROHIBITION AND ESTABLISHMENT OF TREATMENT STANDARDS							
47 SURFACE IMPOUNDMENT EXEMPTIONS							
defines additional circumstances in which prohibited waste may continue to be placed in a surface impoundment	109	268.14(a)					
continued storage of "newly identified waste" in newly regulated impoundment for 48 months after the promulgation of the additional listing or characteristic provided waste is not otherwise prohibited and impoundment is in compliance with 265, subpart F within 12 months after new listing/characteristic promulgation	109	268.14(b)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	continue treatment of "newly identified waste" in newly regulated impoundment, provided waste is not otherwise prohibited, and surface impoundment is in compliance with 265, Subpart F within 12 months after new listing/characteristic promulgation	109	268.14(c)					
	SUBPART C - PROHIBITIONS ON LAND DISPOSAL							
	WASTE SPECIFIC PROHIBITIONS - SOLVENT WASTES							
48	effective November 8, 1986, F001-F005 spent solvent wastes, as specified in 261.31, are prohibited from land disposal unless one or more conditions apply:	34	268.30(a)					
	generated by an SQG of 100-1000 kg/mo	34	268.30(a)(1)					
	generated by a CERCLA response action/corrective action except where waste is contaminated soil or debris	34,50	268.30(a)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	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)					
49	situations where 268.30(a), (b) and (c) do not apply:	34,50	268.30(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
49	wastes treated to meet Subpart D of Part 268	34,50	268.30(d)(1)					
49	disposal at facility with successful no-migration petition	34,50	268.30(d)(2)					
49	wastes and units for which case-by-case extensions have been granted	34,50	268.30(d)(3)					
	WASTE SPECIFIC PROHIBITIONS - DIOXIN-CONTAINING WASTES							
9	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	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)					
9,50	situations where 268.31(a) and (b) do not apply	34,50	268.31(d)					
9,50	wastes treated to meet Subpart D, Part 268 standards	34,50	268.31(d)(1)					
9,50	disposal at facility with successful no-migration petition	34,50	268.31(d)(2)					
9,50	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
reserved	39	268.32(b)					
reserved	39	268.32(c)					
268.32(a) and (e) requirements do not apply until specific calendar dates:	39,50	268.32(d)					
July 8, 1989 for contaminated soil or debris 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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
51	liquids containing HOCs greater than or equal to 1,000 mg/l and not prohibited under 268.32(a)(3)	39	268.32(e)(1)					
	nonliquid wastes containing HOCs greater than or equal to 1,000 mg/kg and not wastes described in 268.32(d)	39,50	268.32(e)(2)					
	between July 8, 1987, and November 8, 1988, 268.32(e)(1) and (e)(2) wastes may be disposed of in a landfill or surface impoundment if disposal complies with 268.5(h)(2)	39, 50,66	268.32(f)					
	requirements of 268.32(a), (d) and (e) do not apply under certain conditions:	39,50	268.32(g)					
	granted a 268.6 exemption	39	268.32(g)(1)					
	granted a 268.5 exemption	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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)					
	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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 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)					
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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
granted an exemption from prohibition for wastes and units under 268.6	50	268.33(e)(2)					
granted an extension to an effective date for wastes under 268.5	50	268.33(e)(3)					
prohibition of landfill or surface impoundment disposal of wastes specified in 268.10 for which treatment standards have not been promulgated (other than 268.32 or RCRA 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 if 268.41 and 268.43 treatment standards are exceeded; 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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
effective June 8, 1991, wastes specified in 268.34 with Part 268, Subpart D treatment standard based on incineration, and which are contaminated soil and debris, are prohibited from land disposal	63	268.34(d)					
requirements for landfill or surface impoundment disposal of wastes included in 268.34(c) and (d) between June 8, 1989, and June 8, 1991; applies to F007, F008, F009, F011, and F012 only between June 8, 1989, and July 8, 1989	63	268.34(e)					
requirements of 268.34(a)-(d) do not apply if:	63	268.34(f)					
meet applicable 268 Subpart D standards	63	268.34(f)(1)					
granted an exemption pursuant to a 268.6 petition for the wastes and units covered by the petition	63	268.34(f)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
268.34(a), (b) and (c) do not apply if granted extension under 268.5 for wastes covered by extension	63	268.34(g)					
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 RCRA 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 level	63	268.34(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					
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; and RCRA hazardous wastes containing naturally occurring radioactive materials	78,83, 106,116	268.35(c)					
effective May 8, 1992, 268.10, 268.11 and 268.12 mixed radioactive/hazardous wastes are prohibited from land disposal	78,83, 116	268.35(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	subject to applicable prohibitions in §§ 268.30, 268.31 and 268.32, contaminated soil and debris are prohibited from land disposal as follows:	116	268.35(e)					
52	effective May 8, 1994, prohibition from land disposal of debris contaminated with 268.12 wastes and debris contaminated with any characteristic waste having Subpart D, Part 268 treatment standards	78,83, 103, 116,123	268.35(e)(1)					
53	effective May 8, 1994, mixed radioactive hazardous debris contaminated with 268.12 wastes and mixed radioactive hazardous debris contaminated with any characteristic waste for which Subpart D treatment standards are established are prohibited from land disposal	123	268.35(e)(2)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
268.35(e)(1)&(2) do not apply where generator has failed to make good-faith effort to locate suitable treatment capacity, has not utilized such capacity as it has found to be available, or has failed to file a report under 268.5(g), by August 12, 1993 or within 90 days after hazardous waste is generated, describing generator's efforts to locate treatment capacity; where 268.35(e)(1)&(2) do not apply, all wastes described in 268.35(e)(1)&(2) are prohibited from land disposal effective May 8, 1993	123	268.35(e)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
53	effective May 8, 1993, hazardous soil contaminated with wastes specified in this section having treatment standards in 268 Subpart D based on incineration, mercury retorting or vitrification, and soils 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	116,123	268.35(e)(4)					
	when used in 268.35(e)(1)&(2), debris defined as:	123	268.35(e)(5)					
	as defined in 268.2(g)	123	268.35(e)(5)(i)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
nonfriable inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require cutting, or crushing and grinding in mechanical sizing equipment prior to stabilization, limited to the inorganic or metal materials specified in 268.35(e)(5)(ii)(A)-(H)	123	268.35(e)(5)(ii)					
		268.35(e)(5)(ii)(A)					
		268.35(e)(5)(ii)(B)					
		268.35(e)(5)(ii)(C)					
		268.35(e)(5)(ii)(D)					
		268.35(e)(5)(ii)(E)					
		268.35(e)(5)(ii)(F)					
		268.35(e)(5)(ii)(G)					
		268.35(e)(5)(ii)(H)					
between May 8, 1990, and August 8, 1990, wastes included in paragraph 268.35(a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(f)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
between May 8, 1990, and November 8, 1990, wastes included in paragraph 268.35(b) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(g)					
between May 8, 1990, and May 8, 1992, wastes included in paragraphs 268.35(c), (d) and (e) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with 268.5(h)(2)	78	268.35(h)					
conditions under which requirements of paragraphs 268.35(a), (b), (c), (d) and (e) do not apply:	78	268.35(i)					
wastes meet applicable Part 268, Subpart D standards	78	268.35(i)(1)					
persons granted exemption under 268.6	78	268.35(i)(2)					
wastes meet applicable alternate standards under 268.44	78	268.35(i)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
effective May 8, 1993, prohibition from land disposal of D008 lead materials stored before secondary smelting; submission of binding contractual commitment, documentation and detailed schedule for specified construction, and providing specified capacity, by March 1, 1993; D008 prohibited from land disposal by failure to submit documentation; placed in facility record by July 27, 1992, documentation demonstrating that such management capacity will be adequate and complies with all applicable Subtitle C requirements	106	268.35(k)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
WASTE SPECIFIC PROHIBITIONS - NEWLY LISTED WASTES							
effective November 9, 1992, K107, K108, K109, K110, K111, K112, K117, K118, K123, K124, K125, K126, K131, K132, K136, U328, U353 and U359 prohibited from land disposal	109	268.36(a)					
effective June 30, 1993, F037 and F038 not generated from surface impoundment cleanouts or closures are prohibited from land disposal	109	268.36(b)					
effective June 30, 1994, F037 and F038 generated from surface impoundment cleanout or closures are prohibited from land disposal	109	268.36(c)					
effective June 30, 1994, radioactive wastes mixed with specified wastes are prohibited from land disposal	109	268.36(d)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
effective June 30, 1994, debris contaminated with specified wastes and not contaminated with other prohibited waste are prohibited from land disposal	109	268.36(e)					
under what circumstances 268.36(b) wastes may be disposed in a landfill or generated and disposed in a surface impoundment	109	268.36(f)					
under what circumstances 268.36(d) and (e) wastes may be disposed in a landfill or generated and disposed in a surface impoundment	109	268.36(g)					
under what circumstances 268.36 (a)-(e) do not apply	109	268.36(h)					
		268.36(h)(1)					
		268.36(h)(2)					
		268.36(h)(3)					
		268.36(h)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
how to determine whether a 268.36 waste exceeds a 268.41 or 268.43 treatment standard; waste prohibited and all Part 268 requirements apply if constituents in excess of applicable levels	109	268.36(i)					
WASTE SPECIFIC PROHIBITIONS--IGNITABLE AND CORROSIVE CHARACTERISTIC WASTES WHOSE TREATMENT STANDARDS WERE VACATED							
effective August 9, 1993, wastes specified in 261.21 as D001 (and not in the High TOC Ignitable Liquids subcategory) and in 261.22 as D002 that are managed in systems other than those whose discharge is regulated under the CWA or that inject in Class I deep wells regulated under the SDWA or are zero dischargers that engage in CWA-equivalent treatment before ultimate land disposal, are prohibited from land disposal; CWA-equivalent treatment defined	124	268.37(a)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
effective February 10, 1994, wastes specified in 261.21 as D001 (and not in the High TOC Ignitable Liquids subcategory) and in 261.22 as D002 that are managed in systems defined in 40 CFR 144.6(e) and 146.6(e) as Class V injection wells that do not engage in CWA-equivalent treatment before injection are prohibited from land disposal	124	268.37(b)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART D - TREATMENT STANDARDS							
	APPLICABILITY OF TREATMENT STANDARDS							
33	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
restricted waste with a 268.42 treatment technology, or hazardous debris with 268.45 treatment technology, may be land disposed if specified technology or an Administrator-approved method is used; for wastes displaying characteristic of ignitability and reactivity that are diluted to meet deactivation treatment standard in 268.42(a) Tables 1 & 2, the treater must comply with precautionary measures specified in 264.17(b) and 265.17(b)	39,109, 124	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	if 268.41 through 268.48 treatment standard established and waste is a hazardous debris, then waste subject to those standards rather than the 268.45 hazardous debris standards	109	268.40(d)					
	TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN WASTE EXTRACT							
54, 33	treatment standards; explanation of Table CCWE	34,50, 63,78, 102,109	268.41(a)					
	Constituent Concentrations in Waste Extract	34, 50,63, 78,83, 95,109, 124	268.41(a)/Table CCWE					
	treatment standards for common constituents in combined wastes; mixtures of high and low zinc nonwastewater K061 subject to treatment standard for high zinc K061	34,95	268.41(b)					
	treatment standards for constituents in F001-F005 listed in Table CCWE	109	268.41(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	TREATMENT STANDARDS EXPRESSED AS SPECIFIED TECHNOLOGIES							
	treatment of wastes identified in 268.42(a)(1)&(2) and Tables 2 and 3 with technology(ies) specified in 268.42(a)(1)&(2) and in Table 1 of 268.42	34,78	268.42(a)					
	standard for incineration of liquid hazardous wastes containing PCBs	39	268.42(a)(1)					
	standard for incineration of certain nonliquid hazardous wastes containing HOCs; where standards do not apply	39,50, 78,83	268.42(a)(2)					
55	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	63, 78,83	268.42(a)(3)					
56	removed	63,78	268.42(a)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
Technology Codes and Description of Technology-Based Standards	78,83	268.42(a)/ Table 1					
Technology-Based Standards by RCRA Waste Code	78,83, 95,102, 109,124	268.42(a)/ Table 2					
Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste	78,83	268.42(a)/ Table 3					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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 section into their code.							
submit application to Administrator demonstrating alternate treatment can achieve 268.42(a), (c), & (d) performance specifications for wastes or 268.45 Table 1 specifications for hazardous debris; 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, 78,109	268.42(b)					
† ,11 Alternate Treatment Standards for Lab Packs							
conditions for eligibility of lab packs for land disposal:	78	268.42(c)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
compliance of lab packs with applicable provisions of 264.316 and 265.316	78	268.42(c)(1)					
Part 268 Appendix IV and Appendix V hazardous wastes contained in lab packs	78	268.42(c)(2)					
incineration of lab packs in accordance with Part 264, Subpart O and Part 265, Subpart O requirements	78	268.42(c)(3)					
treatment standards for incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010 and D011	78	268.42(c)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
57	radioactive hazardous mixed wastes with 268.42 Table 3 treatment standards not subject to 268.41 or 268.42 Table 2 or 268.43 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; hazardous debris containing radioactive waste subject to 268.45 treatment standards	78,109	268.42(d)					
	TREATMENT STANDARDS EXPRESSED AS WASTE CONCENTRATIONS							
	introductory paragraph for Table CCW explaining table	34,50, 63,78	268.43(a)					
58	Constituent Concentrations in Wastes; no land disposal for specified K wastes	50,62, 63,78, 83,109, 124	268.43(a)/Table CCW					
59	meet lowest constituent treatment standard when mixing wastes with differing treatment standards for a constituent of concern	50,63	268.43(b)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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.							
60 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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
apply to Administrator or delegated representative for site-specific variance from a treatment standard if specified conditions are appropriate; what applicant must demonstrate	50,66	268.44(h)					
260.20(b)(1)-(4) information must be included	50	268.44(i)					
Assistant Administrator or delegated representative may request additional information	50	268.44(j)					
if site-specific treatment standard variance then compliance with 268.7 waste analysis requirements	50	268.44(k)					
during application review process, compliance with land disposal restrictions once effective date for waste reached	50	268.44(l)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
TREATMENT STANDARDS FOR HAZARDOUS DEBRIS							
treatment of hazardous debris prior to land disposal as specified unless EPA determines under 261.3(e)(2) that debris is no longer contaminated with hazardous waste	109	268.45(a)					
general; treatment for each 268.45(b) contaminant subject to treatment in accordance with 268.45, Table 1	109	268.45(a)(1)					
characteristic debris; deactivation as specified in 268.45, Table 1	109	268.45(a)(2)					
mixtures of debris types; standards for each debris type must be achieved; if applicable, immobilization must be used last	109	268.45(a)(3)					
mixtures of 268.45(b) contaminant types; 268.45, Table 1 treatment for each contaminant must be used; if applicable, immobilization must be used last	109	268.45(a)(4)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
waste PCBs; hazardous debris subject to both 40 CFR 761 and 268.45 must meet more stringent requirements	109	268.45(a)(5)					
hazardous debris treated for each "contaminant subject to treatment," determined as follows:	109	268.45(b)					
toxicity characteristic debris; those EP constituents for which debris exhibits a toxicity characteristic	109	268.45(b)(1)					
debris contaminated with listed waste; constituents for which BDAT standards are established for wastes under 268.41 and 268.43	109	268.45(b)(2)					
cyanide reactive debris; reactive because of cyanide must be treated for cyanide	109	268.45(b)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
when hazardous debris that has been treated is not considered a hazardous waste; hazardous debris contaminated with a listed waste that is treated by a Table 1 immobilization technology must be managed in a Subtitle C facility	109	268.45(c)					
general requirements for treatment residues:	109	268.45(d)(1)					
separate residue from debris by simple physical or mechanical means;	109	268.45(d)(1)(i)					
residue is subject to 268 Subpart D waste-specific treatment standards	109	268.45(d)(1)(ii)					
residue from nontoxic debris, as specified, must be deactivated; not subject to 268 Subpart D waste-specific treatment standards	109	268.45(d)(2)					
residue from cyanide-reactive debris must meet 268.43, D003 standards	109	268.45(d)(3)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	ignitable nonwastewater residue, as specified, must meet technology-based "D001 Ignitable Liquids" standard	109	268.45(d)(4)					
	layers of debris removed by spalling remain subject to 268.45 treatment standards	109	268.45(d)(5)					
	alternative treatment standards for hazardous debris	109	268.45/Table 1					
	ALTERNATIVE TREATMENT STANDARDS BASED ON HTMR							
	Table 1 identifies alternative treatment standards for F006 and K062 nonwastewaters	109	268.46					
	alternative treatment standards as shown at 57 FR 37281	109	268.46/Table 1					
	SUBPART E - PROHIBITIONS ON STORAGE							
	PROHIBITIONS ON STORAGE OF RESTRICTED WASTES							
9	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)					
9	on-site storage exemption for generator	34,109	268.50(a)(1)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	treatment, storage, and disposal facility exemption	34,109	268.50(a)(2)					
9	container labeling	34	268.50(a)(2)(i)					
9	tank labeling	34	268.50(a)(2)(ii)					
9	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)					
9	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	APPENDIX I TO PART 268							
	TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)							
9,33, 61	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)							
62	F001-F005 spent solvent waste treatment standards appear in 268.41, 268.42 and 268.43	34,109	Appendix II					
	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							
†,11	**ORGANOMETALLIC LAB PACKS**							
	list of hazardous wastes that may be placed-in "organometallic" or "Appendix IV lab packs"	78,83	Appendix IV					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	APPENDIX V TO PART 268							
†,11	**ORGANIC LAB PACKS**							
	list of hazardous wastes that may be placed in "organic" or "Appendix V lab packs"	78,83	Appendix V					
	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					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	APPENDIX IX TO PART 268							
	EXTRACTION PROCEDURE (EP) TOXICITY TEST METHOD AND STRUCTURAL INTEGRITY TEST (SW-846, METHOD 1310A)							
33	*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 A OF THE PERMIT APPLICATION							
	add new paragraph regarding hazardous *debris; description of* debris category(ies) and contaminant category(ies) to be treated, stored or disposed of at facility	109	270.13(n)					
	CONTENTS OF PART B: GENERAL REQUIREMENTS							
	insert "and hazardous debris" after "hazardous waste"; insert "of this chapter" after "part 264"	109	270.14(b)(2)					
	add new paragraph; copy of notice of approval of petition or extension	34	270.14(b)(21)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART C - PERMIT CONDITIONS							
	ESTABLISHING PERMIT CONDITIONS							
	insert "through 268"; remove "267"	34	270.32(b)(1)					
	SUBPART D - CHANGES TO PERMIT							
63	**PERMIT MODIFICATIONS AT THE REQUEST OF THE PERMITTEE**							
	replace "of restricted wastes" with ", or in containment buildings"	109	270.42(e)(3)(ii)(B)					
	add new paragraph and subparagraphs; conditions for treating nonspecified waste	34	270.42(o)					
	prohibited from one or more land disposal methods under Part 268, Subpart C or RCRA Section 3004	34,†39	270.42(o)(1)					
	treatment in accordance with 268.4 and 268.3 and:	34,†39	270.42(o)(2)					
	treatment in accordance with 268.41, 268.42 or 268.44; or	†39	270.42(o)(2)(i)					
	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)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	Federal/State approval; allowable modifications	34	270.42(o)(4)					
	add new paragraph and subparagraphs; 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							
64	**CLASSIFICATION OF PERMIT MODIFICATION**							
65, 66	redesignate old B(1)(b) as B(1)(c); add new item involving F039 under "General Facility Standards"; add a footnote symbol to the Class I designation at B(1)(b); remove second occurrence of B(1)(b)	78,83, 124	270.42 Appendix I, B(1)(b)					

CONSOLIDATED CHECKLIST: Land Disposal Restrictions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
65, 67	redesignate old B(1)(c) as B(1)(d), old B(1)(b) becomes B(1)(c); add new item involving underlying hazardous constituents under "General Facility Standards"	78,124	270.42 Appendix I, B(1)(c)					
67	old B(1)(c) becomes B(1)(d)	124	270.42 Appendix I, B(1)(d)					
	add entry 6 to section I	109	270.42 Appendix I, I(6)					
	add new section M	109	270.42 Appendix I, M					
	SUBPART G - INTERIM STATUS							
	CHANGES DURING INTERIM STATUS							
	remove "or" before "containers" and insert "or containment buildings" after "containers"; in two places, insert "of this chapter" after "Part 268"	109	270.72(b)(6)					
68	no reconstruction; changes do not include tank/container changes to comply with land disposal restrictions	39	270.72(e)					

[1] See the amendment to the rule addressed by Revision Checklist 39 at 52 FR 41295 (October 27, 1987), included on Revision Checklist 39.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

[2] Paragraph 260.11(a) is also affected by Revision Checklist 67 (54 FR 40260, September 29, 1989), Revision Checklist 73 (55 FR 8948, March 9, 1990), and Revision Checklist 126 (58 FR 46040, August 31, 1993).

[3] The original 261.3(c)(ii)(C) was introduced by Revision Checklist 95. Revision Checklist 109 split the paragraph into two subparagraphs, (C)(*1*)&(*2*), and completely revised the text.

[4] Paragraph 261.5(f)(2) is also affected by Revision Checklist 47 (53 FR 27162, July 19, 1988).

[5] Note that the "TC Rule," Revision Checklist 74 (55 FR 11798, March 29, 1990), has also made changes to 261.24(b).

[6] Paragraph 261.33(c) is also affected by Revision Checklist 41 (52 FR 26012, July 10, 1987).

[7] This revision fixes an error in the July 1, 1991 CFR which makes it appear that there are two paragraphs designated as 262.34(a)(2) (see the editorial note in the CFR). Revision Checklist 82 originally inserted the first 262.34(a)(2), 262.34(a)(2)(i), and 262.34(a)(2)(ii) and redesignated the old 262.34(a)(2)-(4) as 262.34(a)(3)-(5). However, Revision Checklist 92 redesignated 262.34(a)(3) as 262.34(a)(2), effectively removing the first 262.34(a)(2) and incorporating these requirements into 262.34(a)(1) at 262.34(a)(1)(iii) and (iii)(A)&(B). It was not the Agency's intent to include these requirements both at 262.34(a)(1)(iii)(A)&(B) and at 262.34(a)(2) as is indicated in the July 1, 1991 CFR. The first 262.34(a)(2) in that CFR should not be in the code. Revision Checklist 92 also redesignated 262.34(a)(3)-(5) as 262.34(a)(2)-(4), i.e., returned these subparagraphs to their original numbering prior to the redesignation by Revision Checklist 82. The revision, which is part of Revision Checklist 109, removes the first 262.34(a)(2), returning the code to what was intended by Revision Checklist 92.

[8] Note that the final rule for Revision Checklist 39 (52 FR 25787) gives Subpart E, 262.51 as the citation for the section titled "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 detected 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; Revision Checklist 48).

[9] See the technical correction to the rule addressed by Revision Checklist 34 at 52 FR 21010 (June 4, 1987, included on Revision Checklist 34).

[10] Subparagraphs 264.13(a)(1) and 265.13(a)(1) are also affected by Revision Checklist 64 (54 FR 33376, August 14, 1989).

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
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[11] 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.

[12] Revision Checklist 109 [57 FR 37194 (August 18, 1992)] added these subparts to Parts 264 and 265.

[13] Note that there is an error in the Federal Register; the deadline for the written notice should be February 18, 1993, rather than November 16, 1992 as it appears in the Federal Register, in keeping with the effective date of these provisions, with the preamble to the rule at 57 FR 37215 (second full paragraph in the right-hand column), and with the similar provision under 265.1101(b)(4)(i).

[14] Note that there is a typographical error in the Federal Register; "lead" should be "led."

[15] Note that the Federal Register for this rule introduces an error into the second-to-last sentence of this subparagraph by inserting an extraneous "with" between "§§" and "265.111."

[16] Note, there is an error in the Federal Register article for this rule. The phrase "as needed to permit" should read "as needed to prevent."

[17] 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.

[18] 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.

[19] 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.

[20] There is a typographical error in the title of this section as printed in 58 FR 29860 (May 24, 1993; Revision Checklist 124); "scope/and" should be "scope and." States should retain the correct title as it appears in the CFR.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

[21] 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.

[22] Paragraph 268.2(c) is also affected by Revision Checklist 121 (58 FR 8658; February 16, 1993).

[23] 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).

[24] Subparagraphs 268.2(g)(1) through (8) were introduced into the code by Revision Checklist 78, modified by Revision Checklist 83, and removed by Revision Checklist 109.

[25] 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.

[26] Revision Checklist 109 redesignated the old 268.5(h)(2)(v) as 268.5(h)(2)(vi) and added a new 268.5(h)(2)(v).

[27] 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).

[28] 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).

[29] 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).

[30] 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).

[31] 268.6(d)-(j) were originally introduced by Revision Checklist 34. Revision Checklist 50 redesignated these paragraphs as 268.6(g)-(m).

[32] 268.6(k) was originally introduced by Revision Checklist 39. Revision Checklist 50 redesignated it as 268.6(n).

[33] Note, Revision Checklist 126 (58 FR 46040; August 31, 1993), a non-LDR checklist, replaced the TCLP (method 1311) in Appendix II to Part 261 and the EP toxicity test method (method 1310) in Part 268, Appendix IX with notes referencing the TCLP and EP in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" as incorporated by reference at 260.11(a). All references to Part 261, Appendix II and

Part 268, Appendix IX were revised to reflect these changes. Revision Checklist 126 did not revise the content nor the intended use of the TCLP or the EP toxicity methods.

[34] There is a typographical error in 58 FR 29860 (May 24, 1993; Revision Checklist 124) which revised 268.7(a)(1)(ii) & 268.7(b)(4)(ii); "reactive cyanides" should appear in italic type as it does in the CFR.

[35] Revision Checklist 109 redesignated the old 268.7(a)(1)(iv) as 268.7(a)(1)(v) and added a new 268.7(a)(1)(iv). Note that there is a typographical error in the Federal Register rule for Revision Checklist 109. The instructions preceding the change to 268.7 (on page 57 FR 37270) incorrectly say that 268.7(a)(1)(v) is added; however, the change shown is that a new 268.7(a)(1)(iv) is added, as described in this footnote.

[36] 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. Note that there is a typographical error in the Federal Register article for Revision Checklist 109. The instructions preceding 268.7 (on page 57 FR 37270) incorrectly say 268.7(a)(3)(vi) is added. It is a new 268.7(a)(3)(v) which is added and the old 268.7(a)(3)(v) is redesignated as 268.7(a)(3)(vi).

[37] Note that there is a typographical error in the Federal Register article for Revision Checklist 109; there should be a comma, not a semicolon, after the second occurrence of "containers" in 268.7(a)(4).

[38] 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).

[39] 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.

[40] 268.7(a)(7) was originally 268.7(a)(6) on Revision 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).

[41] 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.

[42] 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.

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
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[43] 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 268.7(b)(7) and 268.7(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.

[44] 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 changes.

[45] 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.

[46] An error in the September 6, 1989 rule (54 FR 36967; Revision Checklist 66) 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.

[47] The rest of Subpart B is not included in this checklist because it deals with the schedule with which EPA will restrict wastes from land disposal. States do not need to adopt those sections (i.e., 268.10-268.13).

[48] 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.

[49] 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).

[50] 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).

[51] 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.

[52] This subparagraph was originally 268.35(e) when introduced into the code by Revision Checklist 78. However, Revision Checklist 116 redesignated it as 268.35(e)(1), with some modifications, and inserted a new paragraph at 268.35(e).

[53] The original 268.35(e)(2) was introduced by Revision Checklist 116. Revision Checklist 123 redesignated it as 268.35(e)(4) and added a new 268.35(e)(2).

[54] Note that there are typographical errors in the Federal Register addressed by Revision Checklist 102. The change from K031 to D031 appears to be incorrect; "D031" should be "K031." There will be a technical correction in the future. Also, after "Appendix I of this part" in column 2 of page 57 FR 8089 for 268.41(a), "for the allowable" appears to have been incorrectly changed to "of the allowable."

[55] 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).

[56] 268.42(a)(4) was introduced into the code by Revision Checklist 63. Revision Checklist 78 removed this paragraph.

[57] 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).

[58] Note, in the Federal Register for Revision Checklist 109 (57 FR 37275), there are two different entries in Table CCW for K030. This interpretation was confirmed by EPA and this is how the Checlist 109 change was included in the July 1, 1990 CFR. The second "K030" should read "K043." Also, this Federal Register adds an entry for K111, but this is not noted in the revision instructions for the table.

[59] 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.

[60] Note that 268.44(o) and a table listing wastes excluded from the treatment standards under 268.43(a) were added to the CFR by 56 FR 12351, a notice granting treatability variance for facilities located in Chicago, Illinois. Due to the topic, no checklist was necessary for this notice. As such, this paragraph and table were not included in this consolidated checklist as States would likely not want to include it in their code, unless treatability variance was granted to a facility in that State.

[61] 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 treated 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.

62 Revision Checklist 109 removed the table of F001-F005 spent solvent waste treatment standards and replaced it with a note regarding where such treatment standards may be found.

63 Revision Checklist 54 revised the section heading, which previously read "Minor Modification of Permits," to read "Permit Modification at the Request of the Permittee." This was an optional change; therefore a State may have the old section title if it elected not to adopt the Checklist 54 changes. 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 at the time of base program authorization need worry about the 270.42 modifications made to this section by Revision Checklists 34, 39, 54, and 109. Revision Checklist 54 removed portions of the code added by Revision Checklists 34 and 39, i.e., 270.42(o) and 270.42(p) and their subparagraphs. However, these sections have been retained in this Consolidated LDR Checklist because the Revision Checklist 54 deletions were optional. The various scenarios for changes to this section are as follows:

- If the State did not include an analog to 270.42 in its base program, all entries for 270.42 shown in this Consolidated LDR Checklist should be disregarded.

- If the State included an analog to 270.42 in its base program and chose to adopt the optional changes in Revision Checklists 39 and 54, the change to 270.42(e)(3)(ii)(B) should be made; the entries on this Consolidated LDR Checklist for 270.42(o) and (p) and their respective subparagraphs should be disregarded (such code will have been deleted); and the new section title should be used.

- If the State included an analog to 270.42 in its base program, but chose not to adopt the optional changes in Revision Checklists 39 and 54, the change to 270.42(e)(3)(ii)(B) should be made; the State should have analogs to 270.42(o) and (p) and their respective subparagraphs as shown on this Consolidated LDR Checklist; and the old section title may be retained.

64 Appendix I was introduced by Revision Checklist 54 as an optional modification to Section 270.42. Changes to this appendix addressed by Revision Checklists 78, 83, 109 and 124 are relevant only if a State has modified its code to include Appendix I as per Revision Checklist 54.

65 Revision Checklist 78 redesignated the old item B(1)(b) as item B(1)(c) and added a new B(1)(b).

CONSOLIDATED CHECKLIST: Land Disposal Restrictions
as of June 30, 1994 (cont'd)

[66] Revision Checklist 83 added the footnote symbol to the Class I designation at B(1)(b). Note that both the 1991 and 1992 CFRs have two occurrences of item B(1)(b). The first occurrence (as revised by Revision Checklist 83) is the correct version. The second occurrence of item B(1)(b) is the one added by Revision Checklist 78 (without the Revision Checklist 83 change) and which is removed by Revision Checklist 124.

[67] Revision Checklist 124 redesignated the old item B(1)(c) as item B(1)(d) and added a new B(1)(c).

[68] Revision Checklist 61 revised and redesignated 270.72(e) as 270.72(b). The Revision Checklist 61 changes are optional, however; therefore, some States may have retained 270.72(e) in their code as introduced by the LDR Revision Checklist 39.

Consolidated Checklist for the Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994

The following consolidated checklist should replace the existing version in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Burning of Hazardous Waste in Boilers and Industrial Furnaces
as of June 30, 1994

Notes 1) This checklist consolidates changes to the Federal code addressed by the following Boilers and Industrial Furnaces (BIF) checklists that have occurred through June 30, 1994:

- Revision Checklist 85 [56 FR 7134 (February 21, 1991)];
- Revision Checklist 94 [56 FR 32688 (July 17, 1991)];
- Revision Checklist 96 [56 FR 42504 (August 27, 1991)];
- Revision Checklist 98 [56 FR 43874 (September 5, 1991)];
- Revision Checklist 105 [57 FR 27880 (June 22, 1992)];
- Revision Checklist 110 [57 FR 37284 (August 18, 1992)];
- Revision Checklist 111 [57 FR 38558 (August 25, 1992)];
- Revision Checklist 114 [57 FR 44999 (September 30, 1992)];
- Revision Checklist 125 [58 FR 38816 (July 20, 1993)] and
- Revision Checklist 127 [58 FR 59598 (November 9, 1993)].

Note that Revision Checklists 105 and 110, which address Coke By-Products, are included in this consolidated checklist because they also affect the BIF rule.

2) Note that 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 considered to be 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 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.

3) Revision Checklist 98 addresses an administrative stay of the permitting standards for BIFs adopted pursuant to the February 21, 1991 (56 FR 7134; Revision Checklist 85) final rule as it applies to coke ovens burning certain hazardous wastes from the coke by-products recovery process. This administrative stay has been removed by Revision Checklist 105 (57 FR 27880; June 22, 1992) and, therefore, should not be adopted by States.

4) The final rule addressed by Revision Checklist 125 was promulgated pursuant to the Clean Air Act, rather than the Resource Conservation and Recovery Act, and primarily amends regulations in 40 CFR Parts 51 and 52. However, this rule also makes conforming changes to 40 CFR Parts 260 and 266 to ensure that the guidelines for air quality modeling and screening for boilers and industrial furnaces burning hazardous waste are consistent with the guidelines in 40 CFR Part 51. Only the changes to 40 CFR Parts 260 and 266 are included in Revision Checklist 125 and in this consolidated checklist. These revisions are necessary. Therefore, Revision Checklist 125 has been developed to help States maintain consistency with the Federal regulations. Note that States do not have to adopt the changes to 40 CFR Parts 51 and 52 to make the Part 260 and 266 changes. Rather, States should reference Appendix W, Part 51 at 266.104(e)(3) and 266.106(h).

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

Note that EPA's Office of Solid Waste is treating the changes made by the Air rule to 40 CFR Parts 260 and 266 as HSWA provisions because they amend the BIF regulations promulgated under HSWA.

5) Although Revision Checklist 127 is designated as optional, EPA strongly recommends that States adopt the less stringent requirements of this administrative stay because the nonmetal limits affected by the stay are extremely conservative and were based on unintended mistaken assumptions. This rule replaces the current nonmetal limits needed to qualify for the Bevill exemption, as specified in the February 21, 1991 rule (Revision Checklist 85), with the land disposal restriction (LDR) limits for underlying constituents in nonwastewaters pending further administrative action to establish appropriate health-based levels.

Note that the administrative stay is conditioned on compliance with the interim LDR exemption values. Noncompliance with those values would mean that the owner or operator of the Bevill device is no longer meeting the conditions of the administrative stay and, therefore, must comply with the comparison test in § 266.112(b)(1), in order to qualify for the exclusion in § 266.112. If the owner or operator meets neither the conditions of the stay nor the comparison test, then the residue would be subject to regulation as hazardous waste. Additionally, the stay does not affect the application of the procedural requirements in 266.112(b)(2) except as outlined in 58 FR 59600, column 3, sections V. A-D.

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
SUBPART B - DEFINITIONS							
DEFINITIONS							
change "Parts 260 through 265 and 268" to "Parts 260 through 266 and 268"	85	260.10(intro)					
"carbon regeneration unit"	85	260.10					
revise "incinerator"	85	260.10(1)&(2)					
replace "controlled flame devices" with "thermal treatment" in introductory text of the definition for "industrial furnace"	85	260.10					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	260.10(12)& (13)					
"infrared incinerator"	85,111	260.10					
"plasma arc incinerator"	85,111	260.10					
"sludge dryer"	85	260.10					
REFERENCES							
add to first of set listings in alphabetical order a reference to the October 1992 version of "U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources"	85,125	260.11(a)					
SUBPART C - RULEMAKING PETITIONS							
GENERAL							
replace "265" with "266" in the first sentence	111	260.20(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE							
	SUBPART A - GENERAL							
	DEFINITION OF SOLID WASTE							
1	redesignate (d)(2) as (d)(3); add new paragraph regarding secondary materials fed to a halogen acid furnace that exhibit a characteristic or are a listed waste; exception for brominated material that meets certain criteria	85, 94,96	261.2(d)(2)					
	material must contain a bromine concentration of at least 45%	96	261.2(d)(2)(i)					
	material must contain less than a total of 1% of toxic organic compounds listed in Appendix VIII	96	261.2(d)(2)(ii)					
	material is processed continually on-site in the halogen acid furnace via direct conveyance	96	261.2(d)(2)(iii)					
	redesignate old 261.2(d)(2) as 261.2(d)(3)	85,94	261.2(d)(3)					
	change "paragraph" to "paragraphs"; insert "and (d)(2)" after "(d)(1)"	111	261.2(e)(2)(iv)					
	DEFINITION OF HAZARDOUS WASTE							
2	replace "261.6(a)(3)(v) through (ix)" with "261.6(a)(3)(v) through (viii)"	94,96	261.3(c)(2)(ii)(B)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
EXCLUSIONS							
† add exclusion for K060, K087, K141, K142, K143, K144, K145, K147, K148 and other wastes from coke by-products that are hazardous only because they exhibit the Toxicity Characteristic when recycled as specified; exclusion is conditioned on there being no land disposal of the wastes from point of generation to recycling point	85, 105,110	261.4(a)(10)					
insert "except as provided by §266.112 of this chapter for facilities that burn or process hazardous waste" at end of paragraph	85	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	85	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	85	261.4(b)(8)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
REQUIREMENTS FOR RECYCLABLE MATERIALS							
replace the letter "G" with "H"	94	261.6(a)(2)					
replace "Subpart D" with "Subpart H"	94	261.6(a)(2)(ii)					
remove existing paragraph 261.6(a)(3)(vii) and redesignate 261.6(a)(3)(viii) as 261.6(a)(3)(vii)	85	261.6(a)(3)(vii)					
redesignate 261.6(a)(3)(ix) as 261.6(a)(3)(viii)	85	261.6(a)(3)(viii)					
SUBPART D - LISTS OF HAZARDOUS WASTES							
HAZARDOUS WASTES FROM SPECIFIC SOURCES							
add K141-K145, K147 and K148 in alphanumeric order to the subgroup "Coking" as specified at 57 FR 37305	110	261.32					
APPENDIX VII TO PART 261							
BASIS FOR LISTING HAZARDOUS WASTE							
add K141-K145, K147 and K148 in alphanumeric order as specified at 57 FR 37305	110	261, Appendix VII					
PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES							
SUBPART A - GENERAL							
PURPOSE, SCOPE, AND APPLICABILITY							
change "subparts C, D, F, or G" to "subparts C, F, G, or H"	111	264.1(g)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	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	85	264.340(a)					
PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES							
SUBPART A - GENERAL							
PURPOSE, SCOPE, AND APPLICABILITY							
change "subparts C, D, F, or G" to "subparts C, F, G, or H"	111	265.1(c)(6)					
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"	85	265.112(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	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	85	265.112(d)(1)					
3	date when owner or operator "expects to begin closure" must be either:	85,96	265.112(d)(2)					
3	compliance dates for hazardous waste units receiving final or most recent volume of hazardous wastes; extension by Regional Administrator, or	85,96	265.112(d)(2)(i)					
3	compliance dates for hazardous waste units meeting 265.113(d) requirements receiving final volume or most recent volume nonhazardous wastes; extension by Regional Administrator	85,96	265.112(d)(2)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	CLOSURE: TIME ALLOWED FOR CLOSURE							
3	within 90 days after receiving final volume of hazardous or non-hazardous wastes if owner/operator complies with 265.113(d)&(e) requirements or 90 days after approval of closure plan, whichever is later; criteria for extension by Regional Administrator	85,96	265.113(a)					
3	complete partial and final closure within 180 days after receiving final volume of hazardous or non-hazardous waste if owner/operator complies with 265.113(d)&(e) requirements or 180 days after approval of closure plan, whichever is later; extension by Regional Administrator	85,96	265.113(b)					
	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	85	265.340(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART P - THERMAL TREATMENT							
	OTHER THERMAL TREATMENT							
	delete "." at the end and insert ", and Subpart H of Part 266, if the unit is a boiler or an industrial furnace as defined in §260.10."	94	265.370					
	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	85	266.30-266.35					
4	**SUBPART E - USED OIL BURNED FOR ENERGY RECOVERY**							
	APPLICABILITY							
5	replace "Subpart D of Part 266" with "Subpart H of Part 266"	94,96	266.40(c)					
5	replace "Subpart D" with "Subpart H"	94,96	266.40(d)					
	SUBPART H - HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES							
	APPLICABILITY							
6	regulations apply to hazardous waste burned or processed in a boiler or industrial furnace, irrespective of purpose, except as 266.100(b),(c),(d) and (f) provide; definition of "burn"; 266.104-266.107 emissions standards apply to interim status or permitted facilities	85, 96,†98, †105,111	266.100(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	hazardous wastes and facilities not subject to regulation under Subpart H:	85	266.100(b)					
7	used oil burned for energy recovery that is hazardous solely because it exhibits a characteristic; regulated under 266, Subpart E	85	266.100(b)(1)					
	gas recovered from landfills and burned for energy recovery	85,94	266.100(b)(2)					
	exempt hazardous wastes under 261.4 and 261.6(a)(3)(v)-(viii); CESQG hazardous wastes under 261.5	85,94	266.100(b)(3)					
	coke ovens burning only K087	85	266.100(b)(4)					
	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	85	266.100(c)					
	requirements for exemption from 266.102 through 266.111 for owner or operator of metal recovery furnace; owner or operator of a lead or a nickel-chromium recovery furnace, or certain metal recovery furnaces subject to 266.100(c)(3) requirements	85,96	266.100(c)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
one-time written notice indicating:	85	266.100(c)(1)(i)					
owner or operator claims 266.100(c) exemption	85	266.100(c)(1)(i)(A)					
metal recovery as per 266.100(c)(2) provisions	85	266.100(c)(1)(i)(B)					
recoverable levels of metals	85	266.100(c)(1)(i)(C)					
compliance with 266.100(c) sampling and analysis and recordkeeping requirements	85	266.100(c)(1)(i)(D)					
sample and analyze hazardous waste and other feedstocks as necessary using specified procedures or alternative methods that meet or exceed SW-846 method performance capabilities; situation where "best available method" is used	85,96	266.100(c)(1)(ii)					
maintain specified records at facility for at least three years	85	266.100(c)(1)(iii)					
criteria under which a hazardous waste is not processed solely for metal recovery	85	266.100(c)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
total concentration of 261, Appendix VIII organic compounds exceeds 500 ppm by weight and are considered burned for destruction; reduction of organic compound concentration to the 500 ppm limit by bona fide treatment; blending for dilution to meet the 500 ppm limit is prohibited; retention of documentation in records required by 266.100(c)(1)(iii)	85,96	266.100(c)(2)(i)					
heating value of 5,000 Btu/lb or more and considered burned as fuel; reduction of the heating value to below 5,000 Btu/lb by bona fide treatment; blending for dilution to meet the 5,000 Btu/lb limit is prohibited; retention of documentation in records required by 266.100(c)(1)(iii)	85,96	266.100(c)(2)(ii)					
requirements for exemption from 266.102 through 266.111 for owner or operator of certain metal recovery furnaces; written notice to director; 266.100(c)(1) compliance	96	266.100(c)(3)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
exemption from 266.100(c)(1) requirements for hazardous wastes listed in Appendices XI and XII, Part 266, and baghouse bags used to capture metallic dusts emitted by steel manufacturing, provided:	96	266.100(c)(3)(i)					
waste contains recoverable levels of specified metals	96	266.100(c)(3)(i)(A)					
waste does not exhibit the Toxicity Characteristic of 261.24 for an organic constituent	96	266.100(c)(3)(i)(B)					
waste is not a hazardous waste listed in Part 261 Subpart D because it is listed for an organic constituent as identified in Appendix VII of Part 261	96	266.100(c)(3)(i)(C)					
certification by owner or operator under 266.100(c)(3) regarding hazardous waste; sampling and analysis or other information to assure compliance; sampling and analysis conducted according to 266.100(c)(1)(ii); maintain records to document compliance with (c)(3) for at least three years	96	266.100(c)(3)(i)(D)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
basis for case-by-case decisions regarding toxic organic constituents; metal recovery furnace subject to Subpart H requirements after adequate notice and opportunity for comment; factors Director will consider:	96	266.100(c)(3)(ii)					
concentration and toxicity of organic constituents in the material	96	266.100(c)(3)(ii)(A)					
level of destruction of toxic constituents provided by the furnace	96	266.100(c)(3)(ii)(B)					
acceptable ambient levels established in Appendices IV or V, Part 266, exceeded for any toxic organic compound that may be emitted based on certain conditions	96	266.100(c)(3)(ii)(C)					
266.111 direct transfer operation standards apply only to facilities subject to 266.102 or 266.103 standards	85	266.100(d)					
266.112 residue management standards apply to any boiler or industrial furnace burning hazardous waste	85	266.100(e)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
conditional exemption from Subpart H requirements for owners or operators of certain smelting, melting, and refining furnaces, except for 266.112; to be exempt from 266.101 through 266.111, an owner or operator must:	96,111	266.100(f)					
provide a one-time written notice indicating:	96	266.100(f)(1)					
owner or operator claims 266.100(f) exemption	96	266.100(f)(1)(i)					
hazardous waste is burned for legitimate recovery of precious metal	96	266.100(f)(1)(ii)					
compliance with 266.100(f) sampling and analysis and recordkeeping requirements	96	266.100(f)(1)(iii)					
sample and analyze hazardous waste as necessary using specified procedures	96	266.100(f)(2)					
maintain specified records at facility for at least three years	96	266.100(f)(3)					
MANAGEMENT PRIOR TO BURNING							
generators of hazardous waste that is burned in a boiler or industrial furnace subject to Part 262	85	266.101(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
transporters of hazardous waste that is burned in a boiler or industrial furnace subject to Part 263	85	266.101(b)					
owners and operators of facilities that store hazardous waste burned in a boiler or industrial furnace subject to the applicable provisions of parts 264, 265, and 270, except as provided by 266.101(c)(2); standards applicable to storage by burners and intermediary facilities	85,111	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 the regulations of parts 264, 265, and 270 applicable to storage units for those storage units that store 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	85,111	266.101(c)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85	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	85	266.102(a)(2)(ix)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
analysis to quantify concentration of any 261, Appendix VIII constituent at levels detectable by specified analytical procedures, alternative methods or best available method; identification; explanation of constituents excluded from analysis; analysis provides 266 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	85, 94,96	266.102(b)(1)					
sampling and analysis throughout normal operation to ensure permit-specified physical and chemical composition limits are met	85	266.102(b)(2)					
compliance with 266.104 through 266.107 emissions standards	85	266.102(c)					
burn only hazardous wastes specified in permit under 266.102(e) operating conditions; exception for approved trial burns under 270.66 conditions	85	266.102(d)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	266.102(d)(2)					
266.103 interim status boilers and industrial furnaces permitted under 270.66(g) procedures	85	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:	85	266.102(d)(4)					
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	85	266.102(d)(4)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	during trial burn, operating requirements sufficient for 266.104-266.107 emissions compliance and in accordance with approved trial burn plan	85	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	85	266.102(d)(4)(iii)					
8	for duration of permit, operating requirements based on trial burn or 270.22 alternative data, sufficient to ensure 266.104-266.107 emissions compliance	85,94	266.102(d)(4)(iv)					
	operating requirements specified in the permit apply at all times where hazardous waste is in unit	85	266.102(e)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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:	85	266.102(e)(2)(i)					●
feed rate of hazardous waste and other fuels as per 266.102(e)(6)	85	266.102(e)(2)(i)(A)					
minimum and maximum device production rate when producing normal product as per 266.102(e)(6)	85	266.102(e)(2)(i)(B)					
appropriate controls of hazardous waste firing system	85	266.102(e)(2)(i)(C)					
allowable variation in boiler and industrial furnace system design or operating procedures	85	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)	85	266.102(e)(2)(i)(E)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
appropriate indicator of combustion gas velocity as per 266.102(e)(6), unless 270.66 documentation	85	266.102(e)(2)(i)(F)					
other operating requirements to ensure 266.104(a) DRE compliance	85	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:	85	266.102(e)(2)(ii)					
when complying with 266.104(b)(1) CO standard, permit limit is 100 ppmv	85	266.102(e)(2)(ii)(A)					
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	85	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	85	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	85	266.102(e)(2)(iii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
except as provided in 266.102(e)(3)(ii) and (iii), operating requirements the permit will specify to ensure 266.105 particulate standard compliance:	85	266.102(e)(3)(i)					
total ash feed rate from hazardous waste, other fuels, and industrial furnace feedstocks, as per 266.102(e)(6)	85	266.102(e)(3)(i)(A)					
maximum device production rate when producing normal product as per 266.102(e)(6)	85	266.102(e)(3)(i)(B)					
operation and maintenance controls for hazardous waste firing system and air pollution control system	85	266.102(e)(3)(i)(C)					
allowable variation in system design including air pollution control system or operating procedures	85	266.102(e)(3)(i)(D)					
9 other operating requirements to ensure 266.111(b) particulate standard compliance	85	266.102(e)(3)(i)(E)					
no permit conditions to ensure particulate standard compliance for 266.105(b) exempt facilities	85	266.102(e)(3)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
for cement kilns and light-weight aggregate kilns, permit conditions shall not limit ash content of hazardous waste or other feed materials	85	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:	85	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)	85	266.102(e)(4)(i)(A)					
total feed rate of hazardous waste as per 266.102(e)(6)	85	266.102(e)(4)(i)(B)					
sampling and metals analysis program	85,94	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:	85	266.102(e)(4)(ii)					
maximum emission rate for each metal based on average rate during trial burn	85	266.102(e)(4)(ii)(A)					
feed rate of total and pumpable hazardous waste as per 266.102(e)(6)(i)	85	266.102(e)(4)(ii)(B)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
10		85	266.102(e)(4)(ii)(C)					
			266.102(e)(4)(ii)(C)(*1*)					
	feed rate of each metal in specified feedstreams, measured and specified as per 266.102(e)(6)	85,96	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)	85	266.102(e)(4)(ii)(D)					
	maximum combustion gas temperature measured at location indicative of combustion chamber temperature as per 266.102(e)(6)	85	266.102(e)(4)(ii)(E)					●
	maximum flue gas temperature at inlet to particulate matter air pollution control system as per 266.102(e)(6)	85	266.102(e)(4)(ii)(F)					
	maximum device production rate when producing normal product as per 266.102(e)(6)	85	266.102(e)(4)(ii)(G)					
	operation and maintenance controls of hazardous waste firing system and any air pollution control system	85	266.102(e)(4)(ii)(H)					
	allowable variation in system design including air pollution control system or operating procedures	85	266.102(e)(4)(ii)(I)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
other operating requirements to ensure 266.106(c) or (d) metals standards compliance	85	266.102(e)(4)(ii)(J)					
operating requirements the permit will specify to conform with 266.106(f) alternative implementation approach:	85	266.102(e)(4)(iii)					
maximum emission rate for each metal based on average rate	85	266.102(e)(4)(iii)(A)					
feed rate of total and pumpable hazardous waste as per 266.102(e)(6)(i)	85	266.102(e)(4)(iii)(B)					
feed rate of each metal in specified feedstreams, measured and specified as per 266.102(e)(6)	85	266.102(e)(4)(iii)(C)					
	85,96	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)	85	266.102(e)(4)(iii)(D)					
maximum combustion gas temperature measured at location indicative of combustion chamber temperature as per 266.102(e)(6)	85	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)	85	266.102(e)(4)(iii)(F)					

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CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
maximum device production rate when producing normal product as per 266.102(e)(6)	85	266.102(e)(4)(iii)(G)					
operation and maintenance controls of hazardous waste firing system and any air pollution control system	85	266.102(e)(4)(iii)(H)					
allowable variation in system design including air pollution control system or operating procedures	85	266.102(e)(4)(iii)(I)					
other operating requirements to ensure 266.106(c) or (d) metals standards compliance	85	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:	85	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)	85	266.102(e)(5)(i)(A)					
feed rate of total hazardous waste as per 266.102(e)(6)	85	266.102(e)(5)(i)(B)					
sampling and analysis program for total chloride and chlorine	85	266.102(e)(5)(i)(C)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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:	85	266.102(e)(5)(ii)					
maximum emission rate for HCl and Cl_2 based on average rate	85	266.102(e)(5)(ii)(A)					
feed rate of total hazardous waste as per 266.102(e)(6)	85	266.102(e)(5)(ii)(B)					
total feed rate of chlorine and chloride in total feedstreams as per 266.102(e)(6)	85	266.102(e)(5)(ii)(C)					
maximum device production rate when producing normal product as per 266.102(e)(6)	85	266.102(e)(5)(ii)(D)					
operation and maintenance controls of hazardous waste firing system and any air pollution control system	85	266.102(e)(5)(ii)(E)					
allowable variation in system design including air pollution control system or operating procedures	85	266.102(e)(5)(ii)(F)					
other operating requirements to ensure 266.107(b)(2) or (c) HCl or Cl_2 standards compliance	85	266.102(e)(5)(ii)(G)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	measuring parameters and establishing limits based on trial burn data	85,94	266.102(e)(6)					
	as specified in 266.102(e)(2)-(5), each operating parameter shall be measured and permit limits on the parameter established according to either of following procedures:	85	266.102(e)(6)(i)					
	measured and recorded on instantaneous basis and permit limit based on time-weighted average	85	266.102(e)(6)(i)(A)					
			266.102(e)(6)(i)(B)(*1*)					●
		85	266.102(e)(6)(i)(B)(*1*)(*i*)					
	hourly rolling average basis as defined	85,94	266.102(e)(6)(i)(B)(*1*)(*ii*)					
12	permit limit based on average over all valid test runs of highest hourly rolling average value per run	85,94	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:	85,94	266.102(e)(6)(ii)					
	feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	85	266.102(e)(6)(ii)(A)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
12			266.102(e)(6)(ii)(B)					
	specifications the continuous monitor shall meet	85	266.102(e)(6)(ii)(B)(*1*)					
		85,94	266.102(e)(6)(ii)(B)(*2*)					
	feed rate permit limit based on specified average	85	266.102(e)(6)(ii)(C)					
	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)	85	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	85	266.102(e)(6)(iv)(A)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85,94	266.102(e)(6)(iv)(B)					
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)	85	266.102(e)(6)(iv)(C)					
requirements for controlling fugitive emissions	85	266.102(e)(7)(i)					
		266.102(e)(7)(i)(A)					
		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:	85	266.102(e)(7)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
maintenance of permit limit for minimum combustion chamber temperature while hazardous waste or residues remain in chamber	85	266.102(e)(7)(ii)(A)					
exhaust gases ducted to air pollution control system while hazardous waste or residues remain in chamber	85	266.102(e)(7)(ii)(B)					
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	85	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	85	266.102(e)(7)(iii)					
owner or operator, while burning hazardous waste, must monitor and record:	85	266.102(e)(8)(i)					
specified feed rates and composition of specified materials	85	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	85	266.102(e)(8)(i)(B)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
sampling and analysis as requested to verify that requirements established in permit achieve 266.104-266.107 standards	85	266.102(e)(8)(i)(C)					
monitors record data in permit limit units, unless permit allows otherwise	85	266.102(e)(8)(ii)					
daily visual inspection of boiler or industrial furnace and associated equipment when they contain hazardous waste	85	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	85	266.102(e)(8)(iv)					
monitoring and inspection data recorded and placed in 264.73 operating record	85	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	85	266.102(e)(9)					
all 266.102-required information and data in facility operating record until closure of the facility	85,96	266.102(e)(10)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
remove all hazardous waste and hazardous waste residues at closure	85	266.102(e)(11)					
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	85	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:	85,94	266.103(a)(1)(ii)					
continuous on-site, physical construction program has begun	85	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	85	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	85	266.103(a)(1)(iii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
266.103 requirements not applicable to hazardous waste and facilities exempt under 266.100(b) or 266.108	85	266.103(a)(2)					
F020-F023, F026 or F027 hazardous waste listed for dioxin and hazardous waste derived from these wastes may not be burned in interim status boiler or industrial furnace	85,96	266.103(a)(3)					
interim status owners and operators subject to specified 265 provisions:	85	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)					
		266.103(a)(4)(vii)					
		266.103(a)(4)(viii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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 or where fuels are normally fired:	85,96	266.103(a)(5)					
fed at location where temperatures are at least 1800° F	85	266.103(a)(5)(i)(A)					
determination and documentation in facility record of adequate *oxygen*	85	266.103(a)(5)(i)(B)					
for cement kiln systems, hazardous waste fed into kiln	85	266.103(a)(5)(i)(C)					
applicability of 266.104(c) or 266.103(c)(5) hydrocarbon controls	85,96	266.103(a)(5)(i)(D)					
criteria for burning hazardous waste for a purpose other than solely as an ingredient:	85	266.103(a)(5)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
total concentration of 261, Appendix VIII nonmetal compounds exceed 500 ppm by weight as fired and considered burned for destruction; reduction of the concentration of nonmetal compounds to the 500 ppm limit by bona fide treatment; blending for dilution to meet the 500 ppm limit prohibited; retention of documentation in facility record	85,96	266.103(a)(5)(ii)(A)					
heating value of 5,000 Btu/lb or more, as fired, and considered burned as fuel; reduction of the heating value of a waste as-generated to below 5,000 Btu/lb limit by bona fide treatment; blending to augment heating value to meet the 5,000 Btu/lb limit prohibited; retention of documentation in facility record	85,96	266.103(a)(5)(ii)(B)					
burning hazardous waste with heating value less than 5,000 Btu/lb prohibited; situation where 5,000 Btu/lb limit can be exceeded; exceptions:	85,96	266.103(a)(6)					
hazardous waste burned solely as an ingredient	96	266.103(a)(6)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
hazardous waste burned for purposes of compliance testing for a total period of time not to exceed 720 hours	96	266.103(a)(6)(ii)					
waste burned if Director has documentation to show that, prior to August 21, 1991:	96	266.103(a)(6)(iii)					
boiler or industrial furnace operating under Part 265, Subpart O or P requirements	96	266.103(a)(6)(iii)(A)					
boiler or industrial furnace met 270.70 interim status eligibility requirements for Part 265, Subpart O or Subpart P	96	266.103(a)(6)(iii)(B)					
hazardous waste with a heating value less than 5,000 Btu/lb burned prior to August 21, 1991	96	266.103(a)(6)(iii)(C)					
such waste burned in halogen acid furnace if waste burned as an excluded ingredient under 261.2(e) prior to February 21, 1991 and documentation kept on file	96	266.103(a)(6)(iv)					
266.111 compliance if hazardous waste directly transferred from transport vehicle to boiler or industrial furnace without storage unit use	85	266.103(a)(7)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	266.103(b)(1)					
information to be submitted with certification of precompliance to support determination and compliance with operating parameter limits	85	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	85	266.103(b)(2)(i)(E)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
except for facilities complying with Tier I or Adjusted 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:	85,111	266.103(b)(2)(ii)					
feed rate of specified materials in each feedstream	85,94	266.103(b)(2)(ii)(A)					
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	85,94	266.103(b)(2)(ii)(B)					
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 266, Appendix IX procedures	85	266.103(b)(2)(ii)(C)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
basis for best engineering judgment; 270.11(d) certification of determinations included in certification of precompliance	85,94	266.103(b)(2)(ii)(D)					
for facilities complying with Tier I or Adjusted Tier I feed rate screening limits, the feed rate of specified materials in each feed stream	85,111	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:	85,94	266.103(b)(2)(iv)					
estimated air pollution control system (APCS) removal efficiency for specified materials	85	266.103(b)(2)(iv)(A)					
use best engineering judgment or 266, Appendix IX procedures	85	266.103(b)(2)(iv)(B)					
basis for best engineering judgment in conformance with 266.103(b)(2)(ii)(D)	85	266.103(b)(2)(iv)(C)					
determination of allowable emissions rates for specified materials and information to support such determinations to include:	85	266.103(b)(2)(v)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		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*)					
	85	266.103(b)(2)(v)(A)(*4*)					
	85,94	266.103(b)(2)(v)(A)(*5*)					
		266.103(b)(2)(v)(A)(*6*)					
for all facilities:	85	266.103(b)(2)(v)(A)(*7*)					
		266.103(b)(2)(v)(B)					
		266.103(b)(2)(v)(B)(*1*)					
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)(*2*)					
		266.103(b)(2)(v)(B)(*3*)					
	85	266.103(b)(2)(v)(B)(*4*)					
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	85,94	266.103(b)(2)(vi)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	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	85	266.103(b)(2)(viii)					●
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, applicable particulate matter standard and precompliance limit on metal concentration	85	266.103(b)(2)(ix)					
		266.103(b)(2)(ix)(A)					
		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	85	266.103(b)(3)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
feed rate of total hazardous waste and pumpable hazardous waste	85	266.103(b)(3)(i)					
	85,94	266.103(b)(3)(ii)					
	85	266.103(b)(3)(ii)(A)					
	85,111	266.103(b)(3)(ii)(B)					
feed rate of each metal in specified feedstreams	85	266.103(b)(3)(ii)(C)					
total feed rate of chlorine and chloride in total feedstreams	85	266.103(b)(3)(iii)					
total feed rate of ash in total feedstreams, except ash feed rate for cement kilns and light-weight aggregate kilns is not limited	85	266.103(b)(3)(iv)					
maximum production rate when producing normal product, unless complying with the Tier I or Adjusted Tier I feed rate screening limits for chlorine under 266.106(b)(1) or (e) and for all metals under 266.106(b) or (e), and uncontrolled particulate emissions do not exceed 266.105 standard	85,111	266.103(b)(3)(v)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)	85	266.103(b)(4)					
limits on 266.103(b)(3) parameters established and continuously monitoring under:	85	266.103(b)(5)(i)					
instantaneous limits	85,96	266.103(b)(5)(i)(A)					
12	85	266.103(b)(5)(i)(B)					
		266.103(b)(5)(i)(B)(*1*)					
hourly rolling average basis as defined	85,94	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:	85	266.103(b)(5)(ii)					
feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	85	266.103(b)(5)(ii)(A)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
12		85	266.103(b)(5) (ii)(B)					
			266.103(b)(5) (ii)(B)(*1*)					
	specifications the continuous monitor shall meet:	85,94	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)	85	266.103(b)(5) (iii)					
	on or before August 21, 1991, 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:	85,94	266.103(b)(6)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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)					
	85	266.103(b)(6)(vii)					
		266.103(b)(6)(viii)					
		266.103(b)(6)(viii)(A)					
	85,96	266.103(b)(6)(viii)(B)					
		266.103(b)(6)(ix)					
information to include in public notice	85	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	85	266.103(b)(7)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
submittal of revised certification of pre-compliance under 266.103(b)(2)&(3) procedures	85	266.103(b)(8)					
266.103(b)(6) public notice requirements not applicable to recertifications	85	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	85	266.103(b)(8)(ii)					
language of signed statement that must be included with the certification of precompliance	85	266.103(b)(9)					
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 on or before August 21, 1992	85,94	266.103(c)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	establish limits and all applicable emission standards on 266.103(c)(1)(i)-(xiii) *parameters* based on operations during compliance test or as otherwise specified and include with certification of compliance; device will be operated within these limits and applicable emission standards of 266.104(b)-(e), 266.105, 266.106, 266.107 and 266.103(a)(5)(i)(D) when hazardous waste is in the unit	85,94,96, 111,114	266.103(c)(1)					
13	feed rate of total hazardous waste and pumpable hazardous waste	85	266.103(c)(1)(i)					
13		85	266.103(c)(1)(ii)					
		85,111	266.103(c)(1)(ii)(A)					
			266.103(c)(1)(ii)(A)(*1*)					
		111	266.103(c)(1)(ii)(A)(2)					
		85	266.103(c)(1)(ii)(B)					
	feed rate of each metal in specified feedstreams	85, 111,114	266.103(c)(1)(ii)(C)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13	total feed rate of chlorine and chloride in total feed streams; the operating limits for facilities that comply with Tier I or Adjusted Tier I feed rate screening limits	85, 111,114	266.103(c)(1) (iii)					
13	total feed rate of ash in total feedstreams, except ash feed rate for cement kilns and light-weight aggregate kilns is not limited	85,94	266.103(c)(1) (iv)					
13	carbon monoxide concentration and, where required, hydrocarbon concentration in stack gas; CO and HC limits	85	266.103(c)(1) (v)					
13	maximum production rate when producing normal product, unless complying with Tier I or Adjusted Tier I feed rate screening limits for chlorine under 266.107(b)(1) or (e) and for all metals under 266.106(b) or (e), and uncontrolled particulate emissions do not exceed 266.105 standard	85, 111,114	266.103(c)(1) (vi)					
13	maximum combustion chamber temperature with temperature measured where specified; exception	85,114	266.103(c)(1) (vii)					
13	maximum flue gas temperature entering a particulate matter control device; exception	85,114	266.103(c)(1) (viii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13		85,94	266.103(c)(1)(ix)					
			266.103(c)(1)(ix)(A)					
	limits for systems using wet scrubbers, including wet ionizing scrubbers; exception:	85	266.103(c)(1)(ix)(B)					
			266.103(c)(1)(ix)(C)					
13	systems using venturi scrubbers, the minimum differential gas pressure across the venturi; exception	85	266.103(c)(1)(x)					
13		85,94, 114	266.103(c)(1)(xi)					
		85	266.103(c)(1)(xi)(A)					
	limits for systems using dry scrubbers; exception:	85,114	266.103(c)(1)(xi)(B)					
13		85,94	266.103(c)(1)(xii)					
	limits for systems using wet ionizing scrubbers or electrostatic precipitators; exception		266.103(c)(1)(xii)(A)					
		85	266.103(c)(1)(xii)(B)					
13	systems using fabric filters, the minimum pressure drop; exception	85	266.103(c)(1)(xiii)					
	at least 30 days prior to 266.103(c)(3) compliance testing, notify Director and submit required information:	85	266.103(c)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		266.103(c)(2)(i)					
		266.103(c)(2)(i)(A)					
		266.103(c)(2)(i)(B)					
		266.103(c)(2)(i)(C)					
general facility information	85	266.103(c)(2)(i)(D)					
		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)					
specific information on each device to be tested	85	266.103(c)(2)(ii)(F)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	information on testing planned, including complete copy of test protocol and QA/QC plan, and summary description for each test that provides specified information	85	266.103(c)(2)(iii) 266.103(c)(2)(iii)(A) 266.103(c)(2)(iii)(B)					
13	compliance testing under 266.103(b) and 266.103(c)(2) conditions; case by case approval to use compliance test data from one unit in lieu of testing a similar on-site unit; information required to support owner or operator request; approval based on 266.103(c) requirements	85,96	266.103(c)(3)(i)					
13	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:	85	266.103(c)(3)(ii)					
13	266, Appendix IX testing requirements in "Alternative Method for Implementing Metals Controls"	85	266.103(c)(3)(ii)(A)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13	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)	85	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*)					
13	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	85	266.103(c)(3)(ii)(C)					
13	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	85	266.103(c)(3)(iii)(A)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13	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	85	266.103(c)(3)(iii)(B)					
13	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)	85	266.103(c)(3)(iii)(C)					
	within 90 days of completing compliance testing, certification to Director of compliance with 266.104(b),(c)&(e), 266.105-266.107 and 266.103(a)(5)(i)(D) emissions standards; certification must include:	85	266.103(c)(4)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		266.103(c)(4)(i)					
		266.103(c)(4)(i)(A)					
	85	266.103(c)(4)(i)(B)					
	85,94	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	85	266.103(c)(4)(i)(I)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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*)					
	85	266.103(c)(4)(ii)(B)(*4*)					
	85,94	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	85	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	85	266.103(c)(4)(iii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
determination of operating limits based on all valid runs for 266.103(c)(1) parameters using one of two procedures:	85	266.103(c)(4)(iv)					
instantaneous limits	85	266.103(c)(4)(iv)(A)					
		266.103(c)(4)(iv)(B)(*1*)					
		266.103(c)(4)(iv)(B)(*1*)(*i*)					
hourly rolling average basis as defined	85	266.103(c)(4)(iv)(B)(*1*)(*ii*)					
parameter operating limit based on compliance test data and specific average	85	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:	85	266.103(c)(4)(iv)(C)					
feed rate of each metal limited to ten times the allowable hourly rolling average basis feed rate	85	266.103(c)(4)(iv)(C)(*1*)					
		266.103(c)(4)(iv)(C)(*2*)					
	85	266.103(c)(4)(iv)(C)(*2*)(*i*)					
specifications the continuous monitor shall meet	85,94	266.103(c)(4)(iv)(C)(*2*)(*ii*)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
operating limit for feed rate of each metal established based on compliance test data as the specified average	85	266.103(c)(4)(iv)(C)(3)					
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(c)(4)(iv)(A)-(C)	85	266.103(c)(4)(iv)(D)					
language of statement to accompany the certification of compliance	85	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; owners and operators of facilities electing to comply with 266.104(f) alternative hydrocarbon provision and requesting a 266.103(c)(7)(ii)(B) time extension	85,111	266.103(c)(5)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
special operating requirements for industrial furnaces that recycle collected particulate matter from air pollution control system:	85	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)	85	266.103(c)(6)(i)					
operating requirements of 266.103(c)(3)(ii)(B) if complying with that paragraph	85	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:	85	266.103(c)(7)(i)					
stop burning hazardous waste and begin 266.103(l) closure	85,94	266.103(c)(7)(i)(A)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
limit hazardous waste burning only for purposes of compliance testing (and pretesting to prepare for compliance testing) 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	85,94	266.103(c)(7)(i)(B)					
obtain case-by-case time extension under 266.103(c)(7)(ii)	85	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	85	266.103(c)(7)(ii)					
in granting extension, Director may apply specified conditions	85	266.103(c)(7)(ii)(A)					
if time extension requested to enable facility to comply with alternative hydrocarbon provisions of 266.104(f) and to obtain RCRA permit because 266.104(c) HC limit cannot be met:	85,111	266.103(c)(7)(ii)(B)					
what Director shall consider:	85	266.103(c)(7)(ii)(B)(*1*)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	determine if complete Part B permit application that includes 270.22(b) information has been submitted	85	266.103(c)(7)(ii) (B)(*1*)(*i*)					
	consider if good faith effort to certify compliance with all other emission controls has been made	85,94	266.103(c)(7)(ii) (B)(*1*)(*ii*)					
12	if extension granted, require facility to operate under 266.104(f)(1) baseline CO and HC flue gas concentration limits	85,94	266.103(c)(7)(ii) (B)(*2*)					
	submit at any time a revised certification of compliance under specific procedures:	85	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	85	266.103(c)(8)(i)					
	at least 30 days prior to first burning under revised conditions, notify Director and submit specific information:	85	266.103(c)(8)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
EPA facility ID number, facility name, contact person, telephone number and address	85	266.103(c)(8)(ii)(A)					
operating conditions owner/operator is seeking to revise and description of changes that prompted need to revise	85	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	85	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	85	266.103(c)(8)(ii)(D)					
conduct compliance test under revised operating conditions and submitted protocol to determine 266.104-266.107 emissions standards compliance	85	266.103(c)(8)(iii)					
submit revised certification of compliance under 266.103(c)(4)	85	266.103(c)(8)(iv)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
recertification of compliance within three years; if recertification under new operating conditions, 266.103(c)(8) compliance	85	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; criteria for compliance with 266.103(l), 266.112(d)(2) and 266.113 provisions	85,96	266.103(e)					
no hazardous waste as feed during start-up and shut-down unless device is operating within certification conditions	85	266.103(f)					
during 266.103(c)(3) compliance test and upon certification of compliance, automatic waste feed cutoff required; additional requirements include:	85	266.103(g)					
maintenance of minimum combustion chamber temperature while hazardous waste or residues remain in chamber to minimize emissions of organic compounds	85,94	266.103(g)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	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	85	266.103(g)(1)(ii)					
continued monitoring of operating parameters with limits during cutoff; no restart of hazardous waste feed until parameters comply with limits established in compliance certification	85	266.103(g)(2)					
requirements for controlling fugitive emissions	85	266.103(h)					
		266.103(h)(1)					
		266.103(h)(2)					
		266.103(h)(3)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
cease burning hazardous waste when changes in combustion properties, feed rates, feed stocks/fuels or design or operating conditions deviate from limits specified in compliance certification	85	266.103(i)					
owner or operator, while burning hazardous waste, must monitor and record:	85	266.103(j)(1)					
specified feed rates and composition of specified materials to ensure conformance with certification	85	266.103(j)(1)(i)					
CO, HC and oxygen on a continuous basis as specified; monitors installed, operated and maintained as per 266, Appendix IX methods	85	266.103(j)(1)(ii)					
sampling and analysis as requested by Director to verify compliance with 266.104-266.107 standards	85	266.103(j)(1)(iii)					
daily visual inspection of boiler or industrial furnace and associated equipment when they contain hazardous waste	85	266.103(j)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85	266.103(j)(3)					
monitoring and inspection data recorded and placed in operating log	85	266.103(j)(4)					
all 266.103-required information and data kept in facility operating record until closure of the boiler or industrial furnace unit	85,96	266.103(k)					
remove all hazardous waste and hazardous waste residues at closure and comply with 265.111-265.115	85	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	85,94	266.104(a)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85	266.104(a)(2)					
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	85,94	266.104(a)(3)					
owners and operators of boilers operating under 266.110 requirements are exempt from DRE trial burn	85	266.104(a)(4)					
owners and operators of boilers or industrial furnaces in compliance with 266.109(a) are exempt from DRE trial burn	85	266.104(a)(5)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	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	85	266.104(b)(1)					
continuous monitoring of CO and oxygen in conformance with 266, Appendix IX specifications	85,94	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	85	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)	85	266.104(c)(1)					
HC limits established on hourly rolling average basis, reported as propane, continuously corrected to 7% oxygen, dry gas basis	85	266.104(c)(2)					
HC continuously monitored under 266, Appendix IX specifications; CO and oxygen continuously monitored under 266.104(b)(2)	85,94	266.104(c)(3)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
alternative CO standard based on trial burn data (new facility) and compliance test (interim status facility); definition and implementation	85	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	85	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:	85	266.104(e)					
determine emission rates of certain tetraocta congeners during trial burn or compliance test using 266, Appendix IX Method 23	85,94	266.104(e)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85,94	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 concentration used when a person resides on-site; wording should refer to Appendix W, Part 51 rather than Appendix X, Part 266, methods	85,125	266.104(e)(3)					
specified 2,3,7,8-TCDD ratio shall not exceed 1.0	85,94,96	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	85	266.104(f)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
demonstrate that facility is designed and operated to minimize HC emissions from fuels and raw materials and that the facility is producing normal products under normal operating conditions feeding normal feedstocks and fuels when baseline HC (and CO) level is determined; baseline HC level and CO level defined; must be multiple baseline levels under certain conditions	85,111	266.104(f)(1)					
develop approach to monitor over time changes in facility operation that could reduce baseline HC level	85	266.104(f)(2)					
conduct emissions testing during trial burn to:	85	266.104(f)(3)					
determine baseline HC (and CO) level	85	266.104(f)(3)(i)					
demonstrate that HC (and CO) levels do not exceed baseline level when hazardous waste is burned	85	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	85,94	266.104(f)(3)(iii)					
		266.104(f)(3)(iii)(A)					
	85	266.104(f)(3)(iii)(B)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
			266.104(f)(3)(iv)					
	demonstrate that maximum annual average ground level concentrations of 266.104(f)(3)(iii) compounds do not exceed specified levels	85	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	85	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:	85	266.104(g)					
	fire hazardous waste only into the kiln	85	266.104(g)(1)					
14	by-pass duct diverts minimum of 10% of kiln off-gas into duct	85,94	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	85	266.104(h)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85	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	85	266.105(a)					
owner or operator meeting 266.109(b) requirements for low risk waste exemption is exempt from particulate matter standard	85	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	85	266.105(c)					
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	85,94	266.106(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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)	85	266.106(b)					
feed rates of antimony, barium, lead, mercury, thallium and silver in all feedstreams shall not exceed 266, Appendix I screening limits	85	266.106(b)(1)					
what feed rate screening limits for antimony, barium, mercury, thallium, and silver are based on	85	266.106(b)(1)(i)					●
		266.106(b)(1)(i)(A)					
		266.106(b)(1)(i)(B)					
what feed rate screening limit for lead is based on	85	266.106(b)(1)(ii)					
		266.106(b)(1)(ii)(A)					
		266.106(b)(1)(ii)(B)					
		266.106(b)(1)(ii)(C)					
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	85,94	266.106(b)(2)(i)					●

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
		266.106(b)(2)(ii)					
	85	266.106(b)(2)(ii)(A)					
what feed rate screening limits for carcinogenic metals are based on	85,94	266.106(b)(2)(ii)(B)					
equation for terrain-adjusted effective stack height (TESH)	85	266.106(b)(3)(i)					
stack height may not exceed 40 CFR 51.100(ii) good engineering practice	85	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	85	266.106(b)(3)(iii)					
screening limits function of noncomplex or complex terrain; criteria; use U.S. Geological Survey 7.5-minute topographic maps	85	266.106(b)(4)					
screening limits function of urban or rural land use; determination using 266, Appendix IX or X	85,94	266.106(b)(5)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85,94	266.106(b)(6)					
	85,111	266.106(b)(7)					
criteria under which Tier III standards or Adjusted Tier I feed rate screening limits apply instead of Tier I and Tier II screening limits	85	266.106(b)(7)(i)					
		266.106(b)(7)(ii)					
		266.106(b)(7)(iii)					
		266.106(b)(7)(iv)					
		266.106(b)(7)(v)					
monitor feed rate of metals in each feedstream to ensure screening limits are not exceeded	85	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	85	266.106(c)					
emission rates of antimony, barium, lead, mercury, thallium and silver shall not exceed 266, Appendix I screening limits	85	266.106(c)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	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	85,94	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	85	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	85	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	85	266.106(c)(5)(i)					
worst-case stack determined by 266.106(b)(6) procedures	85	266.106(c)(5)(ii)					
for each metal, total emissions from those stacks shall not exceed worst-case stack screening limit	85	266.106(c)(5)(iii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	facilities complying with either Tier III or Adjusted Tier I controls	111	266.106(d)					
15	conformance with Tier III metals control demonstrated by emissions testing; conformance with either Tier III or Adjusted Tier I metals controls demonstrated by air dispersion modeling; demonstration that acceptable ambient levels are not exceeded	85,111	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	85	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	85, 94,111	266.106(d)(3)					
	for noncarcinogenic metals, predicted maximum annual average off-site ground level concentration shall not exceed the RAC	85	266.106(d)(4)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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; exception for facilities complying with Adjusted Tier I controls	85,111	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	85	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)	85,94	266.106(e)					
alternative implementation approaches approved by Director on a case-by-case basis for Tier II or III metals emission limits	85	266.106(f)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		266.106(f)(2)					
	85	266.106(f)(2)(i)					
	85,94	266.106(f)(2)(ii)					
determination of 266.106(d) emissions limits for each noncarcinogenic and carcinogenic metal	85	266.106(f)(2)(ii)(A)					
	85,94	266.106(f)(2)(ii)(B)					
use 266, Appendix IX Multiple Metals Train to conduct emissions testing	85	266.106(g)(1)					
chromium emissions assumed to be hexavalent chromium unless owner/operator determines otherwise	85	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	85,125	266.106(h)					
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	85	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 (e)	85, 94,111	266.107(a)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	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	85,94	266.107(b)(2)					
266.106(b) definitions and limitations for specified terms also apply to 266.107(b) screening limits	85,94	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	85	266.107(b)(4)					
worst-case stack determined by 266.106(b)(6) procedures	85	266.107(b)(4)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
under Tier I, total feed rate of chlorine and chloride to all subject devices not to exceed worst-case stack screening limit	85	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	85	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	85	266.107(c)(1)					
266, Appendix IV lists RACs for HCl and Cl_2	85	266.107(c)(2)					
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	85	266.107(c)(3)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
16	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 limited to trial burn or compliance test feed rates; feed rate limits based on:	85	266.107(d)					
			266.107(d)(1)					
		85,94	266.107(d)(2)					
	adjusted Tier I feed rate screening limits to account for site-specific dispersion modeling; how to determine these adjusted rates	85	266.107(e)					
	emissions testing for HCl and Cl_2 conducted using 266, Appendix IX procedures	85	266.107(f)					
	dispersion modeling conducted according to 266.106(h) provisions	85	266.107(g)					
	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	85	266.107(h)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SMALL QUANTITY ON-SITE BURNER EXEMPTION							
owners and operators that burn hazardous waste in on-site boiler or industrial furnace exempt from 266 Subpart H requirements provided:	85,94	266.108(a)					
quantity of hazardous waste burned for a calendar month does not exceed limits shown in table titled "Exempt Quantities for Small Quantity Burner Exemption" based on 266.106(b)(3) terrain-adjusted effective stack height; table	85,94	266.108(a)(1)					
maximum hazardous waste firing rate does not exceed 1% of total fuel requirements on a total heat input or mass input basis, whichever results in the lower mass feed rate of hazardous waste	85,96	266.108(a)(2)					
minimum heating value of 5,000 Btu/lb	85	266.108(a)(3)					
does not contain F020-F023, F026 or F027	85	266.108(a)(4)					
if mixed with non-hazardous waste, compliance with 266.108(a) quantity before mixing	85	266.108(b)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
equation for implementing 266.108(a)(1) quantity limits if burning in more than one exempt on-site boiler or industrial furnace	85, 94,111	266.108(c)					
one-time signed, written notification requirements for small quantity burner exemption	85	266.108(d)					
		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	85	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	85	266.109(a)					
	85	266.109(a)(1)					
	85,94,96	266.109(a)(1)(i)					
		266.109(a)(1)(ii)					
		266.109(a)(1)(iii)					
operating requirements for device	85	266.109(a)(1)(iv)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		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)					
	85	266.109(a)(2)(iii)(B)					
		266.109(a)(2)(iv)					
	85,94	266.109(a)(2)(iv)(A)					
procedures to demonstrate that hazardous waste burning will not pose unacceptable adverse public health effects		266.109(a)(2)(iv)(B)					
	85	266.109(a)(2)(iv)(C)					
		266.109(b)					
conditions under which the 266.105 particulate matter standard is waived	85	266.109(b)(1)					
	85,94	266.109(b)(2)					
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:	85	266.110					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
"primary fuel" defined; minimum of 50% primary fuel firing rate, determined on total heat or mass input basis, whichever results in the greater mass feed rate	85,96	266.110(a)					
boiler load defined and not less than 40%	85	266.110(b)					
minimum as-fired heating value of 8,000 Btu/lb	85	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	85	266.110(d)					
boiler must be water-tube type that does not feed fuel using a stoker or stoker type mechanism	85	266.110(e)					
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	85	266.110(f)					
		266.110(f)(1)					
		266.110(f)(2)					
	85,94	266.110(f)(3)					
	85	266.110(f)(4)					

CONSOLIDATED CHECKLIST: *Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)*

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	266.111(a)					
for 266.111, terms have meanings given in 266.111(b)(1)	85	266.111(b)(1) intro					
"direct transfer equipment"	85	266.111(b)(1)					
"container"	85	266.111(b)(1)					
"tank systems" means direct transfer equipment when Subparts I and J of Parts 264 and 265 are referenced	85	266.111(b)(2)					
no direct transfer of pumpable hazardous waste from open-top container to boiler or industrial furnace	85	266.111(c)(1)					
direct transfer equipment requirements	85	266.111(c)(2)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	266.111(c)(3)					
		266.111(c)(3)(i)					
		266.111(c)(3)(ii)					
		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	85	266.111(c)(4)					
appropriate controls and practices to prevent spills and overflows from direct transfer equipment or its secondary containment system	85	266.111(c)(5)					
		266.111(c)(5)(i)					
		266.111(c)(5)(ii)					
applying 266.111(b)(1) definition of container, owners and operators must comply with:	85	266.111(d)					
264.175 containment requirements	85	266.111(d)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
use and management requirements of Subpart I, Part 265 requirements, except 265.170 and 265.174; compliance with specified maintenance and protective distances in lieu of 265.176 requirements; written certification by local fire marshall to be kept on file	85,96	266.111(d)(2)					
264.178 closure requirements	85	266.111(d)(3)					
direct transfer equipment must meet following requirements:	85	266.111(e)					
secondary containment requirements for new and existing equipment	85	266.111(e)(1)					
		266.111(e)(1)(i)					
		266.111(e)(1)(ii)					
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	85	266.111(e)(2)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		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	85	266.111(e)(2)(ii)(E)					
if, due to 266.111(e)(2)(i)&(ii) assessment, direct transfer equipment found to be leaking or unfit for use, compliance with 265.196(a) and (b)	85	266.111(e)(2)(iii)					
		266.111(e)(3)(i)					
		266.111(e)(3)(i)(A)					
		266.111(e)(3)(i)(B)					
inspection requirements at least once each operating hour when transferring hazardous waste from container to boiler or industrial furnace	85	266.111(e)(3)(i)(C)					
inspect cathodic protection systems to ensure 265.195(b) compliance	85	266.111(e)(3)(ii)					
records of inspections maintained in operating record for at least 3 years	85	266.111(e)(3)(iii)					
265.192 compliance for design and installation of new ancillary equipment	85	266.111(e)(4)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	265.196 compliance for response to leaks or spills	85	266.111(e)(5)					
	265.197 closure compliance, except 265.197(c)(2)-(4)	85	266.111(e)(6)					
17	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:	85,94	266.112					
18		85	266.112(a)					
		85,96	266.112(a)(1)					
			266.112(a)(2)					
	criteria the device must meet:	85	266.112(a)(3)					
	demonstration by owner or operator that hazardous waste does not significantly affect residue by demonstrating conformance with either of two criteria:	85	266.112(b)					
	comparison of waste-derived residue with normal residue for 261, Appendix VIII constituents; procedures to be used	85	266.112(b)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	determination of concentrations of toxic constituents of concern in normal residue based on analyses of a minimum of 10 samples representing a minimum of 10 days of operation; determine compositing period not to exceed 24 hours; upper tolerance limit (at 95% confidence with a 95% proportion of the sample distribution) for the statistically-derived concentration; when to revise; how to determine the upper tolerance limit	85,96	266.112(b)(1)(i)					
18	sampling and analysis of waste-derived residue to determine whether residue generated during each 24-hour period has concentrations of toxic constituents higher than 266.112(b)(1)(i) normal residue concentrations; if so, residue not excluded from definition of hazardous waste; toxic constituent concentrations based on analysis of samples obtained over 24-hour period; for multiple samples, concentration of toxic constituent is arithmetic mean; no results may be disregarded	85,96	266.112(b)(1)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
19	concentration of each nonmetal toxic constituent of concern in waste-derived residue must not exceed health-based limits specified in 266, Appendix VII or level detection using SW-846 analytical procedures; if no limit in Appendix VII, limit is 0.002 mg/kg or level of detection, whichever is higher; levels specified in appendix VII and default level of 0.002 micrograms/kg or level of detection as identified in Note 1 are administratively stayed; owner or operator must comply with alternative levels defined as land disposal restriction limits specified in § 268.43 for F039 nonwastewaters; compliance based on good-faith effort to detect constituents; demonstration of good-faith efforts; stay in effect until further administrative action is taken	85,111, †127	266.112(b)(2)(i)					
	for metal constituents, in extract concentration obtained using 261.24 TCLP not to exceed 266, Appendix VII limits	85	266.112(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
sampling and analysis of waste-derived residue to determine whether residue generated during each 24-hour period has concentrations of toxic constituents higher than health-based levels; determination of toxic concentrations based on analysis of one or more samples obtained over 24-hour period; for multiple samples, concentration of toxic constituent is arithmetic mean of concentrations in samples; no results may be disregarded	96	266.112(b)(2)(iii)					
	85,96	266.112(c)					
records to document 266.112 compliance to be retained until closure of boiler or industrial furnace unit; information to be recorded	85	266.112(c)(1)					
		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 Noncarcinogenic Metals for Facilities in Noncomplex Terrain (see 56 FR 7228 and 56 FR 32690 or the July 1, 1992 CFR)	85,94	Appendix I/ Table I-A					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Noncomplex Terrain (see 56 FR 7229)	85	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 7229)	85	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 and 56 FR 32690 or the July 1, 1992 CFR)	85,94	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 and 56 FR 32690, or the July 1, 1992 CFR)	85,94	Appendix I/ Table I-E					
	APPENDIX II TO PART 266							
	TIER I FEED RATE LIMITS FOR TOTAL CHLORINE							
20	Tier I feed rate screening limits for chlorine for facilities in noncomplex and complex terrain (see 56 FR 32690-32691 or the July 1, 1992 CFR)	85,94	Appendix II					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	APPENDIX III TO PART 266							
	TIER II EMISSION RATE SCREENING LIMITS FOR FREE CHLORINE AND HYDROGEN CHLORIDE							
20	Tier II emissions screening limits for Cl_2 and HCl in non-complex and complex terrain (see 56 FR 32691 or the July 1, 1992 CFR)	85,94	Appendix III					
	APPENDIX IV TO PART 266							
	REFERENCE AIR CONCENTRATIONS							
	Constituents, CAS Nos. and RAC (see 56 FR 7232 and 56 FR 32691 or the July 1, 1992 CFR)	85,94	Appendix IV					
	APPENDIX V TO PART 266							
	RISK SPECIFIC DOSES							
	Constituents, CAS Nos., Unit risk and RsD (see 56 FR 7232-7233 or the July 1, 1992 CFR)	85	Appendix V					
	APPENDIX VI TO PART 266							
	STACK PLUME RISE							
	flow rates and exhaust temperatures (see 56 FR 7233-7234 or the July 1, 1992 CFR)	85	Appendix VI					
	APPENDIX VII TO PART 266							
	HEALTH-BASED LIMITS FOR EXCLUSION OF WASTE-DERIVED RESIDUES							
	Metals--TCLP Extract Concentration Limits (56 FR 7234 and 56 FR 32691 or the July 1, 1992 CFR)	85,94	Appendix VII					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	Nonmetals--Residue Concentration Limits (see 56 FR 7234 and 56 FR 32691 or the July 1, 1992 CFR); include note regarding administrative stay of specified and default levels for constituents specified in § 266.112(b)(1) provided owner or operator complies with alternative levels defined in 266.112(b)(2)(i)	85,94, †127	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 and 56 FR 32691 or the July 1, 1992 CFR)	85,94	Appendix VIII					
	APPENDIX IX TO PART 266							
	METHODS MANUAL FOR COMPLIANCE WITH BIF REGULATIONS							
21	Burning Hazardous Waste in Boilers and Industrial Furnaces (see 56 FR 32692-32795 or the July 1, 1992 CFR)	85,94	Appendix IX					
21	Classification of Land Use Types (see 56 FR 32770 and 57 FR 38566)	85, 94,111	Appendix IX/ Section 5.0/ Table 5.0-3					
21, 22	ISCST Predicted Maximum Concentrations (see 56 FR 32771; 57 FR 38566; and 57 FR 44999)	85,94, 111,114	Appendix IX/ Section 5.0/ Table 5.0-4					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
21, 22	ISCST Predicted Maximum Concentrations (see 56 FR 32772-32773; 57 FR 38566; and 57 FR 44999)	85,94, 111,114	Appendix IX/ Section 5.0/ Table 5.0-5					
21	Simplified Land Use Classification Procedure for Compliance with Tier I and Tier II Limits (see 56 FR 32782-32783 or the July 1, 1991 CFR; and 57 FR 38566)	85, 94,111	Appendix IX/ Section 6.0					
21, 23	Statistical Methodology for Bevill Residue Determinations (see 56 FR 42516 & 42517)	85,94,96	Appendix IX/ Section 7.0					
21	Special procedures for chlorine, HCl and CL_2 (see 56 FR 32786-32787 and 56 FR 42512, Corrections 6 and 7 under Part 270; note these corrections should have been placed under Part 266)	85,94,96	Appendix IX/ Section 9.2					
24	Statistics (see 56 FR 32796 or the July 1, 1992 CFR)	85,94	Appendix A to Appendix IX					
25	APPENDIX X TO PART 266--(REMOVED)							
	GUIDELINE ON AIR QUALITY MODELS (REVISED)							
	removed	85,94, 125	Appendix X					
	APPENDIX XI TO PART 266							
	LEAD-BEARING MATERIALS THAT MAY BE PROCESSED IN EXEMPT LEAD SMELTERS							

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
add new appendix addressing lead-bearing materials that may be processed in exempt lead smelters (see 56 FR 42517)	96	Appendix XI					
APPENDIX XII TO PART 266							
NICKEL- OR CHROMIUM-BEARING MATERIALS THAT MAY BE PROCESSED IN EXEMPT NICKEL-CHROMIUM RECOVERY FURNACES							
add new appendix addressing nickel or chromium-bearing materials that may be processed in exempt nickel-chromium recovery furnaces (see 56 FR 42517)	96	Appendix XII					
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM							
SUBPART B - PERMIT APPLICATION							
26 **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	85	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)	85	270.22(a)(1)(i)					
data in lieu of a trial burn as 270.22(a)(6) specifies	85	270.22(a)(1)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	270.22(a)(2)(i)					
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)					
	85	270.22(a)(2)(ii)(A)					
		270.22(a)(2)(ii)(B)					
	85,94	270.22(a)(2)(ii)(C)					
		270.22(a)(2)(ii)(D)					
	85	270.22(a)(2)(ii)(E)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85	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	85	270.22(a)(4)					
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	85	270.22(a)(5)					
		270.22(a)(5)(i)					
		270.22(a)(5)(ii)					
		270.22(a)(5)(iii)					
		270.22(a)(5)(iv)					
		270.22(a)(5)(v)					
		270.22(a)(5)(vi)					
	85,94	270.22(a)(5)(vii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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	85,94	270.22(a)(6)					
		270.22(a)(6)(i)					
		270.22(a)(6)(i)(A)					
		270.22(a)(6)(i)(B)					
for a waiver from any trial burn:	85	270.22(a)(6)(i)(C)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
for a waiver of DRE trial burn, basis for selection of the 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	85	270.22(a)(6)(ii)					
	85	270.22(b)					
	85,94	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)					
	85	270.22(b)(6)					
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	85	270.22(c)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
describe automatic waste feed cutoff system, including any pre-alarm systems	85	270.22(d)					
use of direct transfer operations requires submittal of information supporting 266.111 conformance	85	270.22(e)					
demonstration of 266.112 conformance if claim is made that residues are excluded from regulation	85	270.22(f)					
SUBPART D - CHANGES TO PERMITS							
27 **PERMIT MODIFICATION AT THE REQUEST OF THE PERMITTEE**							
replace "270.21" with "270.22" and "and 270.63" with "270.63 and 270.66"	94	270.42(c)(1)(iv)					
paragraph heading is changed to "Newly regulated wastes and units"	85	270.42(g)					
add wording at end of paragraph regarding the continued management of hazardous waste in units newly regulated as hazardous waste management units; change "wates" to "wastes"	85,94	270.42(g)(1)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
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; change "effetive" to "effective"	85,94	270.42(g)(1)(i)					
insert "The permittee" before "submits"; insert "or unit" after "waste"	85	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"	85	270.42(g)(1)(iii)					
delete "In the case of Classes 2 and 3 modifications,"; insert "The permittee" before "also"; replace "permit modification" with "Class 2 or 3 modification"; change "180 days after" to "180 days of"; add "or subjecting the unit to RCRA Subtitle C management standards" to end of paragraph	85,94	270.42(g)(1)(iv)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
28	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"	85	270.42(g)(1)(v)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
change heading of "L." to "Incinerators, Boilers, and Industrial Furnaces"; in "L.1." & "L.2." replace "a waste feed rate limit, or an organic feed rate limit" with "a feed-stream 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." replace "." after "requirements" with ":"; in "L.5.a." insert "or maximum" before "combustion gas temperature" & 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"; in "L.8." insert "non-hazardous waste before "fuel"	85,94	270.42/ Appendix I					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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)	85	270.66(a)					
permit for new boiler or industrial furnace shall specify appropriate conditions for the following operating periods:	85	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	85	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	85	270.66(b)(1)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in *Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)*

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85 111,114	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	85	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	85	270.66(b)(3)(i)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	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	85	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	85	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	85,94	270.66(b)(4)					
information the trial burn plan must include; Director may require supplemental information	85	270.66(c)					
		270.66(c)(1)					
		270.66(c)(1)(i)					
analysis of each feedstream, as fired	85	270.66(c)(1)(ii)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
29		85	270.66(c)(2)					
			270.66(c)(2)(i)					
		85,94	270.66(c)(2)(ii)					
	analysis of each hazardous waste, as fired	85	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)					
		85	270.66(c)(3)(v)					
			270.66(c)(3)(vi)					
		85,94	270.66(c)(3)(vii)					
	detailed engineering description of boiler or industrial furnace	85	270.66(c)(3)(viii)					
	detailed description of sampling and monitoring procedures	85	270.66(c)(4)					
	detailed test schedule for each hazardous waste for which the trial burn is planned	85	270.66(c)(5)					
	detailed test protocol	85	270.66(c)(6)					
	description of, and planned operating conditions for, any emission control equipment to be used	85	270.66(c)(7)					
	procedures for rapid stopping of hazardous waste feed and emissions control if an equipment malfunction	85	270.66(c)(8)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
other information Director finds necessary	85	270.66(c)(9)					
trial burn conducted to demonstrate conformance with 266.104-266.107 standards under an approved trial burn plan	85	270.66(d)(1)					
findings under which the Director shall approve a trial burn plan	85	270.66(d)(2)					
		270.66(d)(2)(i)					
		270.66(d)(2)(ii)					
		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	85	270.66(d)(3)					
submit all data collected during any trial burn	85	270.66(d)(4)					
270.66(d) submissions must be certified by signature of person authorized to sign permit application or 270.11 report	85	270.66(d)(5)					
for DRE trial burn under 266.104(a), Director will specify trial POHCs; basis for specification	85	270.66(e)					
determinations to be made based on each trial burn:	85	270.66(f)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
quantitative analysis of specified materials in the feedstreams	85	270.66(f)(1)					
determinations needed when a DRE trial burn is required under 266.104(a)	85	270.66(f)(2)					
		270.66(f)(2)(i)					
		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)	85,94	270.66(f)(3)					
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)	85	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)	85	270.66(f)(5)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
identification of sources of fugitive emissions and their means of control	85	270.66(f)(6)					
continuous measurement of CO, oxygen, and HC in stack gas	85	270.66(f)(7)					
such other information as Director specifies	85,94	270.66(f)(8)					
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	85	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	85	270.72(a)(6)					

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
add new paragraph regarding the addition of newly regulated units under 270.72(a)(6)	85	270.72(b)(7)					
TERMINATION OF INTERIM STATUS							
insert "which has achieved interim status prior to November 8, 1984, interim status terminates" before "on November 8, 1989"	85,94	270.73(f)					
insert "which has achieved interim status prior to November 8, 1984, interim status terminates" before "on November 8, 1992"	85,94	270.73(g)					

1 Revision Checklist 85 (February 21, 1991; 56 FR 7134) redesignated the old paragraph (d)(2) as (d)(3) and introduced a new paragraph (d)(2) into the code. Revision Checklist 94 (July 17, 1991; 56 FR 32688) made technical corrections to the February 21, 1991 amendatory language for 261.2 and incorrectly redesignated paragraph (d)(3) as (d)(4) and paragraph (d)(4) as (d)(5). The Federal code, as of February 21, 1991, did not include 261.2(d)(3) or 261.2(d)(4). The technical correction addressed by Revision Checklist 96 (August 27, 1991; 56 FR 42504) fixed this error.

2 The Federal Register addressed by Revision Checklist 94 designated this paragraph as "261.3(c)(2)(ii)(8)." This is a typographical error; the correct paragraph designation is "261.3(c)(2)(ii)(B)." This error was ultimately corrected by the rule addressed by Revision Checklist 96.

3 Note that Revision Checklist 85 made revisions to paragraphs 265.112(d)(2), 265.112(d)(2)(i), 265.112(d)(2)(ii), 265.113(a) and 265.113(b). However, the technical correction addressed by Revision Checklist 96 reversed the revisions made by Revision Checklist 85 and retained the July 1990 CFR language. Thus, States should not make any changes to paragraphs 265.112(d)(2), 265.113(a) or 265.113(b).

4 Revision Checklist 112 (57 FR 41566; September 10, 1992) removed and reserved Subpart E of Part 266 and recodified the Subpart E provisions as portions of the new Part 279.

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

5 Note that there is a typographical error in the Federal Register addressed by Revision Checklist 94 (56 FR 32692; July 17, 1991). The "§266.4" in the heading should be "§266.40." This error was corrected by Revision Checklist 96 at 56 FR 42512 (August 27, 1991).

6 This paragraph was entered into the code by Revision Checklist 85 and was modified by Revision Checklist 96. Subsequently, Revision Checklist 98 issued an administrative stay of the BIF rule as it applies to coke ovens burning certain hazardous wastes from the coke by-products recovery process. This administrative stay was removed by Revision Checklist 105 (57 FR 27880; June 22, 1992). Note also that Revision Checklist 98 incorrectly changed the reference "266.100(b), (c), (d) and (f)" to "266.100(b), (c) and (d)." This error was corrected by Revision Checklist 111 at 57 FR 38564 (August 25, 1992).

7 Revision Checklist 112 (57 FR 41566, September 10, 1992) removed and reserved Subpart E of Part 266 and recodified the Subpart E provisions as portions of the new Part 279. To reflect this change, Revision Checklist 112 revised 266.100(b)(1) to refer to Part 279 rather than Subpart E of Part 266.

8 Note that the Federal Register addressed by Revision Checklist 85 designated this paragraph as "266.102(d)(4)(D)." 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).

9 There seems to be an error in the Federal Register addressed by Revision Checklist 85. Federal code refers to "particulate matter standard in § 266.111(b)," but 266.111(b) addresses definitions of "direct transfer equipment" and "container," not particulate matter standards. It appears that the Federal code should likely reference 266.105(a) as it does contain a particulate matter standard.

10 Note that in the February 21, 1991 rule addressed by Revision Checklist 85, the subparagraph designation was not italicized. This is a typographical error. The August 27, 1991 (56 FR 42504; Revision Checklist 96) technical correction fixes this error.

11 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*)" in this citation should be "266.102(e)(4)(iii)(C)(*1*) and (*2*)."

12 Note that in the Federal Register for Revision Checklist 85, the subparagraph designation was not italicized. This is a typographical error. The 56 FR 32688 (July 17, 1991; Revision Checklist 94) technical correction fixes this error.

13 Note that the July 1, 1992 CFR inadvertently omitted the text to 266.103(c)(1)(i)-(xiii) and 266.103(c)(3)(ii)-(iii)(C) from the Federal code. States should incorporate these paragraphs, as found in the Federal Register addressed by Revision Checklist 85 (56 FR 7134; February 21, 1991), and amended by Revision Checklist 94 (56 FR 32688; July 17, 1991).

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

[14] In the Federal Register addressed by Revision Checklist 85, the designation for this subparagraph is 266.104(g)2. This is a typographical error; the correct designation is 266.104(g)(2). See the technical correction at 56 FR 32689 (July 17, 1991; Revision Checklist 94).

[15] Note that there is an error in the Federal Register for Revision Checklist 111 (57 FR 38558; August 25, 1992) for this rule. The phrase "dispersion modeling to predict the maximum annual average off-site ground level contamination for each" appears twice but should only occur once.

[16] In the Federal Register addressed by Revision Checklist 85, the designations for these subparagraphs are 266.107(d)(i) and 266.107(d)(ii) (see 56 FR 7225). These are typographical errors. The subparagraphs should be designated 266.107(d)(1) and 266.107(d)(2). See technical corrections at 56 FR 32690 (July 17, 1991; Revision Checklist 94).

[17] In the Federal Register addressed by Revision Checklist 85, 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. Revision Checklist 94 corrects this error at 56 FR 32688 (July 17, 1991).

[18] Note that Revision Checklist 96 replaced the old paragraph introduced into the code by Revision Checklist 85.

[19] Note the typographical error in the Federal Register for Revision Checklist 127 [58 FR 59598 (November 9, 1993)]: "FO39" should be "F039" (i.e., should be a zero not an upper case "O").

[20] Note that Revision Checklist 94 replaced the old Table introduced into the code by Revision Checklist 85.

[21] Note that Revision Checklist 85 simply makes an announcement concerning the publishing of the Appendix at a future time. The Appendix was actually entered into the code by Revision Checklist 94. Subsequently, sections 7.0 and 9.2 were modified by Revision Checklist 96; section 5.0 was modified by Revision Checklists 111 and 114, and section 6.0 was modified by Revision Checklist 111.

[22] Note that there are errors in the Federal Register for Revision Checklist 111 (57 FR 38558; August 25, 1992) for this rule. The original titles for these tables in the July 17, 1991 rule (56 FR 32688; Revision Checklist 94) read "μG/M^3", not"8G/M^3" as indicated in the corrections numbered 11 and 12 on page 38566 of the Federal Register for Revision Checklist 111. The "8G/m^3," however, appears in the 1991 CFR and is incorrect. These errors were corrected by Revision Checklist 114 (57 FR 44999, September 30, 1992). The "μG/m^3" in the July 16, 1991 Federal Register and the "8G/m^3" in the 1991 CFR should read "μg/m^3" not "g/m^3" as shown at 57 FR 38566 (August 25,1992).

CONSOLIDATED CHECKLIST: Burning of Hazardous Waste in Boilers and Industrial Furnaces as of June 30, 1994 (cont'd)

[23] Note that Revision Checklist 96 replaced the old section 7.0 introduced into the code by Revision Checklist 94.

[24] Note that Revision Checklist 85 simply makes an announcement concerning the publishing of the Appendix at a future date. The Appendix was actually entered into the code by Revision Checklist 94.

[25] This appendix was originally introduced by Revision Checklist 94; Revision Checklist 85 merely announced that the appendix would be published at a future date. Revision Checklist 125 removed Part 266 Appendix X and Appendices A, B and C to Appendix X, "Guidelines on Air Quality Models (Revised)" and changed references to the guidelines in Part 266 to refer to 40 CFR Part 51, Appendix W.

[26] 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 the rule addressed by Revision Checklist 85 (56 FR 7134; February 21, 1991). On July 1, 1991 (56 FR 30192; Revision Checklist 92) a technical correction was published moving the wood preserving requirements to 270.26.

[27] States only need to make changes if they have adopted, or plan to adopt, the provisions addressed by Revision Checklist 54 (53 FR 37912), because 270.42 is not required by 271.14 to be part of a State's permitting program.

[28] The paragraph following 270.42(g)(1)(v) in Federal code, i.e., 270.42(g)(2), is included in the Federal Register for Revision Checklist 85 (56 FR 7237, February 21, 1991). However, no changes were made to the paragraph by the February 21, 1991 rule, so it has not been included in this consolidated checklist.

[29] Note that Revision Checklist 126 (58 FR 46040; August 31, 1993), amended 270.66(c)(2)(i)&(ii) by replacing the reference to 270.6 with a reference to 260.11 as incorporated by reference at both 260.11 and 270.6.

Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994

The following consolidated checklist should replace the existing version in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Toxicity Characteristics Revisions as of June 30, 1994

Note: 1) This checklist consolidates the changes to the Federal code addressed by the Toxicity Characteristic (TC) Rule [55 FR 11798; March 29, 1990; Revision Checklist 74] and subsequent revisions which have occurred through June 30, 1993, as follows:

- Revision Checklist 74 [55 FR 11748 (March 29, 1990), 55 FR 26986 (June 29, 1990)];
- Revision Checklist 80 [55 FR 40834 (October 5, 1990), 56 FR 3978 (February 1, 1991), 56 FR 13406 (April 2, 1991)];
- Revision Checklist 84 [56 FR 5910 (February 13, 1991)];
- Revision Checklist 108 [57 FR 30657 (July 10, 1992)];
- Revision Checklist 117 B [57 FR 23062 (June 1, 1992)]; and
- Revision Checklist 119 [57 FR 55114 (November 24, 1992)].

Note that there have been several technical corrections to the TC Rule preamble. An August 2, 1990 (55 FR 31387) notice corrected a typographical error in an implementation timetable found in the TC Rule's preamble. This error created confusion among small quantity generators regarding their notification responsibilities for TC wastes. This rule also extended the period of time within which affected small quantity generators must comply with the new modification requirements. An August 10, 1990 (55 FR 32377) notice corrected the August 2, 1990 notice. On September 27, 1990, a clarification to the March 29 final rule was published in the Federal Register (55 FR 39409) regarding four implementation issues. This clarification also only affected the TC Rule preamble.

No final rules were promulgated between June 30, 1993 and June 30, 1994 that affected the TC rule. Note, Revision Checklist 126 (56 FR 46040; August 31, 1993), however, replaced all references to the TCLP in Part 261, Appendix II with a reference to the TCLP in SW-846. This rule also replaced the TCLP in Part 261, Appendix II with a note referencing this publication that is incorporated by reference at 260.11(a). This rule is not indicated in the checklist reference column of this consolidated checklist, but it is referenced in the footnote. This approach was taken because this rule is not a correction to the TC rule per se; but rather it introduced a new method of referencing the TCLP.

2) Two interim final rules (55 FR 40834; October 5, 1990 and 56 FR 3978; February 1, 1991) and a final rule (56 FR 13406; April 2, 1991) extended the compliance date of the Toxicity Characteristic (TC) Rule for certain hydrocarbon recovery and remediation operations. This extension is addressed by Revision Checklist 80 and included in this Consolidated Checklist. Because a less stringent requirement than that imposed by the TC Rule was in effect until January 25, 1993, the incorporation by States of this extension is optional.

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

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE							
SUBPART A - GENERAL							
DEFINITION OF HAZARDOUS WASTE							
change "Extraction Procedure Toxicity characteristic" to "Toxicity Characteristic"	117 B	261.3(a)(2)(i)					
EXCLUSIONS							
replace "characteristic of EP toxicity" with "Toxicity Characteristic"	74	261.4(b)(6)(i)					
replace "characteristic of EP toxicity, and do not fail the test for" with "toxicity characteristic for any other constituent, and do not exhibit"	108	261.4(b)(6)(ii)					
insert "arsenical-treated" after "discarded"; replace "characteristic of EP toxicity" with "Toxicity Characteristic for Hazardous Waste Codes D004 through D017"; delete "or reasons," after "reason"	74,108	261.4(b)(9)					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
1	add new paragraph regarding petroleum-contaminated media and debris that fail the 261.24 Toxicity Characteristic test (D018 through D043 only) and are subject to Part 280 corrective action	74	261.4(b)(10)					
†,2	Extension for Specified Hydrocarbon Recovery Operations							
	add new paragraph; until January 25, 1993, exclusion for injected groundwater exhibiting the 261.24 Toxicity Characteristic that is infiltrated or reinjected pursuant to specified hydrocarbon recovery operations existing on or before March 25, 1991; extension only until six months after final rule publication for groundwater returned through infiltration galleries; conditions for new operations involving injection to qualify for date extension	80	261.4(b)(11)					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	operations are performed pursuant to a written state agreement that includes a provision to assess the groundwater and the need for further remediation once the free phase recovery is completed	80	261.4(b)(11)(i)					
3	copy of written agreement has been submitted to the Characteristics Section, U.S. Environmental Protection Agency	80	261.4(b)(11)(ii)					
†,4	add new paragraph; used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, provided the refrigerant is reclaimed for further use	84	261.4(b)(12)					
	PCB WASTES REGULATED UNDER TOXIC SUBSTANCE CONTROL ACT							
	exemption for PCB-containing wastes, already regulated under Part 761 (TSCA), that fail the 261.24 Toxicity Characteristic test (D018 through D043 only)	74	261.8					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE							
	TOXICITY CHARACTERISTIC							
5	remove "EP" before "toxicity"; insert "using the methodology outlined in Appendix II" after "after filtering"; change "purposes" to "purpose"	74	261.24(a)					
1	remove "EP" before "toxicity"; add D018 through D043 to Table 1; as per technical correction, change the word "hydroxide" in the contaminant for D031 to "epoxide"; add new column with CAS numbers	74	261.24(b)					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

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

EPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	[4] 200.0
D024	m-Cresol	108-39-4	[4] 200.0
D025	p-Cresol	106-44-5	[4] 200.0
D026	Cresol	–	[4] 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3] 0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3] 0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentrachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3] 5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

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

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CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	SUBPART D - LISTS OF HAZARDOUS WASTES							
	GENERAL							
	replace "EP Toxic Waste" in the hazard codes and in the text following the hazard codes with "Toxicity Characteristic Waste"	74	261.30(b)					
	APPENDIX II TO PART 261							
	METHOD 1311 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)							
5, 6	EP toxicity test procedures are replaced by Method 1311 Toxicity Characteristic Leaching Procedures (TCLP)	74	Appendix II					
†,7	Withdrawal of Spike Recovery Correction Requirement From Method 1311 TCLP							
	change "data is" to "data are"; delete sentence regarding bias determined from matrix spike determination and parenthetical reference phrase following it	119	Appendix II, 8.2					
	change "may not be not less" to "may not be less"	119	Appendix II, 8.2.2					
	remove subparagraph	119	Appendix II, 8.2.5					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
8	redesignate former 8.4 as 8.5; add new 8.4 and subparagraphs addressing use of internal calibration quantitation methods	119	Appendix II, 8.4					
			Appendix II, 8.4.1					
			Appendix II, 8.4.2					
			Appendix II, 8.4.3					
			Appendix II, 8.4.4					
9	former 8.4 becomes 8.5	119	Appendix II, 8.5					

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

SUBPART N - LANDFILLS

DESIGN AND OPERATING REQUIREMENTS

replace "EP toxicity characteristics" with "Toxicity Characteristic"; insert "with EPA Hazardous Waste Numbers D004 through D017" after "chapter"	74	264.301(e)(1)					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES							
	SUBPART K - SURFACE IMPOUNDMENTS							
	DESIGN REQUIREMENTS							
	replace "EP toxicity characteristics" with "Toxicity Characteristic"; insert "with EPA Hazardous Waste Numbers D004 through D017" after "chapter"	74	265.221(d)(1)					
	SUBPART M - LAND TREATMENT							
	WASTE ANALYSIS							
	replace "exceed" with "equal or exceed"; replace "EP toxicity characteristic" with "Toxicity Characteristic"	74	265.273(a)					
	SUBPART N - LANDFILLS							
	DESIGN REQUIREMENTS							
10	replace "EP toxicity characteristics" with "Toxicity Characteristic"; insert ", with EPA Hazardous Waste Numbers D004 through D017" after "chapter"	108	265.301(d)(1)					

CONSOLIDATED CHECKLIST : Consolidated Checklist for the Toxicity Characteristics Revisions as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 268 - LAND DISPOSAL RESTRICTIONS							
APPENDIX I TO PART 268							
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)							
5, 11 replace Appendix with note stating the TCLP is located in Appendix II of Part 261	74	Appendix I					

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

2 See the immediate final rules at 55 FR 40834 (October 5, 1990) and 56 FR 3978 (February 1, 1991) and the final rule at 56 FR 13406 (April 2, 1991).

3 A copy of the agreement should be sent to EPA's Characteristics Section; thus, this reference should remain in a State's code. A copy of the written agreement may also be sent to the State, if the State chooses to include this requirement.

4 The final rule (56 FR 5910, February 13, 1991) which introduced this paragraph into the Federal code is considered "narrower in scope" because it narrows the wastes which are regulated, by excluding from regulation certain chlorofluorocarbon refrigerants as specified at 261.4(b)(12).

5 **Revision Checklist 74 added the TCLP at Part 261, Appendix II. Note, however, that Revision Checklist 126 (58 FR 46040; August 31, 1993), a non-TC checklist, replaced the TCLP (method 1311) in Appendix II to Part 261 with a note referencing the TCLP "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" as incorporated by reference at 260.11(a). All references to Part 261, Appendix II and Part 268, Appendix IX were revised to reflect these changes. Revision Checklist 126 did not revise the content nor the intended use of the TCLP or the EP toxicity methods.**

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

7 On June 29, 1990 (55 FR 26986; Revision Checklist 74), EPA promulgated a final rule which made technical corrections to the March 29, 1990 final rule, including the regulatory language in 40 CFR Part 261, Appendix II. Those corrections reorganized the TCLP in 40 CFR Part 261, Appendix II and included adding a requirement for the spike recovery correction. The November 24, 1992 rule (57 FR 55114; Revision Checklist 119) deleted the requirements

spike recovery correction of analytical data. Because such deletions provide for a standard less restrictive than was imposed on June 29, 1990, States are not required to include spike recovery correction when modifying their programs to incorporate the final TCLP.

8 There is a typographical error in the Federal Register; "84.4.4" should be "8.4.4."

9 There is a typographical error in the Federal Register; in the table at 8.5, second column heading, there should be a space between "TCLP" and "extraction."

10 There are several errors in the Federal Register for this citation. First, "such waste does not" should read "such wastes do not" and "261.4 of this chapter" should read "261.24 of this chapter" as they are found in the July 15, 1985, Federal Register at 50 FR 28750 (Revision Checklist 17(H)) and in the 1992 CFR. Second, "Waste Number" should be "Waste Numbers."

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

Consolidated Checklist for the Wood Preserving Listings as of June 30, 1994

The following consolidated checklist should replace the existing version in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Wood Preserving Listings
as of June 30, 1994

Note: 1) This checklist consolidates the changes to the Federal code addressed by the following Wood Preserving Listings checklists:

- Revision Checklist 82 [55 FR 50450 (December 6, 1990)];
- Revision Checklist 91 [56 FR 27332 (June 13, 1991)];
- Revision Checklist 92 [56 FR 30192 (July 1, 1991)];
- Revision Checklist 101 [57 FR 5859 (February 18, 1992)]; and
- Revision Checklist 120 [57 FR 61492 (December 24, 1992)].

No final rules were promulgated between January 1, 1993, and June 30, 1994, that affected the Wood Preserving Listings rule. Therefore, this consolidated checklist is identical to that of December 31, 1992.

2) This consolidated checklist adds, to the list of wastes from non-specific sources, three broad categories of wastes from wood preserving processes that use chlorophenolic, creosote, and/or inorganic (arsenical and chromium) preservatives. These wastes, F032, F034 and F035, include wastewaters, process residuals, preservative drippage and spent formulations. The listing of F032 and the permitting and interim status standards applicable to drip pads handling this waste are promulgated pursuant to HSWA. The listings of F034 and F035, the permitting and interim standards for drip pads that handle F034 and F035 wastes, and the addition of a test method to Appendix III of Part 261 are non-HSWA provisions. EPA will implement the addition of F032 to the list of hazardous wastes from non-specific sources 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 interim or final authorization. In authorized States, the non-HSWA requirements will not be applicable until the States revise their programs to adopt equivalent requirements under State law, unless the wastes are designated as hazardous due to the Toxicity Characteristic, which would allow an owner or operator to comply with the drip pad standards administered under Federal law.

3) Note that double lines are used on the checklists to indicate the beginning and ending of optional provisions with subparagraphs or requirements that must all be adopted if the optional provision is adopted.

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
	SUBPART B - DEFINITIONS							
	DEFINITIONS							
	add "drip pad" in alphabetical order	82	260.10					
	PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE							
	SUBPART A - GENERAL							
1	**EXCLUSIONS**							
†	Spent Wood Preserving Solutions and Wastewaters							
	add new paragraph which excludes as a solid waste spent wood preserving solutions that have been reclaimed and are reused for their original intended purpose	82,92	261.4(a)(9)(i)					
	add new paragraph which excludes as a solid waste wastewaters from the wood preserving process that have been reclaimed and are reused to treat wood	92	261.4(a)(9)(ii)					
2	**HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES**							
3	add the waste codes "F032", "F034" and "F035" in alphanumeric order to list as shown below:	82,†91, †120	261.31(a)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
•	• • • • • •	
F032	Wastewaters (except those that have not come into contact with process contaminants), 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 or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), 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.	(T)
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes 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.	(T)
F035	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes 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.	(T)
•	• • • • • •	

4 remove the administrative stay addressed in Footnote 1 of the 261.31 table	†91,120	261.31(a)/table					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	DELETION OF CERTAIN HAZARDOUS WASTE CODES FOLLOWING EQUIPMENT CLEANING AND REPLACEMENT							
	wastes from wood preserving processes at plants that do not resume or initiate use of chlorophenolic preservatives will not meet the listing definition of F032 once the 261.35(b) and (c) requirements are met; wastes may continue to meet another hazardous waste listing description or exhibit one or more characteristics	82	261.35(a)					
5	generators must either clean or replace all specified process equipment that may have come into contact with chlorophenolic formulations or constituents	82,92	261.35(b)					
	generators shall do one of the following:	82,92	261.35(b)(1)					
	prepare and follow an equipment cleaning plan; clean equipment in accordance with 261.35	92	261.35(b)(1)(i)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	prepare and follow an equipment replacement plan; replace equipment in accordance with 261.35	92	261.35(b)(1)(ii)					
6	document cleaning and replacement in accordance with 261.35, carried out after termination of use of chlorophenolic preservatives	92	261.35(b)(1)(iii)					
	cleaning requirements	82,92	261.35(b)(2)					
	prepare and sign a written equipment cleaning plan that describes:	92	261.35(b)(2)(i)					
	equipment to be cleaned	92	261.35(b)(2)(i)(A)					
	how equipment will be cleaned	92	261.35(b)(2)(i)(B)					
	solvent to be used in cleaning	92	261.35(b)(2)(i)(C)					
	how solvent rinses will be tested	92	261.35(b)(2)(i)(D)					
	how cleaning residues will be disposed	92	261.35(b)(2)(i)(E)					
	equipment must be cleaned as follows:	92	261.35(b)(2)(ii)					
	remove all visible residues from process equipment	92	261.35(b)(2)(ii)(A)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
rinse with appropriate solvent until no dioxin or dibenzofuran detection in final solvent rinse	92	261.35(b)(2)(ii)(B)					
analytical requirements	92	261.35(b)(2)(iii)					
test rinses as per SW-846, Method 8290	92	261.35(b)(2)(iii)(A)					
"not detected" defined	92	261.35(b)(2)(iii)(B)					
generator manages cleaning process residues as F032 waste	92	261.35(b)(2)(iv)					
replacement requirements	82,92	261.35(b)(3)					
prepare and sign written equipment replacement plan that describes:	92	261.35(b)(3)(i)					
equipment to be replaced	92	261.35(b)(3)(i)(A)					
how equipment will be replaced	92	261.35(b)(3)(i)(B)					
how equipment will be disposed	92	261.35(b)(3)(i)(C)					
generator must manage discarded equipment as F032 waste	92	261.35(b)(3)(ii)					
documentation requirements	92	261.35(b)(4)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
document previous equipment cleaning and/or replacement performed in accordance with 261.35 and occurred after cessation of chlorophenolic preservative use	92	261.35(b)(4)(i)					
documentation that must be maintained as part of the facility's operating record	82	261.35(c)					
name and address of the facility	82	261.35(c)(1)					
formulations previously used and the date on which their use ceased in each process at the plant	82	261.35(c)(2)					
formulations currently used in each process at the plant	82	261.35(c)(3)					
equipment cleaning or replacement plan	82	261.35(c)(4)					
name and address of any persons who conducted the cleaning and replacement	82	261.35(c)(5)					
dates on which cleaning and replacement were accomplished	82	261.35(c)(6)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
dates of sampling and testing	82	261.35(c)(7)					
description of sample handling and preparation techniques	82	261.35(c)(8)					
description of the tests performed, the date, and the results of the tests	82	261.35(c)(9)					
name and model numbers of the instrument(s) used in performing the tests	82	261.35(c)(10)					
QA/QC documentation	82	261.35(c)(11)					
signed certification statement	82	261.35(c)(12)					
APPENDIX III TO PART 261							
CHEMICAL ANALYSIS TEST METHODS							
add the compound. "Benzo(k) fluoranthene", in alphabetical order, to Table 1	82	Table 1, Appendix III					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

TABLE 1. – ANALYSIS METHODS FOR ORGANIC CHEMICALS CONTAINED IN SW-846

Compound	Method Nos.
• • • • • • •	
Benzo(k) fluoranthene	8100,8250,8270,8310
• • • • • • •	

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add "F032", "F034", and "F035" to list in alphanumeric order as shown below:	82	Appendix VII					

EPA hazardous waste No.	Hazardous constituents for which listed
•	• • • • • •
F032	Benz(a)anthracene, benzo(a)pyrene, dibenz(a,h)-anthracene, indeno(1,2,3-cd)pyrene, pentachlorophenol, arsenic, chromium, tetra-, penta-, hexa-, heptachlorodibenzo-p-dioxins, tetra-, penta-, hexa-, heptachlorodibenzofurans.
F034	Benz(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium.
F035	Arsenic, chromium, lead.
•	• • • • • •

APPENDIX VIII TO PART 261

HAZARDOUS CONSTITUENTS

add the specified hazardous constituents in alphabetical order as shown below:	82	Appendix VIII					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

Common Name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
• • • • • • • •			
Benzo(k)fluoranthene	Same	207-08-9	.....
• • • • • • • •			
Heptachlorodibenzofurans	.....	.....	.....
Heptachlorodibenzo-p-dioxins	.....	.....	.....
• • • • • • • •			

PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART C - PRE-TRANSPORT REQUIREMENTS

7,8 ACCUMULATION TIME

the waste is placed:	92	262.34(a)(1)					
in containers and generator complies with Subpart I of Part 265; and/or	92	262.34(a)(1)(i)					
in tanks and generator complies with Subpart J of Part 265, except 265.197(c) and 265.200; and/or	92	262.34(a)(1)(ii)					
9 on drip pads and generator complies with Subpart W of Part 265 and maintains following records:	†82,92	262.34(a)(1)(iii)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	description of procedures to ensure all wastes are removed from drip pad and associated collection system at least once every 90 days	†82,92	262.34(a)(1)(iii) (A)					
9	documentation of each waste removal, including quantity, date and time of removal; generator exempt from Subparts G and H of Part 265, except 265.111 and 265.114	†82,92	262.34(a)(1)(iii) (B)					
9	date each period of accumulation begins is marked and visible	82,92	262.34(a)(2)					
	PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES							
	SUBPART J - TANK SYSTEMS							
	APPLICABILITY							
	add reference to paragraph (c)	82	264.190					
	add new paragraph subjecting tanks, sumps and other collection devices used in conjunction with Subpart W-regulated drip pads to Part 264, Subpart J requirements	82	264.190(c)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
10	**SUBPART W - DRIP PADS**							
	APPLICABILITY							
	Subpart W applies to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage, precipitation, and/or surface water run-off to an associated collection system; existing drip pads defined; applicability of 264.573(b)(3) leak collection system requirement	82,92, 120	264.570(a)					
	owner or operator of certain drip pads inside or under a structure not subject to 264.573(e) or 264.573(f) regulations, as appropriate	82,92	264.570(b)					
	Subpart W requirements not applicable to management of infrequent, incidental drippage in storage yards provided:	120	264.570(c)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
owner or operator maintains and complies with a written contingency plan describing how owner or operator will respond immediately to discharge of infrequent and incidental drippage; at a minimum, what the contingency plan must describe	120	264.570(c)(1)					
		264.570(c)(1)(i)					
		264.570(c)(1)(ii)					
		264.570(c)(1)(iii)					
		264.570(c)(1)(iv)					
ASSESSMENT OF EXISTING DRIP PAD INTEGRITY							
evaluation of existing drip pads; by June 6, 1991, written assessment obtained and kept on file; annual review, update and recertification required until 264.573 standards are met, except 264.573(b) standards for liners and leak detection systems	82,92, 120	264.571(a)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
11, 12	development of written plan for upgrading, repairing and modifying drip pad to meet 264.573(b) requirements; submittal of plan to Regional Administrator no later than 2 years before completion of modifications; written plan documentation, review and certification requirements	82,92, 120	264.571(b)					
12			264.571(b)(1)					
			264.571(b)(2)					
	removed	82,120	264.571(b)(3)					
	submittal of required drawings and certification to Regional Administrator or State Director upon completion of all upgrades, repairs, and modifications	82,92	264.571(c)					
	if drip pad found to be leaking or unfit for use, compliance with 264.573(m) provisions or close drip pad in accordance with 264.575	82,92	264.571(d)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13 DESIGN AND INSTALLATION OF NEW DRIP PADS							
owners and operators of new drip pads must ensure that the pads are designed, installed and operated in accordance with one of the following:	82,92, 120	264.572					
all of the requirements of 264.573 (except 264.573(a)(4)), 264.574 and 264.575	120	264.572(a)					
all of the requirements of 264.573 (except 264.573(b)), 264.574 and 264.575	120	264.572(b)					
13 DESIGN AND OPERATING REQUIREMENTS							
drip pads must:	82,92	264.573(a)					
be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt	82,92	264.573(a)(1)					
be sloped for free-drainage to the associated collection system	82,92	264.573(a)(2)					
have a curb or berm around the perimeter	82,92	264.573(a)(3)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
14, 15, 16	hydraulic conductivity requirements; maintain surface free of cracks and gaps; sealing material must be chemically compatible with preservatives that contact pad; requirements apply to existing drip pads and drip pads of owners/operators electing to comply with 264.572(a)	82,92, 120	264.573(a)(4)(i)					
14	owner or operator must obtain and keep at the facility written assessment of drip pad certified by independent qualified registered engineer; assessment must attest to results of evaluation; assessment must be reviewed, updated and recertified annually; evaluation must document extent to which drip pad meets 264.573 (except 264.573(b)) design and operating standards	120	264.573(a)(4)(ii)					
17	remove notes regarding administrative stays for new and existing drip pads	†91,92, †101, 120	264.573(a)(4)/ notes					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
18	be of sufficient structural strength and thickness to meet specified conditions	82,92	264.573(a)(5)					
19	if owner/operator elects to comply with § 264.572(b) instead of § 264.572(a), the drip pad must have:	82,92, 120	264.573(b)					
	a synthetic liner that meets certain design, construction and installation specifications	82,92	264.573(b)(1)					
	specific requirements for liner construction materials	82,92	264.573(b)(1)(i)					
	foundation or base requirements	82,92	264.573(b)(1)(ii)					
	liner must cover all surrounding earth that could come into contact with the waste or leakage	82,92	264.573(b)(1)(iii)					
	leakage detection system immediately above the liner; detection system must be:	82,92	264.573(b)(2)					
	constructed of materials that are:	82,92	264.573(b)(2)(i)					
	chemically resistant to relevant waste and leakage	82,92	264.573(b)(2)(i)(A)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
of sufficient strength and thickness to prevent collapse	82,92	264.573(b)(2)(i)(B)					
designed and operated to function without clogging through the scheduled closure of the drip pad; and	82,92	264.573(b)(2)(ii)					
designed to detect drip pad failure or the release of hazardous waste or accumulated liquid at the earliest practicable time	82,92	264.573(b)(2)(iii)					
leakage collection system immediately above the liner designed, constructed, maintained and operated to collect leakage from below the drip pad; date, time and quantity of leakage collected must be documented in operating log	120	264.573(b)(3)					
maintenance of drip pads; note regarding remedial action	82,92	264.573(c)					
convey, drain, and collect liquid resulting from spillage or precipitation in order to prevent run-off	82,92	264.573(d)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
run-on control system requirements	82,92	264.573(e)					
run-off management system requirements, unless system is protected by a structure, as described in 264.570(b)	82,92	264.573(f)					
evaluation of drip pad for compliance with 264.573(a)-(f) requirements; design certification required	82,92	264.573(g)					
removal of drippage and accumulated precipitation from associated collection system as necessary to prevent overflow onto the drip pad	82,92	264.573(h)					
thorough cleaning of drip pad surface in a manner and frequency to meet specified conditions; documentation of date, time and cleaning procedure in facility's operating log; owner/operator must determine whether residues are hazardous under 262.11 and, if so, manage them according to Parts 261-268, 270 and RCRA §3010	82,92, 120	264.573(i)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
minimize tracking of hazardous waste or constituents off the drip pad	82,92	264.573(j)					
after removal from treatment vessel, treated wood from pressure and non-pressure processes must be held on pad until drippage has ceased; documentation required	82,92	264.573(k)					
collection and holding units for run-on and run-off control systems emptied or otherwise managed as soon as possible after storms to maintain design capacity	82,92	264.573(l)					
throughout the active life of the drip pad and as specified in the permit, repair of detected condition that may have caused or has caused a release of hazardous waste within a reasonable period of time, in accordance with the following procedures:	82,92	264.573(m)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	upon detection of a condition that may have caused or has caused a release of hazardous waste, the owner must:	82,92	264.573(m)(1)					
	enter discovery in the facility operating log	82,92	264.573(m)(1)(i)					
	immediately remove from service affected portion of drip pad	82,92	264.573(m)(1)(ii)					
	determine steps to repair drip pad and clean up any leakage; establish schedule for repairs	82,92	264.573(m)(1)(iii)					
	notify Regional Administrator within 24 hours after discovery; provide written notice as specified within 10 working days	82,92	264.573(m)(1)(iv)					
	review, determination and notification by Regional Administrator	82,92	264.573(m)(2)					
20	written notification to Regional Administrator and certification of compliance with 264.573(m)(1)(iv) after repairs and clean up	82,92	264.573(m)(3)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	should a permit be necessary, Regional Administrator will specify in the permit all design and operating practices necessary to ensure that 264.573 requirements are met	82,92	264.573(n)					
	documentation in operating log, as specified, of past operating and waste handling practices	82,92	264.573(o)					
13	INSPECTIONS							
	inspection of liners and cover systems for uniformity, damage and imperfections during construction or installation; inspection and certification of liners to meet 264.573 requirements; maintenance of certification as part of the facility operating record; inspection of liners and covers after installation	82,92	264.574(a)					
	drip pad must be inspected weekly and after storms to detect evidence of any of the following:	82,92	264.574(b)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
deterioration, malfunctions or improper operation of run-on and run-off control systems	82,92	264.574(b)(1)					
presence of leakage in and proper functioning of leak detection system	82,92	264.574(b)(2)					
deterioration or cracking of drip pad surface; note regarding remedial action	82,92	264.574(b)(3)					
13 CLOSURE							
at closure, removal and decontamination requirements; management as hazardous waste	82,92	264.575(a)					
conditions under which owner or operator must close facility and perform post-closure care in accordance with 264.310 requirements; for permitted units, permit requirement continues throughout post-closure period; drip pad is considered a landfill and must meet Subparts G and H requirements of Part 264	82,92	264.575(b)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
owner or operator of an existing drip pad that does not comply with the 264.573(b)(1) liner requirements must:	82,92	264.575(c)(1)					
include in closure plans for drip pad under 264.112, a plan for 264.575(a) compliance and a contingent plan for 264.575(b) compliance	82,92	264.575(c)(1)(i)					
prepare a contingent post-closure plan under 264.118 for complying with 264.575(b) in case not all contaminated subsoils can be practicably removed at closure	82,92	264.575(c)(1)(ii)					
cost estimates calculated under 264.112 and 264.144 for closure and post-closure care of drip pad subject to 264.575(c) must include the cost of complying with the contingent closure plan and the contingent post-closure plan; cost of expected closure under 264.575(a) need not be included	82,92	264.575(c)(2)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES							
SUBPART J - TANK SYSTEMS							
APPLICABILITY							
add reference to paragraph (c)	82	265.190					
add new paragraph subjecting tanks, sumps and other collection devices used in conjunction with Subpart W-regulated drip pads to Part 265, Subpart J requirements	82	265.190(c)					
SUBPART W - DRIP PADS							
APPLICABILITY							
Subpart W applies to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage, precipitation, and/or surface water run-off to an associated collection system; existing drip pads defined; applicability of 265.443(b)(3) leak collection system requirement	82,92, 120	265.440(a)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
owner or operator of certain drip pads inside or under a structure not subject to 265.443(e) or 265.443(f) regulations, as appropriate	82	265.440(b)					
Subpart W requirements not applicable to management of infrequent, incidental drippage in storage yards provided:	120	265.440(c)					
owner or operator maintains and complies with a written contingency plan describing how owner or operator will respond to discharge of infrequent and incidental drippage; at a minimum, what the contingency plan must describe	120	265.440(c)(1)					
		265.440(c)(1)(i)					
		265.440(c)(1)(ii)					
		265.440(c)(1)(iii)					
		265.440(c)(1)(iv)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	ASSESSMENT OF EXISTING DRIP PAD INTEGRITY							
	evaluation of existing drip pads; by June 6, 1991, written assessment obtained and kept on file; annual review, update and recertification required until 265.443 standards are met, except for 265.443(b) standards for liners and leak detection systems	82,120	265.441(a)					
21	development of written plan for upgrading, repairing and modifying drip pad to meet 265.443(b) requirements; submittal of plan to Regional Administrator no later than 2 years before completion of modifications; written plan documentation, review and certification requirements	82,120	265.441(b)					
21			265.441(b)(1)					
			265.441(b)(2)					
	removed	82,120	265.441(b)(3)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
submittal of required drawings and certification to Regional Administrator or State Director upon completion of all repairs and modifications	82	265.441(c)					
if drip pad found to be leaking or unfit for use, comply with 265.443(m) provisions or close drip pad in accordance with 265.445	82	265.441(d)					
DESIGN AND INSTALLATION OF NEW DRIP PADS							
owners and operators of new drip pads must ensure that the pads are designed, installed and operated in accordance with one of the following:	82, 120	265.442					
all of the applicable requirements of 265.443 (except 265.443(a)(4)), 265.444 and 265.445	120	265.442(a)					
all of the applicable requirements of 265.443 (except 265.443(b)), 265.444 and 265.445	120	265.442(b)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
DESIGN AND OPERATING REQUIREMENTS							
drip pads must:	82	265.443(a)					
be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt	82	265.443(a)(1)					
be sloped to free-drain wastes to the associated collection system	82	265.443(a)(2)					
have a curb or berm around the perimeter	82	265.443(a)(3)					
22, 23 hydraulic conductivity requirements; maintain surface free of cracks and gaps; surface material must be chemically compatible with preservatives that contact pad; requirements apply to existing drip pads and drip pads of owners/ operators electing to comply with 265.442(a)	82,120	265.443(a)(4)(i)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
22	owner or operator must obtain and keep at the facility a written assessment of drip pad certified by independent qualified registered engineer; assessment must attest to results of evaluation; assessment must be reviewed, updated and recertified annually; evaluation must document extent to which drip pad meets 265.443 (except 265.443(b)) design and operating standards	120	265.443(a)(4)(ii)					
24	remove notes regarding administrative stays for new and existing drip pads	†91, †101, 120	265.443(a)(4)/ notes					
	be of sufficient structural strength and thickness to meet specified conditions; note regarding structural integrity standards	82	265.443(a)(5)					
25	if an owner/operator elects to comply with § 265.442(b) instead of § 265.442(a), the drip pad must have:	82,120	265.443(b)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	a synthetic liner that meets certain specifications	82	265.443(b)(1)					
	specific requirements for liner construction materials	82	265.443(b)(1)(i)					
	foundation or base requirements	82	265.443(b)(1)(ii)					
	liner must cover all surrounding earth that could come into contact with the waste or leakage	82	265.443(b)(1)(iii)					
	leakage detection system immediately above the liner; detection system must be:	82	265.443(b)(2)					
	constructed of materials that are:	82	265.443(b)(2)(i)					
	chemically resistant to relevant waste and leakage	82	265.443(b)(2)(i)(A)					
	of sufficient strength and thickness to prevent collapse	82	265.443(b)(2)(i)(B)					
26	designed and operated to function without clogging through scheduled drip pad closure	92	265.443(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
26	designed to detect the failure of the drip pad or the presence of hazardous waste release or accumulated liquid at the earliest practicable time	82,92	265.443(b)(2)(iii)					
	leakage collection system immediately above the liner designed, constructed, maintained and operated to collect leakage from below the drip pad for removal; date, time and quantity of leakage collected must be documented in operating log	120	265.443(b)(3)					
	maintenance of drip pads; note regarding remedial action	82	265.443(c)					
	convey, drain, and collect liquid resulting from drippage or precipitation in order to prevent run-off	82	265.443(d)					
	run-on control system requirements, unless drip pad is protected by a structure, as described in 265.440(b)	82	265.443(e)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
run-off management system requirements, unless drip pad is protected by a structure, as described in 265.440(b)	82	265.443(f)					
evaluation of drip pad for compliance with 265.443(a)-(f) requirements; design certification required	82	265.443(g)					
removal of drippage and accumulated precipitation from associated collection system as necessary to prevent overflow onto the drip pad	82	265.443(h)					
thorough cleaning of drip pad surface in a manner and frequency to meet specified conditions; documentation of date, time and cleaning procedure in facility's operating log	82,120	265.443(i)					
minimize tracking of hazardous waste or constituents off the drip pad	82	265.443(j)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
after removal from treatment vessel, treated wood from pressure and non-pressure processes must be held on pad until drippage has ceased; documentation required	82	265.443(k)					
collection and holding units for run-on and run-off control systems emptied or otherwise managed as soon as possible after storms to maintain design capacity	82	265.443(l)					
throughout the active life of the drip pad and as specified in the permit, repair of detected condition that may have caused or has caused a release of hazardous waste within a reasonable period of time, in accordance with the following procedures:	82,92	265.443(m)					
upon detection of a condition that may have caused or has caused a release of hazardous waste, the owner must:	82,92	265.443(m)(1)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	entry of discovery in the facility operating log	82	265.443(m)(1)(i)					
	immediate removal from service of affected portion of drip pad	82	265.443(m)(1)(ii)					
	determination of steps to repair drip pad, remove any leakage, and establish schedule for clean up and repairs	82	265.443(m)(1)(iii)					
	notify Regional Administrator within 24 hours after discovery; provide written notice as specified within 10 working days	82	265.443(m)(1)(iv)					
	review, determination and notification by Regional Administrator	82	265.443(m)(2)					
27	written notification to Regional Administrator and certification of compliance with 265.443(m)(1)(iv) after repairs and clean up	82,92	265.443(m)(3)					
	documentation in operating log, as specified, of past operating and waste handling practices	82	265.443(n)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
INSPECTIONS							
inspection of liners and cover systems for uniformity, damage and imperfections during construction or installation; inspection and certification of liners to meet 265.443 requirements; maintenance of certification as part of the facility operating record; inspection of liners and covers after installation	82	265.444(a)					
drip pad must be inspected weekly and after storms to detect evidence of any of the following:	82	265.444(b)					
deterioration, malfunctions or improper operation of run-on and run-off control systems	82	265.444(b)(1)					
presence of leakage in and proper functioning of leak detection system	82	265.444(b)(2)					
deterioration or cracking of drip pad surface; note regarding remedial action	82	265.444(b)(3)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
CLOSURE							
at closure, removal and decontamination requirements; management as hazardous waste	82	265.445(a)					
closure and post-closure care of drip pad as a landfill under 265.310, if some contaminated subsoils cannot be removed or decontaminated; for permitted units, permit requirement continues throughout post-closure period	82	265.445(b)					
owner or operator of an existing drip pad not in compliance with the 265.443(b)(1) liner requirements must:	82	265.445(c)(1)					
include in the closure plan for the drip pad under 265.112, a plan for 265.445(a) compliance and a contingent plan for 265.445(b) compliance	82	265.445(c)(1)(i)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
prepare contingent post-closure plan under 265.118 for complying with 265.445(b) in case not all contaminated subsoils can be practicably removed at closure	82	265.445(c)(1)(ii)					
cost estimates calculated under 265.112 and 265.144 for closure and post-closure care of drip pad subject to 265.445(c) must include cost of complying with contingent closure plan and contingent post-closure plan; cost of expected closure under 265.445(a) need not be included	82	265.445(c)(2)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM							
SUBPART B - PERMIT APPLICATION							
28 **SPECIAL PART B INFORMATION REQUIREMENTS FOR DRIP PADS**							
additional information to be provided by owners and operators of hazardous waste treatment, storage, or disposal facilities that collect, store, or treat hazardous waste on drip pads, except as otherwise provided by 264.1	82	270.26					
list of hazardous wastes placed or to be placed on each drip pad	82	270.26(a)					
detailed plans and an engineering report describing how 264.90(b)(2) will be met, if an exemption is sought to Subpart F of Part 264	82	270.26(b)					
detailed plans and an engineering report describing the design, construction, operation and maintenance of drip pad to meet 264.573 requirements; submission must address 264.571 items	82,92	270.26(c)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
design characteristics of the drip pad	82	270.26(c)(1)					
liner system	82	270.26(c)(2)					
leakage detection system	82	270.26(c)(3)					
practices designed to maintain drip pads	82	270.26(c)(4)					
associated collection system	82	270.26(c)(5)					
control of run-on to the drip pad	82	270.26(c)(6)					
control of run-off from the drip pad	82	270.26(c)(7)					
removal intervals and demonstration of sufficiency to prevent overflow	82	270.26(c)(8)					
procedures for cleaning drip pad at least once every seven days; provisions for documentation of date, time and cleaning procedure	82	270.26(c)(9)					
operating practices and procedures to minimize tracking of hazardous waste or waste constituents off the drip pad	82	270.26(c)(10)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
procedures for ensuring that treated wood from pressure and non-pressure processes is held on the drip pad until drippage has ceased; recordkeeping practices	82	270.26(c)(11)					
provisions for ensuring that collection and holding units for run-on and run-off control systems are emptied or managed as soon as possible after storms to maintain design capacity	82	270.26(c)(12)					
if treatment is carried out on the drip pad, details of process equipment used, and the nature and quality of residuals	82	270.26(c)(13)					
description of drip pad inspections to meet 264.573 requirements; include in 270.14(b)(5) inspection plan	82,92	270.26(c)(14)					
certification that drip pad design meets 264.573(a)-(f) requirements	82,92	270.26(c)(15)					

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
description of removal procedures at closure under 264.575(a); for waste not removed at closure, submittal of detailed plan and engineering report to describe compliance with 264.310(a) and (b); information should be included in closure plan and, where applicable, 270.14(b)(13) post-closure plan	82,92	270.26(c)(16)					

1 261.4(a)(9)(i) was originally 261.4(a)(9) on Revision Checklist 82. Revision Checklist 92 redesignated it as 261.4(a)(9)(i) and added a new paragraph designated as 261.4(a)(9)(ii).

2 Note the Federal Register 56 FR 27732 (June 13, 1991; Revision Checklist 91) incorrectly refers to 261.31 rather than to 261.31(a) as the place where the list of hazardous wastes from non-specific sources can be found. Revision Checklist 81 redesignated 261.31 as 261.31(a) and added 261.31(b).

3 Waste codes F032, F034, and F035 were added to the table in 261.31(a) by Revision Checklist 82. Revision Checklist 91 (56 FR 27332; June 13, 1991) addressed an administrative stay of these listings. Revision Checklist 120 (57 FR 61492; December 24, 1992) terminated the June 13, 1991 administrative stay by amending the listings. For the States that did not adopt the June 13, 1991 administrative stay, the Revision Checklist 120 changes to these listings represent a narrowing of the F032, F034, and F035 listings. Thus, the Revision Checklist 120 changes are optional for States that did not adopt the administrative stay. For those States that did adopt the June 13, 1991 administrative stay, the wording added by the stay (i.e., the parenthetical note concerning the stay) should be removed and be replaced with the wording presented in the December 24, 1992 rule (Revision Checklist 120) and in this consolidated checklist.

4 Only those States that added the administrative stay addressed by the June 13, 1992 rule (56 FR 27332; Revision Checklist 91) to their code need to make this change.

5 Revision Checklist 82 originally introduced §261.35 into the code. Revision Checklist 92 made extensive formatting and word changes to 261.35(b).

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

[6] Note there is a typographical error in 261.35(b)(1)(iii)." "Preservations," at the end of the sentence, should be "preservatives." We have used the correct word on the checklist.

[7] Note Revision Checklist 82 redesignated 262.34(a)(2)-(4) as 262.34(a)(3)-(5). Revision Checklist 92 changed these paragraphs back to their original numbering, i.e., 262.34(a)(2)-(4). Because these two changes cancelled each other out, they were not directly addressed by this checklist.

[8] The technical correction for §262.34, 56 FR 30192 (July 1, 1991; Revision Checklist 92), contains the text of the introductory paragraph, 262.34(a). As no revisions were made to this paragraph, it has not been included in this consolidated checklist. Also, because this technical correction made extensive changes to this section of the code, the "Federal Requirements" column summarizes the requirement rather than the changes.

[9] An error in the July 1, 1991 CFR makes it appear that there are two paragraphs designated as 262.34(a)(2) (see the editorial note in the CFR). Revision Checklist 82 originally inserted the first 262.34(a)(2), 262.34(a)(2)(i), 262.34(a)(2)(ii) and redesignated the old 262.34(a)(2)-(4) as 262.34(a)(3)-(5). However, Revision Checklist 92 redesignated 262.34(a)(3) as 262.34(a)(2), effectively removing the first 262.34(a)(2) and incorporating these requirements into 262.34(a)(1) at 262.34(a)(1)(iii) and (iii)(A)&(B). It was not the Agency's intent to include these requirements both at 262.34(a)(1)(iii)(A)&(B) and at 262.34(a)(2) as is indicated in the July 1, 1991 CFR. The first 262.34(a)(2) in that CFR should not be in the code. Revision Checklist 92 also redesignated 262.34(a)(3)-(5) as 262.34(a)(2)-(4), i.e., returned these subparagraphs to their original numbering prior to the redesignation by Revision Checklist 82.

[10] The entire text of Subpart W of Part 264 was printed in the Federal Register (56 FR 30192; July 1, 1991) for Revision Checklist 92. This was done to demonstrate the numbering of each citation following the redesignation of sections to correspond with Subpart W, Part 265. Numerous paragraphs within the redesignated sections had no revisions made to them. Paragraphs in this consolidated checklist, where Revision Checklist 92 is indicated in the "Checklist Reference" column, reflect revisions to wording, internal references, or numbering that were addressed in Revision Checklist 92.

[11] The Federal Register for Revision Checklist 92 (56 FR 30196; July 1, 1991) introduced a typographical error by incorrectly changing "in sufficient detail" to "insufficient detail". This typographical error was corrected by Revision Checklist 120 (57 FR 61492; December 24, 1992) to read "in sufficient detail".

[12] When this paragraph was revised by Revision Checklist 120, the instructions for revising it were unclear. According to EPA, the last sentence of 264.571(b), which introduces the subparagraphs, is to be removed, as well as subparagraphs (b)(1), (2), and (3). A technical correction will be published in the Federal Register in the near future.

[13] Revision Checklist 92 redesignated the original 264.575 (as introduced by Revision Checklist 82) as 264.572 and redesignated the original 264.572, 264.573 and 264.574 as 264.573, 264.574 and 264.575, respectively.

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

[14] This paragraph was originally introduced into the Federal code as 264.572(a)(4) by Revision Checklist 82 and redesignated as 264.573(a)(4) by Revision Checklist 92. Revision Checklist 120 completely revised the paragraph by removing the old 264.573(a)(4) and replacing it with 264.573(a)(4)(i) and 264.573(a)(4)(ii) .

[15] There are two typographical errors in this paragraph in the Federal Register for Revision Checklist 120; in both occurrences, "1x10^{-7}" should be "1x10^{-7}."

[16] Note that the Federal Register for Revision Checklist 120 is in error. According to EPA, the last line of 264.573(a)(4)(i) should read "§ 264.572(b) instead of § 264.572(a)" rather than "§ 264.572(a) instead of § 264.572(b)." As written, the code contradicts what is said in the 264.572(a)&(b) requirements.

[17] Note that there were two administrative stays at this citation. Revision Checklist 91 (56 FR 27332; June 13, 1991) added a note regarding an administrative stay with no ending date for new pads at 264.572(a)(4). However, 264.572(a)(4) was redesignated as 264.573(a)(4) by revision Checklist 92. Because of this redesignation, the Revision Checklist 91 administrative stay was incorrectly omitted in the July 1, 1991 and July 1, 1992 CFRs. Revision Checklist 101 (57 FR 5859; February 18, 1992) added a second note addressing an administrative stay for existing drip pads at wood preserving plants until October 31, 1992. These notes were removed by Revision Checklist 120 (57 FR 61492; December 21, 1992) when the administrative stays were terminated by the Federal Register for that checklist. This same Federal Register does not clearly indicate that these notes regarding administrative stays be removed; however, according to EPA, they should be removed. A technical correction will be published in the Federal Register in the near future.

[18] Note that a typographical error occurs in the text of 264.573(a)(5) in the Federal Register 56 FR 30196 (July 1, 1991; Revision Checklist 92); "daily perations" should be "daily operations" as introduced into the code by Revision Checklist 82 (55 FR 50450; December 6, 1990).

[19] There is an error in the Federal Register for Revision Checklist 120 at 264.573(b). According to EPA, the phrase "§ 264.572(b) instead of § 264.572(a)" likely should be "§ 264.572(a) instead of § 264.572(b)." As currently written, the code contradicts the 264.572(a)&(b) requirements.

[20] Note that paragraph 264.573(m)(3) was originally 264.572(m)(3) in the Federal Register 55 FR 50450 (December 6, 1990; Revision Checklist 82). This paragraph had an incorrect reference; "paragraph (m)(3) of this section" should be "paragraph (m)(1)(iv) of this section." This error was addressed by the July 1, 1991 technical corrections to the rule (56 FR 30192; Revision Checklist 92).

[21] When this paragraph was revised by Revision Checklist 120, the instructions for revising it were unclear. According to EPA, the last sentence of 265.441(b), which introduces the subparagraphs, is to be removed, as well as subparagraphs (b)(1), (2), and (3). A technical correction will be published in the Federal Register in the near future.

[22] This paragraph was introduced into the Federal code by Revision Checklist 82 as 265.443(a)(4). Revision Checklist 120 completely revised the paragraph by removing the old 265.443(a)(4) and replacing it with 265.443(a)(4)(i) and 265.443(a)(4)(ii).

CONSOLIDATED CHECKLIST: Wood Preserving Listings
as of June 30, 1994 (cont'd)

23 Note that the Federal Register for Revision Checklist 120 is in error. According to EPA, the last line of 265.443(a)(4)(i) should read "§ 265.442(b) instead of § 265.442(a)" rather than "§ 265.442(a) instead of § 265.442(b)". As written, the code contradicts what is said in the 265.442(a)&(b) requirements.

24 Revision Checklist 91 added a note regarding an administrative stay with no ending date for new drip pads. Revision Checklist 101 added a second note addressing an administrative stay for existing drip pads at wood preserving plants until October 31, 1992. These notes were removed by Revision Checklist 120 when the administrative stays were terminated by the Federal Register for that checklist. This same Federal Register does not clearly indicate that the notes regarding the administrative stays be removed; however, according to EPA, they should be removed. A technical correction will be published in the Federal Register in the near future.

25 There appears to be an error in the Federal Register for Revision Checklist 120 at 265.443(b). The phrase "§ 265.442(b) instead of § 265.442(a)" likely should be "§ 265.442(a) instead of § 265.442(b)." As currently written, the code contradicts the 265.442(a)&(b) requirements.

26 Revision Checklist 82 introduced the original 265.443(b)(2)(ii) into the code. Revision Checklist 92 redesignated the original 265.443(b)(2)(ii) as 265.443(b)(2)(iii) and added a new paragraph 265.443(b)(2)(ii).

27 Note that 265.443(m)(3) in the Federal Register 55 FR 50450 (December 6, 1990; Revision Checklist 82) has an incorrect reference. The reference to "paragraph (m)(3) of this section" should be to "paragraph (m)(1)(iv) of this section." This error was addressed by the July 1, 1990 technical corrections to the rule (56 FR 30192; Revision Checklist 92).

28 Note that the "Special Part B Information Required for Drip Pads" was originally at 270.22 as introduced into the code by Revision Checklist 82. The Boilers and Industrial Furnaces rule (56 FR 7134; February 21, 1991; Revision Checklist 85) inadvertently removed section 270.22 from the code. The July 1, 1991 (56 FR 30192; Revision Checklist 92) Wood Preserving technical corrections notice rectified this problem by redesignating that section, as introduced by Revision Checklist 82, as 270.26.

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Consolidated Checklist for the Bevill Exclusion for Mining Wastes as of June 30, 1994

The following consolidated checklist should replace the existing version in SAM Appendix K

CONSOLIDATED CHECKLIST
for
Bevill Exclusion for Mining Wastes as of June 30, 1994

1) This checklist consolidates the changes to the Federal code addressed by the Bevill exclusion for mining wastes and subsequent revisions that have occurred through June 30, 1994 by the following checklists:

- Revision Checklist 53 [53 FR 35412 (September 13, 1988)];
- Revision Checklist 65 [54 FR 36952 (September 1, 1989)];
- Revision Checklist 71 [55 FR 2322 (January 23, 1990)]; and
- Revision Checklist 90 [56 FR 27300 (June 13, 1991)].

The "Checklist Reference" column indicates which of these checklists have affected each listed citation.

2) Note that in the Federal Register notice addressed by Revision Checklist 90, a series of appendices follows the change made to 40 CFR 261.4(b)(7). These appendices were not included in this consolidated 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 REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
	SUBPART B - DEFINITIONS							
	DEFINITIONS							
1	revise "designated facility"	71	260.10					

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CONSOLIDATED CHECKLIST: Bevill Exclusion for Mining Wastes
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTES							
	SUBPART A - GENERAL							
	DEFINITION OF HAZARDOUS WASTE							
2	add exception for mixture of a 261.4(b)(7) waste and a solid waste exhibiting a Subpart C characteristic unless resultant mixture meets certain characteristic conditions; mixture is hazardous relative to the EP toxicity characteristic	65	261.3(a)(2)(i)					
	add "of this part" after "Subpart D"; add language excepting mixtures of hazardous waste and solid waste excluded under 261.4(b)(7) and the mixture no longer exhibits hazardous characteristics for which the hazardous waste was listed in Subpart D	65	261.3(a)(2)(iii)					
	EXCLUSIONS							
3	define beneficiation; for purpose of 261.4(b)(7), solid waste from the processing of ores includes:	53,65, 71,90	261.4(b)(7)					

CONSOLIDATED CHECKLIST: Bevill Exclusion for Mining Wastes as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
4		53,65, 71	261.4(b)(7)(i)					
			261.4(b)(7)(ii)					
		53,71	261.4(b)(7)(iii)					
			261.4(b)(7)(iv)					
			261.4(b)(7)(v)					
			261.4(b)(7)(vi)					
		71	261.4(b)(7)(vii)					
			261.4(b)(7)(viii)					
			261.4(b)(7)(ix)					
			261.4(b)(7)(x)					
			261.4(b)(7)(xi)					
			261.4(b)(7)(xii)					
			261.4(b)(7)(xiii)					
			261.4(b)(7)(xiv)					
			261.4(b)(7)(xv)					
			261.4(b)(7)(xvi)					
			261.4(b)(7)(xvii)					
			261.4(b)(7)(xviii)					
	specific solid wastes from the processing of ores and minerals		261.4(b)(7)(xix)					
		71	261.4(b)(7)(xx)					
	SUBPART D - LISTS OF HAZARDOUS WASTES							
	HAZARDOUS WASTES FROM SPECIFIC SOURCES							
	add, after entries for "iron and steel" and before entries for "Secondary lead," the following:	53	261.32					

CONSOLIDATED CHECKLIST: Bevill Exclusion for Mining Wastes as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Primary aluminium:		
K088	*Spent potliners from primary aluminum reduction*	(T)

APPENDIX VII TO PART 261

BASIS FOR LISTING HAZARDOUS WASTE

add the following in the appropriate numerical sequence:	53	Appendix VII					

EPA hazardous waste No.	Hazardous constituents for which listed
K088	Cyanide (complexes).

PART 262 - STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

SUBPART B - THE MANIFEST

USE OF MANIFEST

add new paragraph stating requirements when shipping hazardous waste to a designated facility in an authorized State which has not yet obtained authorization to regulate that particular waste as hazardous	71	262.23(e)					

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CONSOLIDATED CHECKLIST: Bevill Exclusion for Mining Wastes
as of June 30, 1994 (cont'd)

1 Note that this definition in the Federal Register (55 FR 2353, January 23, 1990) and in the July 1, 1990, 1991and 1992 CFRs contains a typographical error. The reference to 260.20 should be to 262.20.

2 Note that on March 29, 1990 (55 FR 11798; Revision Checklist 74), EPA promulgated the Toxity Characterictic (TC) Rule which replaced the EP Toxicity Characteristic with the Toxicity Characteristic Leaching Procedure. However, the March 29, 1990 rule and subsequent revisions to the TC Rule failed to correct the reference to the EP Toxicity characteristic at 261.3(a)(2)(i). This error has been corrected by the June 1, 1992 interim final rule (56 FR 23062; Revision Checklist 117B). Thus, States that have adopted the TC Rule must replace the reference to the EP Toxicity characteristic with a reference to the Toxicity Characteristic.

3 Note that the BIF Rule as addressed by Revision Checklist 85 (56 FR 7134; February 21, 1991) amended this paragraph by exempting facilities that burn or process hazardous waste, as provided by 266.112, from the exclusion. States which have adopted the Revision Checklist 85 provisions must also adopt the changes addressed by that checklist for this paragraph.

4 The list of excluded wastes from the processing of ores and minerals, currently represented by 261.4(b)(7)(i)-(xx) as per Revision Checklist 71, has undergone extensive formatting changes over time. Revision Checklist 53 addressed a fairly short list of wastes numbered 261.4(b)(7)(i)-(vi). Revision Checklist 65 made significant changes in that 261.4(b)(7)(i)(A)-(E) represented five wastes retained under the exclusion, and 261.4(b)(7)(ii)(A)-(T) represented twenty wastes conditionally retained under the exclusion. Citations numbered (b)(7)(iii)-(vi) were omitted at that point in time. Finally, Revision Checklist 71 resulted in a list of 20 wastes retained under the exclusion, numbered 261.4(b)(7)(i)(-(xx). Therefore, the references to Checklists 53 and 65 in the "Checklist reference" column are relevant only insofar as the numbering format on the Federal RCRA citations are concerned, as opposed to the text of the citations. Many of the wastes addressed by Revision Checklist 65 under paragraphs (i) and (ii) are addressed in paragraphs (i)-(xx) in Revision Checklist 71.

Consolidated Checklist for Recycled Used Oil Management Standards as of June 30, 1994

The following consolidated checklist should be inserted in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Recycled Used Oil Management Standards as of June 30, 1994

Note: 1) This checklist consolidates the changes to Federal code addressed by the following Recycled Used Oil Management Standards (RUO) checklists:

- Revision Checklist 112 [57 FR 41566 (September 10, 1992)] and
- Revision Checklist 122 [58 FR 26420 (May 3, 1993) and 58 FR 33341 (June 17, 1993)]
- Revision Checklist 130 [59 FR 10550 (March 4, 1994)]

The RUO "Checklist Reference" column indicates which of these checklists has affected each listed citation. Subsequent to promulgation of the first RUO rule (i.e., the rule addressed by Revision Checklist 112), checklists other than the RUO checklists have also affected certain sections of code addressed by the RUO checklists. The effects of these subsequent checklists are indicated in footnotes.

2) The preamble to the September 10, 1992 rule (57 FR 41566; Revision Checklist 112) indicated that none of the provisions of that rule were being promulgated pursuant to HSWA. Therefore, the Part 279 regulations would not be enforceable in an authorized State until the State had received authorization for Revision Checklist 112. After publication of the September 10, 1992 rule, EPA realized that its position, making all provisions of that rule non-HSWA, was arguably inconsistent with statements made in the preamble of the November 29, 1985 rule (50 FR 49201; Revision Checklist 19) which promulgated 266, Subpart E. Those provisions were issued under HSWA authority and are recodified in certain portions of Part 279 (specifically, 279.10, 279.11 and portions of 279.1 and Subparts G and H of Part 279) by the September 10, 1992 rule. In the May 3, 1993 rule (58 FR 26420; Revision Checklist 122), EPA, thus, redesignated these provisions in Part 279 as HSWA because they were originally promulgated under these authorities. These provisions will continue to be enforced by EPA until a State becomes authorized for them. States already authorized for the Part 266, Subpart E provisions will continue to enforce these provisions until the State becomes authorized for Part 279. For this checklist, the HSWA provisions are designated by a "◆" (diamond symbol).

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
SUBPART B - DEFINITIONS							
DEFINITIONS							
add, in alphabetical order, definition of "used oil"	112	260.10					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE							
SUBPART A - GENERAL							
DEFINITION OF HAZARDOUS WASTE							
used oil containing >1000 ppm total halogens presumed to be hazardous waste; presumption may be rebutted by demonstrating that the used oil does not contain hazardous waste; example from SW-846; where SW-846 may be obtained	112	261.3(a)(2)(v)					
rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins if processed, through a tolling agreement, to reclaim metal-working oils/fluids; presumption does apply to metal working oils/fluids if such oils/fluids are recycled in any other manner or disposed	112	261.3(a)(2)(v)(A)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation; rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units	112	261.3(a)(2)(v)(B)					
	EXCLUSIONS							
1,2	261.4(b)(15) redesignated as (b)(13)	122	261.4(b)(13)					
1	add paragraph excluding from regulation used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products	122	261.4(b)(14)					
1,2	redesignate as 261.4(b)(13)	122	261.4(b)(15)					
	SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE GENERATED BY CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS							
	replace "subpart E of part 266" with "part 279"	112,122	261.5(j)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
REQUIREMENTS FOR RECYCLABLE MATERIALS							
remove 261.6(a)(2)(iii); redesignate 261.6(a)(2)(iv) and (v) as 261.6(a)(2)(iii) and (iv)	112	261.6(a)(2)(iii)					
		261.6(a)(2)(iv)					
		261.6(a)(2)(v)					
remove 261.6(a)(3)(iii); redesignate 261.6(a)(3)(iv)-(viii) as 261.6(a)(3)(iii)-(vii)	112	261.6(a)(3)(iii)					
		261.6(a)(3)(iv)					
		261.6(a)(3)(v)					
		261.6(a)(3)(vi)					
		261.6(a)(3)(vii)					
		261.6(a)(3)(viii)					
used oil that is recycled and is hazardous waste solely because it exhibits a characteristic is not subject to Parts 260-268 but is regulated under Part 279; definition of used oil that is recycled	112	261.6(a)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES							
	SUBPART A - GENERAL							
	PURPOSE, SCOPE, AND APPLICABILITY							
3	change "261.6(a)(2) and (3)" to "261.6(a)(2), (3), and (4)"; change "that requirements of this part" to "they"; add "part 279 or" before "subparts"; change "subparts C, F, G or H" to "subparts C, D, F or G" (note, this last change appears to be an error; see Endnote 3 for this checklist)	122	264.1(g)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	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							
3	change "owner and operator" to "owner or operator"; change "261.6(a)(2) and (3)" to "261.6(a)(2), (3), and (4)"; change "that requirements of this part" to "they"; add "part 279 or" before "subparts"; change "subparts C, F, G or H" to "subparts C, D, F or G" (note, this last change appears to be an error; see Endnote 3 for this checklist)	122	265.1(c)(6)					
	PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES							
	SUBPART E - USED OIL BURNED FOR ENERGY RECOVERY							
	remove and reserve Subpart E	112	266.40-266.44					
	SUBPART H - HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES							
	APPLICABILITY							
	substitute "part 279 of this chapter" for "subpart E of part 266 rather than this subpart"	112	266.100(b)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
PART 279 - STANDARDS FOR THE MANAGEMENT OF USED OIL							
SUBPART A - DEFINITIONS							
DEFINITIONS							
terms defined in sections 260.10, 261.1 and 280.12 have same meanings in Part 279	112	279.1					
"aboveground tank"	112	279.1					
"container"	112	279.1					
"do-it-yourselfer used oil collection center"	112	279.1					
"existing tank"	112	279.1					
"household 'do-it-yourselfer' used oil"	112	279.1					
"household 'do-it-yourselfer' used oil generator"	112	279.1					
"new tank"	112	279.1					
"petroleum refining facility"	130	279.1					
"processing"	112	279.1					
"re-refining distillation bottoms"	112	279.1					
"tank"	112	279.1					
◆ "used oil"	112,122	279.1					
"used oil aggregation point"	112	279.1					
◆ "used oil burner"	112	279.1					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
"used oil collection center"	112	279.1					
"used oil fuel marketer"	112	279.1					
"used oil generator"	112	279.1					
"used oil processor/ re-refiner"	112	279.1					
"used oil transfer facility"	112, †130	279.1					
"used oil transporter"	112	279.1					
SUBPART B - APPLICABILITY							
APPLICABILITY							
section identifies materials subject to regulation as used oil under Part 279; also identifies some materials which are not so regulated and indicates if subject to Parts 260-266, 268, 270 and 124	112	279.10					
EPA presumes used oil is to be recycled unless used oil handler disposes of it or sends it for disposal; except as provided in 279.11, used oil is subject to regulation under Part 279, regardless of whether it exhibits a 261 Subpart C characteristic	112	279.10(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
mixtures of used oil and hazardous waste	112	279.10(b)					
listed hazardous waste	112	279.10(b)(1)					
mixtures of used oil and hazardous waste listed in 261 Subpart D subject to regulation as hazardous waste under Parts 260-266, 268, 270 and 124 rather than as used oil under Part 279	112	279.10(b)(1)(i)					
used oil containing >1000 ppm total halogens presumed to be hazardous waste; presumption may be rebutted by demonstrating that the used oil does not contain hazardous waste; example from SW-846; where to obtain SW-846	112,130	279.10(b)(1)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins if processed to reclaim metalworking oils/fluids; presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner or disposed	112	279.10(b)(1)(ii)(A)					
rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation; presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units	112	279.10(b)(1)(ii)(B)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆,5 mixtures of used oil and hazardous waste that solely exhibit one or more of the 261, Subpart C hazardous waste characteristics and mixtures of used oil and hazardous waste that are listed in subpart D solely because they exhibit one or more of the characteristics of hazardous waste identified in subpart C, are subject to:	112,122	279.10(b)(2)					
◆ except as 279.10(b)(2)(iii) provides, regulation under Parts 260-266, 268, 270 and 124 if mixture exhibits any 261, Subpart C hazardous waste characteristics	112	279.10(b)(2)(i)					
◆ if the mixture does not exhibit any 261, Subpart C hazardous waste characteristics, it is regulated under Part 279; exception	112,122	279.10(b)(2)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆ mixture is regulated under Part 279 if waste mixed with oil is hazardous solely because it exhibits the characteristic of ignitability, provided mixture does not exhibit the 261.21 characteristic of ignitability	112, 122, 130	279.10(b)(2)(iii)					
◆ mixtures of used oil and conditionally exempt small quantity generator hazardous waste regulated under 261.5 are subject to regulation as used oil under Part 279	112	279.10(b)(3)					
6 materials containing or otherwise contaminated with used oil	112,122	279.10(c)					
except as provided in 279.10(c)(2), materials containing or otherwise contaminated with used oil from which used oil has been properly drained or removed such that no visible signs of free-flowing oil remain in or on material:	122	279.10(c)(1)					
are not used oil; not subject to Part 279	122	279.10(c)(1)(i					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
subject to Parts 124, 260-266, 268, and 270 if applicable	122	279.10(c)(1)(ii)					
materials containing or otherwise contaminated with used oil that are burned for energy recovery subject to Part 279	122	279.10(c)(2)					
used oil drained or removed from materials containing or otherwise contaminated with used oil subject to Part 279	122	279.10(c)(3)					
mixtures of used oil with products	112	279.10(d)					
except as provided in 279.10(d)(2), mixtures of used oil and fuels or other fuel products are subject to Part 279	112,122	279.10(d)(1)					
used oil and diesel fuel mixed on-site by the generator for use in the generator's own vehicles not subject to Part 279 after mixing; prior to mixing used oil is subject to 279, Subpart C	112	279.10(d)(2)					
materials derived from used oil	112	279.10(e)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
materials reclaimed from used oil that are used beneficially and not burned for energy recovery or used in a manner constituting disposal are:	112	279.10(e)(1)					
not used oil and not subject to Part 279	112	279.10(e)(1)(i)					
not solid wastes, and not subject to Parts 260-266, 268, 270 and 124	112	279.10(e)(1)(ii)					
materials produced from used oil burned for energy recovery are subject to Part 279	112	279.10(e)(2)					
except as provided in 279.10(e)(4), materials derived from used oil that are disposed of or used in a manner constituting disposal are:	112	279.10(e)(3)					
not used oil and not subject to Part 279	112	279.10(e)(3)(i)					
are solid waste and are subject to Parts 260-266, 268, 270 and 124 if the materials are listed or identified as hazardous waste	112,122	279.10(e)(3)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	used oil re-refining distillation bottoms used as feedstock to manufacture asphalt products are not subject to this part	112,122	279.10(e)(4)					
7	removed	112,122	279.10(e)(4)(i)& (ii)					
	CWA, Section 402 or 307, wastewater contaminated with *de minimis* quantities of used oil not subject to Part 279; definition of *de minimis*; exception does not apply if used oil is discarded as result of abnormal manufacturing operations resulting in substantial releases or to used oil recovered from wastewaters	112	279.10(f)					
8	used oil introduced into crude oil pipelines or a petroleum refining facility	112, †130	279.10(g)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
† used oil mixed with crude oil or natural gas liquids for insertion into a crude oil pipeline is exempt from the Part 279 requirements; used oil is subject to Part 279 requirements prior to mixing of used oil with crude oil or natural gas liquids	130	279.10(g)(1)					
† mixtures of used oil and crude oil or natural gas liquids containing less than 1% used oil being stored or transported to crude oil pipeline or petroleum refining facility for insertion into refining process at a point prior to crude distillation or catalytic cracking are exempt from the Part 279 requirements	130	279.10(g)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
† used oil inserted into petroleum refining facility process before crude distillation or catalytic cracking without prior mixing with crude oil exemption is exempt from the Part 279 requirements provided used oil constitutes less than 1% of crude oil feed to any petroleum facility process unit at any time; used oil is subject to Part 279 requirements prior to insertion into the petroleum refining facility process	130	279.10(g)(3)					
† except as provided in 279.10(g)(5), used oil introduced into petroleum refining facility process after crude distillation or catalytic cracking is exempt from the Part 279 requirements only if used oil meets 279.11 specifications; used oil is subject to Part 279 requirements prior to insertion into petroleum refining facility process	130	279.10(g)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
† used oil incidentally captured by hydrocarbon recovery system or wastewater treatment system as part of routine process operations at petroleum refining facility and inserted into the petroleum refining facility process is exempt from the Part 279 requirements; exemption does not extend to used oil intentionally introduced into a hydrocarbon recovery system	130	279.10(g)(5)					●
† tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil or natural gas liquids are exempt from the Part 279 requirements	130	279.10(g)(6)					
used oil produced on vessels from normal shipboard operations is not subject to Part 279 until it is transported ashore	112	279.10(h)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
9	used oil containing PCBs; marketers and burners of used oil containing quantifiable level of PCBs subject to 40 CFR 761.20(e) in addition to Part 279	112,122	279.10(i)					
	USED OIL SPECIFICATIONS							
◆	used oil burned for energy recovery and fuel produced from treatment of used oil is subject to Part 279 unless it is shown not to exceed allowable levels of specific constituents and properties in Table 1; once used oil no longer exceeds specifications and there is compliance with 279.72, 279.73 & 279.74(b), then not subject to Part 279	112	279.11					
◆	"Used Oil Not Exceeding Any Specification Level Is Not Subject to This Part When Burned for Energy Recovery"; lists constituents/ properties and allowable levels	112	279.11, Table 1					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
†,◆, 10 after Table 1, add note regarding applicable standards for burning used oil containing PCBs	122	279.11, Table 1, note					
PROHIBITIONS							
used oil shall not be managed in surface impoundments or waste piles unless those units are subject to Parts 264 or 265	112	279.12(a)					
use of used oil as a dust suppressant is prohibited, except in States listed in 279.82(c)	112	279.12(b)					
off-specification used oil fuel may be burned in:	112	279.12(c)					
industrial furnaces identified in 260.10	112	279.12(c)(1)					
specific boilers:	112	279.12(c)(2)					
industrial boilers on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes	112	279.12(c)(2)(i)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
utility boilers used to produce electric power, steam, heated or cooled air, or gases or fluids for sale	112	279.12(c)(2)(ii)					
used oil-fired space heaters if burner meets 279.23 provisions	112	279.12(c)(2)(iii)					
hazardous waste incinerators subject to regulation under subpart O of 264 or 265	122	279.12(c)(3)					
SUBPART C - STANDARDS FOR USED OIL GENERATORS							
APPLICABILITY							
definition of used oil generator; 279 Subpart C applies to all used oil generators except:	112	279.20(a)					
household "do-it-yourselfer" used oil generators	112	279.20(a)(1)					
vessels, until the used oil is transported ashore; definition of co-generators; decision as to which party will fulfill Part 279 requirements	112	279.20(a)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	diesel fuel and used oil mixed by the used oil generator for use in generator's own vehicles, after mixing; prior to mixing the used oil is subject to Part 279	112	279.20(a)(3)					
	farmers who generate an average of ≤25 gallons per month from vehicles or machinery used on the farm in a calendar year	112	279.20(a)(4)					
	used oil generators who conduct specific activities are subject to the requirements of other applicable provisions of Part 279	112	279.20(b)					
	except under 279.24(a)&(b), generators who transport used oil must also comply with Subpart E of Part 279	112	279.20(b)(1)					
11	except as provided in 279.20(b)(2)(ii), generators who process or re-refine used oil must also comply with Subpart F of Part 279	112,130	279.20(b)(2)(i)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
generators who perform the following activities are not processors provided the used oil is generators on-site and is not being sent off-site to a burner of on- or off-specification used oil fuel:	130	279.20(b)(2)(ii)					
filtering, cleaning, or otherwise reconditioning used oil before returning it for reuse by generator	130	279.20(b)(2)(ii)(A)					
separating used oil from wastewater generated on-site to make the wastewater acceptable for discharge or reuse pursuant to section 307(b) of CWA or other applicable Federal regulations governing the management or discharge of wastewaters	130	279.20(b)(2)(ii)(B)					
using oil mist collectors to remove small droplets of used oil from in-plant air to make plant air suitable for continued recirculation	130	279.20(b)(2)(ii)(C)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
draining or removing used oil from materials containing or contaminated with used oil in order to remove excessive oil pursuant to 279.10(c)	130	279.20(b)(2)(ii)(D)					
filtering, separating or reconditioning used oil before burning it in a space heater pursuant to 279.23	130	279.20(b)(2)(ii)(E)					
generators who burn off-specification used oil for energy recovery, except under 279.23, must also comply with Subpart G of Part 279	112	279.20(b)(3)					
generators who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets 279.11 specifications must also comply with Subpart H of Part 279	112	279.20(b)(4)					
generators who dispose of used oil must also comply with Subpart I of Part 279	112	279.20(b)(5)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
HAZARDOUS WASTE MIXING							
mixtures of used oil and hazardous waste must be managed in accordance with 279.10(b)	112,122	279.21(a)					
the rebuttable presumption of 279.10(b)(1)(ii) applies to used oil managed by generators; used oil containing >1,000 ppm total halogens is presumed to be hazardous and must be managed as such; does not apply to certain metalworking oils/fluids and certain used oils removed from refrigeration units	112	279.21(b)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
USED OIL STORAGE							
used oil generators are subject to applicable Spill Prevention, Control and Countermeasures (40 CFR Part 112) and Underground Storage Tank (40 CFR Part 280) standards for used oil stored in underground tanks, whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the Part 279, Subpart C requirements	112,122	279.22					
used oil generators may not store used oil in units other than tanks, containers, or units subject to Parts 264 or 265	112	279.22(a)					
containers and aboveground tanks must be:	112	279.22(b)					
in good condition	112	279.22(b)(1)					
not leaking	112	279.22(b)(2)					
labels	112	279.22(c)					
containers and aboveground tanks must be clearly marked "Used Oil"	112	279.22(c)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	fill pipes used to transfer used oil into underground storage tanks must be clearly marked "Used Oil"	112	279.22(c)(2)					
	on detection of a release of used oil to the environment not subject to Part 280, Subpart F, which has occurred after the effective date of the authorized used oil program for the State in which the release is located, a generator must perform these cleanup steps:	112	279.22(d)					
	stop the release	112	279.22(d)(1)					
	contain the released used oil	112	279.22(d)(2)					
	clean up and properly manage the released used oil and other materials	112	279.22(d)(3)					
	repair or replace any leaking used oil storage containers or tanks prior to returning them to service	112	279.22(d)(4)					
	ON-SITE BURNING IN SPACE HEATERS							
♦,12	generators may burn used oil in used oil-fired space heaters if:	112,122	279.23					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
◆,12	the heater burns only used oil generated by the owner/operator or received from household do-it-yourself used oil generators	112,122	279.23(a)					
◆,12	the heater is designed to have a maximum capacity ≤0.5 million Btu/hour	112,122	279.23(b)					
◆,12	the combustion gases are vented to the ambient air	112,122	279.23(c)					
	OFF-SITE SHIPMENTS							
	except as provided in 279.24(a)-(c), generators must ensure their used oil is transported only by transporters with EPA ID numbers	112	279.24					
	generators, without an EPA ID number, may transport used oil generated at the generator's site and used oil collected from household do-it-yourselfers to a used oil collection center if:	112	279.24(a)					
	the generator transports the used oil in a vehicle owned by the generator or by an employee of the generator	112	279.24(a)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
≤55 gallons is transported at any time	112	279.24(a)(2)					
the used oil is transported to a used oil collection center that is registered, licensed, permitted or recognized by a state/county/-municipal government to manage used oil	112	279.24(a)(3)					
generators, without an EPA ID number, may transport used oil generated at the generator's site to an aggregation point if:	112	279.24(b)					
the generator transports the used oil in a vehicle owned by the generator or by an employee of the generator	112	279.24(b)(1)					
≤55 gallons is transported at any time	112	279.24(b)(2)					
the generator transports the used oil to an aggregation point owned and/or operated by the same generator	112	279.24(b)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
used oil generators may arrange for used oil to be transported by a transporter without an EPA ID number if the used oil is reclaimed under a contractual agreement ("tolling arrangement") pursuant to which the reclaimed oil is returned by the processor/re-refiner to the generator for use as a lubricant, cutting oil or coolant; what the tolling arrangement must indicate:	112	279.24(c)					
type of used oil and frequency of shipments	112	279.24(c)(1)					
that the vehicle used to transport the used oil to the processing/ re-refining facility and to deliver recycled used oil back to the generator is owned and operated by the used oil processor/re-refiner	112	279.24(c)(2)					
reclaimed oil will be returned to the generator	112	279.24(c)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART D - STANDARDS FOR USED OIL COLLECTION CENTERS AND AGGREGATION POINTS							
DO-IT-YOURSELFER USED OIL COLLECTION CENTERS							
section applies to owners/operators of do-it-yourselfer (DIY) used oil collection centers; definition of DIY used oil collection center	112	279.30(a)					
owners/operators of DIY used oil collection centers must comply with the generator standards in Subpart C of Part 279	112	279.30(b)					
USED OIL COLLECTION CENTERS							
section applies to owners/operators of used oil collection centers; definition of used oil collection center; such centers may accept used oil from household DIYs	112	279.31(a)					
owners/operators must:	112	279.31(b)					
comply with the generator standards in Subpart C of Part 279	112	279.31(b)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
be registered/ licensed/permitted/ recognized by a state/ county/municipal government to manage used oil	112	279.31(b)(2)					
USED OIL AGGREGATION POINTS OWNED BY THE GENERATOR							
section applies to owners/operators of used oil aggregation points; definition of used oil aggregation point; such points may accept oil from household DIYs	112	279.32(a)					
owners/operators must comply with the generator standards in Subpart C of Part 279	112	279.32(b)					
SUBPART E - STANDARDS FOR USED OIL TRANSPORTER AND TRANSFER FACILITIES							
APPLICABILITY							
definition of used oil transporters; Subpart E of Part 279 applies to all used oil transporters except:	112	279.40(a)					
on-site transportation	112	279.40(a)(1)					
generators who transport ≤55 gallons from the generator to a used oil collection center	112	279.40(a)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
generators who transport ≤55 gallons from the generator to a used oil aggregation point owned or operated by the same generator	112	279.40(a)(3)					
those who transport used oil from household do-it-yourselfers to a regulated used oil generator, collection center, aggregation point, processor/ re-refiner, or burner subject to Part 279; Subpart E of Part 279 applies to transportation of collected household DIY used oil from regulated used oil generators, collection centers, aggregation points, or other facilities where household DIY used oil is collected	112,122	279.40(a)(4)					
transporters who import or export used oil are subject to Part 279, Subpart E whenever the used oil is in the United States	112	279.40(b)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
used oil transported in a truck previously used to transport hazardous waste must be managed as hazardous waste unless the truck has been emptied, prior to transport, as described in 261.7 or the waste/oil mixture is determined under 279.10(b) not to be hazardous waste	112	279.40(c)					
specific used oil transporters are subject to additional provisions of Part 279 as follows:	112	279.40(d)					
transporters who generate used oil must also comply with Subpart C of Part 279	112	279.40(d)(1)					
except as 279.41 provides, transporters who process or re-refine used oil must also comply with Subpart F of Part 279	112	279.40(d)(2)					
transporters who burn off-specification used oil for energy recovery must also comply with Subpart G of Part 279	112	279.40(d)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
13	transporters must also comply with Subpart H of Part 279 if they direct shipments of off-specification used oil *from their facility to* a used oil burner or first claim that used oil that is to be burned for energy recovery meets used oil fuel specifications	112,122	279.40(d)(4)					
	transporters who dispose of used oil must also comply with Subpart I of Part 279	112	279.40(d)(5)					
	RESTRICTIONS ON TRANSPORTERS WHO ARE NOT ALSO PROCESSORS OR RE-REFINERS							
	used oil transporters may consolidate or aggregate loads of used oil for transport; except as 279.41(b) provides, used oil transporters may not process used oil unless they also comply with the requirements for processors/re-refiners in Subpart F of Part 279	112	279.41(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	transporters may conduct processing operations incidental to transport, but not designed to produce used oil derived products, unless the transporter also complies with the processor/re-refiner requirements in Subpart F of Part 279	112	279.41(b)					
†	transporters of used oil removed from oil bearing electrical transformers and turbines and filtered by transporter or at a transfer facility prior to being returned to its original use are not subject to the processor/re-refiner requirements in subpart F of Part 279	130	279.41(c)					
	NOTIFICATION							
14	used oil transporters who have not previously done so must comply with RCRA §3010 notification requirements and obtain an EPA ID number	112,122	279.42(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
a used oil transporter without an EPA ID number may obtain one by submitting either:	112	279.42(b)					
a completed EPA Form 8700-12; or	112,122	279.42(b)(1)					
		279.42(b)(2)					
		279.42(b)(2)(i)					
		279.42(b)(2)(ii)					
		279.42(b)(2)(iii)					
		279.42(b)(2)(iv)					
		279.42(b)(2)(v)					
a letter requesting an EPA ID number; what the letter should include		279.42(b)(2)(vi)					
	112	279.42(b)(2)(vii)					
USED OIL TRANSPORTATION							
a used oil transporter must deliver all used oil received to:	112	279.43(a)					
another used oil transporter with an EPA ID number	112	279.43(a)(1)					
a used oil processing/ re-refining facility with an EPA ID number	112	279.43(a)(2)					
an off-specification used oil burner facility with an EPA ID number	112	279.43(a)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
an on-specification used oil burner facility	112	279.43(a)(4)					
used oil transporters must comply with all applicable requirements under DOT regulations in 49 CFR 171-180; persons transporting used oil that meets definition of hazardous material in 49 CFR 171.8 must comply with all applicable regulations in 49 CFR parts 171-180	112,122	279.43(b)					
used oil discharges	112	279.43(c)					
if there is a discharge during transport, the transporter must immediately take appropriate action to protect human health and the environment	112	279.43(c)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	if an official appropriately determines that the used oil must be removed immediately to protect human health and the environment and authorizes the transport, transporters without EPA ID numbers may remove used oil discharged during transport	112	279.43(c)(2)					
	an air, rail, highway or water transporter who has discharged used oil must:	112	279.43(c)(3)					
15	give notice, if required by 49 CFR 171.15, to the National Response Center	112	279.43(c)(3)(i)					
	report in writing to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Dept. of Transportation	112	279.43(c)(3)(ii)					
	a water transporter who has discharged used oil must give notice as required by 33 CFR 153.203	112	279.43(c)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
16	a transporter must clean up any used oil discharged during transport or take action required or approved by government officials so that the used oil discharge no longer presents a hazard to human health or the environment	112	279.43(c)(5)					
	REBUTTABLE PRESUMPTION FOR USED OIL							
17	*used oil transporter* must determine whether total halogen content of used oil transported or stored is above or below 1000 ppm	112	279.44(a)					
	transporter must determine this by:	112	279.44(b)					
	testing the used oil; or	112	279.44(b)(1)					
	applying knowledge of the halogen content of the used oil in light of the materials or processes used	112	279.44(b)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
used oil containing ≥1000 ppm total halogens is presumed to be hazardous waste; presumption may be rebutted by demonstrating that the used oil does not contain hazardous waste; SW-846 example; where to obtain SW-846	112,130	279.44(c)					
rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins if processed, through a tolling agreement, to reclaim metalworking oils/fluids; presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner or disposed	112	279.44(c)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units if the CFCs are destined for reclamation; presumption applies to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units	112	279.44(c)(2)					
transporter must maintain records of analyses or information used to comply with 279.44(a), (b) & (c) for at least 3 years	112	279.44(d)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	USED OIL STORAGE AT TRANSFER FACILITIES							
	used oil transporters are also subject to applicable Spill Prevention, Control and Countermeasures (40 CFR Part 112); transporters are subject to Underground Storage Tank (40 CFR Part 280) standards for used oil stored in underground tanks, whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of this subpart	112,122	279.45					
18	section applies to used oil transfer facilities; definition of used oil transfer facilities; transfer facilities that store used oil for more than 35 days subject to regulation under Subpart F of Part 279	112	279.45(a)					
	used oil may not be stored in units other than tanks, containers, or units subject to regulation under Part 264 or 265	112	279.45(b)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
containers and aboveground tanks must be:	112	279.45(c)					
in good condition	112	279.45(c)(1)					
not leaking	112	279.45(c)(2)					
containers must have secondary containment system	112	279.45(d)					
what secondary containment system must, at a minimum, include		279.45(d)(1)					
	112	279.45(d)(1)(i)					
	112,122	279.45(d)(1)(ii)					
	122	279.45(d)(1)(iii)					
entire containment system must be sufficiently impervious to used oil to prevent release into system from migrating to soil, groundwater or surface water	112	279.45(d)(2)					
existing aboveground tanks must have a secondary containment system	112	279.45(e)					
what the secondary containment system must, at a minimum, include		279.45(e)(1)					
		279.45(e)(1)(i)					
		279.45(e)(1)(ii)					
	112	279.45(e)(1)(iii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
entire containment system must prevent used oil release into system from migrating to soil, groundwater or surface water	112	279.45(e)(2)					
new aboveground tanks storing used oil must have a secondary containment system	112	279.45(f)					
what the secondary containment system must, at a minimum, include	112	279.45(f)(1)					
		279.45(f)(1)(i)					
		279.45(f)(1)(ii)					
		279.45(f)(1)(iii)					
entire containment system must prevent oil release into system from migrating to soil, groundwater or surface water	112	279.45(f)(2)					
labels	112	279.45(g)					
containers and aboveground tanks must be clearly marked "Used Oil"	112	279.45(g)(1)					
fill pipes used to transfer used oil into underground storage tanks must be clearly marked "Used Oil"	112	279.45(g)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
on detection of a release of used oil to the environment not subject to 40 CFR 280 subpart F (UST systems), which has occurred after the effective date of the authorized used oil program for the State in which the release is located, the owner/operator must perform these cleanup steps:	112	279.45(h)					
stop the release	112	279.45(h)(1)					
contain the released used oil	112	279.45(h)(2)					
clean up and properly manage the released used oil and other materials	112	279.45(h)(3)					
repair or replace any leaking used oil storage containers or tanks before returning them to service	112	279.45(h)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	TRACKING							
19	used oil transporters must keep a record of each used oil shipment accepted for transport; what the records must include; exemption from signature requirements for intermediate rail transporters		279.46(a)					
			279.46(a)(1)					
			279.46(a)(2)					
			279.46(a)(3)					
		112	279.46(a)(4)					
		112, †130	279.46(a)(5)(i)					
		†130	279.46(a)(5)(ii)					
20	used oil transporters must keep a record of each used oil shipment delivered to another used oil transporter, burner, *processor/re-refiner*, or disposal facility; what the records must include; exemption from signature requirements for intermediate rail transporters		279.46(b)					
			279.46(b)(1)					
			279.46(b)(2)					
			279.46(b)(3)					
		112	279.46(b)(4)					
		112,†130	279.46(b)(5)(i)					
		†130	279.46(b)(5)(ii)					
	for each shipment exported to any *foreign country*, transporters must maintain records described in 279.46(b)(1)-(4)	112	279.46(c)					
	records described in 279.46(a), (b) & (c) must be maintained for at least 3 years	112	279.46(d)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
MANAGEMENT OF RESIDUES							
transporters who generate residues must manage the residues as specified in 279.10(e)	112	279.47					
SUBPART F - STANDARDS FOR USED OIL PROCESSORS AND RE-REFINERS							
APPLICABILITY							
subpart applies to owners/operators of facilities that process used oil; definition of processing and specific inclusions; exclusions:	112	279.50(a)					
transporters that conduct incidental processing operations occurring during normal course of transportation as provided in 279.41	112	279.50(a)(1)					
burners that conduct incidental processing operations occurring during normal course of used oil management prior to burning as provided in 279.61(b)	112	279.50(a)(2)					
specific processors/ re-refiners who are subject to additional provisions of Part 279:	112	279.50(b)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
processors/re-refiners who generate used oil must also comply with Subpart C of Part 279	112	279.50(b)(1)					
processors/re-refiners who transport used oil must also comply with Subpart E of Part 279	112	279.50(b)(2)					
except as 279.50(b)(3)(i)&(ii) provide otherwise, processors/re-refiners who burn off-specification used oil for energy recovery must also comply with Subpart G of Part 279; exceptions	112	279.50(b)(3)					
used oil is burned in an on-site space heater meeting 279.23 requirements	112	279.50(b)(3)(i)					
used oil is burned for processing used oil, which is considered incidental to used oil processing	112	279.50(b)(3)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	processors/re-refiners who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications of 279.11 must also comply with Subpart H of Part 279	112	279.50(b)(4)					
	processors/re-refiners who dispose of used oil also must comply with Subpart I of Part 279	112	279.50(b)(5)					
	NOTIFICATION							
14	processors/re-refiners who have not yet done so must comply with RCRA §3010 notification requirements and obtain an EPA ID number	112,122	279.51(a)					
	a processor/re-refiner without an EPA ID number may obtain one by submitting either:	112	279.51(b)					
	a completed EPA Form 8700-12; or	112	279.51(b)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
			279.51(b)(2)					
			279.51(b)(2)(i)					
			279.51(b)(2)(ii)					
			279.51(b)(2)(iii)					
			279.51(b)(2)(iv)					
	a letter requesting an EPA ID number; what the letter should include	112	279.51(b)(2)(v)					
			279.51(b)(2)(vi)					
	GENERAL FACILITY STANDARDS							
21	owners/operators of used oil processing and re-refining facilities must comply with the following preparedness and prevention requirements:	112	279.52(a)					
	facilities must be maintained and operated to minimize the possibility of fire, explosion, or any unplanned release of used oil to air, soil or surface water which could threaten human health or the environment	112	279.52(a)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
unless none of the hazards posed by the used oil handled at the facility could require the equipment specified in 279.52(a)(2)(i)-(iv), all facilities must be equipped with the following:	112	279.52(a)(2)					
internal communications or alarm system capable of providing immediate emergency instruction to facility personnel	112	279.52(a)(2)(i)					
device capable of summoning emergency assistance	112	279.52(a)(2)(ii)					
portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment, and	112	279.52(a)(2)(iii)					
water at adequate volume and pressure to supply water hose streams or foam producing equipment or automatic sprinklers or water spray systems	112	279.52(a)(2)(iv)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
all communications or alarm systems, fire protection equipment, spill control equipment and decontamination equipment must be tested and maintained to assure proper operation in time of emergency	112	279.52(a)(3)					
access to communications or alarm system	112	279.52(a)(4)					
all personnel involved in any handling operation must have immediate access to an internal alarm or emergency communication device, unless device not required in 279.52(a)(2)	112	279.52(a)(4)(i)					
if only one employee is present while the facility is operating, the employee must have immediate access to a device capable of summoning external emergency assistance, unless not required in 279.52(a)(2)	112	279.52(a)(4)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
owner/operator must maintain aisle space to allow unobstructed movement of personnel and emergency equipment to any area of facility operation in an emergency, unless aisle space not needed for these purposes	112	279.52(a)(5)					
as appropriate, owner/operator must attempt to make arrangements with local authorities	112	279.52(a)(6)(i)					
arrangements to familiarize police, fire departments, and emergency response teams with the facility's layout, properties of used oil handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes	112	279.52(a)(6)(i)(A)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
if more than one police and fire department might respond, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with others to provide support	112	279.52(a)(6)(i)(B)					
agreements with State emergency response teams, emergency response contractors, and equipment suppliers	112	279.52(a)(6)(i)(C)					
arrangements to familiarize local hospitals with the properties of used oil handled at the facility and the types of injuries or illnesses that could result from fires, explosions, or releases	112	279.52(a)(6)(i)(D)					
if State or local authorities decline to enter into such arrangements, owner/operator must document the refusal in the operating record	112	279.52(a)(6)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
21	owners/operators of used oil processing and re-refining facilities must comply with the following contingency plan and emergency procedure requirements	112	279.52(b)					
	purpose and implementation of contingency plan	112	279.52(b)(1)					
	contingency plan required; plan must be designed to minimize hazards to human health or the environment from fire, explosion or any unplanned release to air, soil, or surface water	112	279.52(b)(1)(i)					
22	provisions of plan must be carried out immediately whenever fire, explosion or release of used oil could threaten human health or the environment	112	279.52(b)(1)(ii)					
	content of contingency plan	112	279.52(b)(2)					
	what the contingency plan must describe	112	279.52(b)(2)(i)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
if already prepared a Part 112 SPCC Plan, or other plan, owner/operator may amend existing plan to meet requirements of Part 279	112	279.52(b)(2)(ii)					
plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate 279.52(a)(6) emergency services	112	279.52(b)(2)(iii)					
plan must list names, addresses and phone numbers for primary emergency coordinator and others qualified to act as emergency coordinator in specified order; list must be kept up to date	112	279.52(b)(2)(iv)					
plan must include a list of required emergency equipment at the facility and location, physical description and brief outline of capabilities of each item; list must be kept up to date	112	279.52(b)(2)(v)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
plan must include evacuation plan if possibly necessary; evacuation plan must describe signal(s) to begin evacuation, evacuation routes and alternative routes	112	279.52(b)(2)(vi)					
contingency plan copy and all revisions must be:	112	279.52(b)(3)					
maintained at the facility	112	279.52(b)(3)(i)					
submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services	112	279.52(b)(3)(ii)					
contingency plan must be reviewed and amended whenever:	112	279.52(b)(4)					
applicable regulations are revised	112	279.52(b)(4)(i)					
the plan fails in an emergency	112	279.52(b)(4)(ii)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
the facility changes in any way that materially increases the potential for fires, explosions, or releases of used oil, or changes the response necessary in an emergency	112	279.52(b)(4)(iii)					
the list of emergency coordinators changes	112	279.52(b)(4)(iv)					
the list of emergency equipment changes	112	279.52(b)(4)(v)					
at all times, at least one employee responsible for coordinating all emergency response measures must be at the facility or on call; knowledge and authority the emergency coordinator must have; guidance responsibilities spelled out in 279.52(b)(6)	112	279.52(b)(5)					
emergency procedures	112	279.52(b)(6)					
if there is an imminent or actual emergency, the emergency coordinator or designee must immediately:	112	279.52(b)(6)(i)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
activate internal facility alarms or communication systems	112	279.52(b)(6)(i)(A)					
notify State or local agencies with designated response roles if needed	112	279.52(b)(6)(i)(B)					
emergency coordinator must immediately identify the character, exact source, amount, and real extent of any released materials; how the coordinator may do this	112	279.52(b)(6)(ii)					
concurrently, the emergency coordinator must assess possible hazards to human health or the environment; what the assessment must consider	112	279.52(b)(6)(iii)					
if release, fire, or explosion could threaten human health or the environment, emergency coordinator must report findings	112	279.52(b)(6)(iv)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
if evacuation may be advisable, emergency coordinator must immediately notify local authorities and be available to help them decide whether to evacuate local areas	112	279.52(b)(6)(iv)(A)					
emergency coordinator must immediately notify either the government official designated on-scene coordinator or the National Response Center; what the report must include	112	279.52(b)(6)(iv)(B)					
		279.52(b)(6)(iv)(B)(*1*)					
		279.52(b)(6)(iv)(B)(*2*)					
		279.52(b)(6)(iv)(B)(*3*)					
		279.52(b)(6)(iv)(B)(*4*)					
		279.52(b)(6)(iv)(B)(*5*)					
		279.52(b)(6)(iv)(B)(*6*)					
emergency coordinator must take all reasonable measures to ensure that fires, explosions and releases do not occur, recur, or spread; what measures must include	112	279.52(b)(6)(v)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures if the facility stops operation because of a fire, explosion or release	112	279.52(b)(6)(vi)					
emergency coordinator must provide for recycling, storing or disposing of any material that results from a release, fire or explosion immediately after that event	112	279.52(b)(6)(vii)					
emergency coordinator must ensure that:	112	279.52(b)(6)(viii)					
no waste or used oil that may be incompatible with the released material is recycled, treated, stored or disposed of until cleanup procedures are completed	112	279.52(b)(6)(viii)(A)					
before operations resume, all emergency equipment is cleaned and fit for intended use	112	279.52(b)(6)(viii)(B)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
before operations resume, owner/operator must notify Regional Administrator and State and local officials that facility complies with 279.52(a)	112,122	279.52(b)(6)(viii) (C)					
owner/operator must note in the operating record the time, date and details of any incident that requires implementing the contingency plan; must submit written report to Regional Administrator within 15 days; what the report must include	112	279.52(b)(6)(ix)					
		279.52(b)(6)(ix) (A)					
		279.52(b)(6)(ix) (B)					
		279.52(b)(6)(ix) (C)					
		279.52(b)(6)(ix) (D)					
		279.52(b)(6)(ix) (E)					
		279.52(b)(6)(ix) (F)					
		279.52(b)(6)(ix) (G)					
REBUTTABLE PRESUMPTION FOR USED OIL							
owner/operator of a processing/re-refining facility must determine whether the total halogen content of used oil managed at the facility exceeds or is less than 1,000 ppm	112	279.53(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
how the owner/operator must make this determination	112	279.53(b) 279.53(b)(1) 279.53(b)(2)					
if the used oil contains ≥1,000 ppm total halogens, it is presumed to be a hazardous waste; how the owner/operator may rebut the presumption; SW-846 example; where to obtain SW-846	112,130	279.53(c)					
rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins if processed, through a tolling agreement, to reclaim metalworking oils/fluids; presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed	112	279.53(c)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units if the CFCs are destined for reclamation; presumption does apply to CFC-contaminated used oils mixed with used oil from sources other than refrigeration units	112	279.53(c)(2)					
USED OIL MANAGEMENT							
used oil processors/ re-refiners are also subject to applicable Spill Prevention, Control and Countermeasures (40 CFR Part 112) and Underground Storage Tank (40 CFR Part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of a hazardous waste, in addition to the Part 279, Subpart F, requirements	112,122	279.54					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
processors/re-refiners may not store used oil in units other than tanks, containers, or units subject to regulation under Part 264 or 265	112,122	279.54(a)					
containers and aboveground tanks must be:	112	279.54(b)					
in good condition	112	279.54(b)(1)					
not leaking	112	279.54(b)(2)					
containers must have a secondary containment system	112	279.54(c)					
what the secondary containment system must, at a minimum, include		279.54(c)(1)					
	112	279.54(c)(1)(i)					
	112,122	279.54(c)(1)(ii)					
	122	279.54(c)(1)(iii)					
entire containment system must prevent used oil released into the system from migrating out of the system into soil, groundwater or surface water	112	279.54(c)(2)					
existing aboveground tanks used to store or process used oil must have a secondary containment system	112	279.54(d)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
what the secondary containment system must, at a minimum, include	112	279.54(d)(1)					
		279.54(d)(1)(i)					
		279.54(d)(1)(ii)					
		279.54(d)(1)(iii)					
entire containment system must prevent used oil released into the system from migrating out of the system into soil, groundwater or surface water	112	279.54(d)(2)					
new aboveground tanks used to store or process used oil must be equipped with a secondary containment system	112	279.54(e)					
what the secondary containment system must, at a minimum, include	112	279.54(e)(1)					
		279.54(e)(1)(i)					
		279.54(e)(1)(ii)					
		279.54(e)(1)(iii)					
entire containment system must prevent used oil released into the system from migrating out of the system into soil, groundwater or surface water	112	279.54(e)(2)					
labels	112	279.54(f)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	containers and aboveground tanks must be clearly marked "Used Oil"	112	279.54(f)(1)					
	fill pipes used to transfer used oil into underground storage tanks must be clearly marked "Used Oil"	112	279.54(f)(2)					
	on detection of a release of used oil to the environment not subject to 40 CFR 280 subpart F which has occurred after the effective date of the authorized used oil program for the State in which the release is located, the owner/operator must perform these cleanup steps:	112	279.54(g)					
	stop the release	112	279.54(g)(1)					
	contain the released used oil	112	279.54(g)(2)					
23	clean up and properly manage released used oil and other materials	112	279.54(g)(3)					
	repair or replace leaking storage containers or tanks before returning them to service	112	279.54(g)(4)					
	closure	112	279.54(h)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
at closure, owners/operators who store or process used oil in aboveground tanks must comply with these requirements	112	279.54(h)(1)					
owner/operator must remove or decontaminate used oil residues in tanks, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil and manage them as hazardous waste; exception	112	279.54(h)(1)(i)					
if owner/operator demonstrates that not all contaminated soils can be removed or decontaminated, closure and post-closure care as for a hazardous waste landfill	112	279.54(h)(1)(ii)					
at closure, owners/operators who store used oil in containers must comply with these requirements	112	279.54(h)(2)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
containers of used oils or used oil residues must be removed from the site	112	279.54(h)(2)(i)					
owner/operator must remove or decontaminate used oil residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil and manage them as hazardous waste; exception	112	279.54(h)(2)(ii)					
ANALYSIS PLAN							
owners/operators of used oil processing and re-refining facilities must develop and follow a written analysis plan describing procedures to be used to comply with analysis requirements of 279.53 and 279.72; plan must be kept at the facility	112	279.55					
for 279.53, what the plan must specify, at a minimum:	112	279.55(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
whether sample analyses or knowledge of the halogen content will be used	112	279.55(a)(1)					
if sample analyses are to be used:	112	279.55(a)(2)					
methods to be used to obtain representative samples	112	279.55(a)(2)(i)					
		279.55(a)(2)(i)(A)					
		279.55(a)(2)(i)(B)					
frequency of sampling and whether analysis will be performed on-site or off-site	112	279.55(a)(2)(ii)					
methods used to analyze for 279.53 parameters	112	279.55(a)(2)(iii)					
type of information that will be used to determine halogen content of the used oil	112	279.55(a)(3)					
if 279.72 on-specification used oil fuel requirements apply, at a minimum the plan must specify:	112	279.55(b)					
whether sample analyses or other information will be used to make this determination	112	279.55(b)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
if sample analyses are used:	112	279.55(b)(2)					
methods to be used to obtain representative samples	112	279.55(b)(2)(i)					
		279.55(b)(2)(i)(A)					
		279.55(b)(2)(i)(B)					
whether used oil will be sampled and analyzed before or after processing/re-refining	112	279.55(b)(2)(ii)					
frequency of sampling and whether analysis will be performed on-site or off-site	112	279.55(b)(2)(iii)					
methods used to analyze used oil for 279.72 parameters	112	279.55(b)(2)(iv)					
type of information that will be used to make the on-specification used oil fuel determination	112	279.55(b)(3)					
TRACKING							
processors/re-refiners must keep a record of each used oil shipment accepted for processing/re-refining; forms records may take; what the records must include for each shipment:	112	279.56(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
name and address of transporter who delivered the used oil to the processor/re-refiner	112	279.56(a)(1)					
name and address of generator or processor/re-refiner from whom the used oil was sent	112	279.56(a)(2)					
EPA ID number of transporter	112	279.56(a)(3)					
EPA ID number of generator or processor/re-refiner	112	279.56(a)(4)					
quantity of used oil accepted	112	279.56(a)(5)					
date of acceptance	112	279.56(a)(6)					
processors/re-refiners must keep record of each shipment shipped to a used oil burner, processor/re-refiner, or disposal facility; forms record may take; what the records must include for each shipment:	112	279.56(b)					
name and address of transporter who delivers the used oil to the burner, processor/re-refiner or disposal facility	112	279.56(b)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
name and address of burner, processor/ re-refiner or disposal facility who will receive the used oil	112	279.56(b)(2)					
EPA ID number of transporter	112	279.56(b)(3)					
EPA ID number of burner, processor/ re-refiner or disposal facility	112	279.56(b)(4)					
quantity of used oil shipped	112	279.56(b)(5)					
shipment date	112	279.56(b)(6)					
records described in 279.56(a) and (b) must be maintained for at least 3 years	112	279.56(c)					
OPERATING RECORD AND REPORTING							
operating record	112	279.57					
owner/operator must keep a written operating record at the facility	112	279.57(a)(1)					
information must be recorded as it becomes available and maintained in the operating record until facility closure	112	279.57(a)(2)					
records and results of used oil analyses described in 279.55 analysis plan	112	279.57(a)(2)(i)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
24	summary reports and details of all incidents that require implementation of the contingency plan of 279.52(b)	112	279.57(a)(2)(ii)					
	processor/re-refiner must send a letter by March 1 of each even-numbered year to the Regional Administrator about used oil activities during the previous calendar year; what the letter must include	112	279.57(b)					
			279.57(b)(1)					
			279.57(b)(2)					
			279.57(b)(3)					
	OFF-SITE SHIPMENTS OF USED OIL							
	processors/re-refiners who initiate shipments off-site must use a used oil transporter with an EPA ID number	112	279.58					
	MANAGEMENT OF RESIDUES							
25	residues from storage, processing, or re-refining must be managed as specified in 279.10(e)	112	279.59					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART G - STANDARDS FOR USED OIL BURNERS WHO BURN OFF-SPECIFICATION USED OIL FOR ENERGY RECOVERY							
APPLICABILITY							
◆ except as 279.60(a)(1)&(2) specify, Subpart G applies to used oil burners; definition of a used oil burner; exceptions:	112	279.60(a)					
◆ burned in an on-site space heater under 279.23 provisions	112	279.60(a)(1)					
◆ burned incidentally to processing by a processor/re-refiner	112	279.60(a)(2)					
additional provisions apply to specific activities	112	279.60(b)					
burners who generate used oil must also comply with Subpart C of Part 279	112,122	279.60(b)(1)					
burners who transport used oil must also comply with Subpart E of Part 279	112	279.60(b)(2)					
except as 279.61(b) provides, burners who process or re-refine used oil must also comply with Subpart F of Part 279	112	279.60(b)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
burners must also comply with Subpart H of Part 279 if they direct shipments of off-specification used oil to a used oil burner or first claim that used oil meets used oil fuel specifications of 279.11	112	279.60(b)(4)					
burners who dispose of used oil must comply with Subpart I of Part 279	112	279.60(b)(5)					
◆ Subpart G does not apply to persons burning used oil that meets the specification of 279.11, if burner meets Part 279, Subpart H, requirements	112	279.60(c)					
RESTRICTIONS ON BURNING							
◆ off-specification used oil fuel may be burned for energy recovery only in specific devices:	112	279.61(a)					
◆ industrial furnaces identified in 260.10:	112	279.61(a)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		279.61(a)(2)					
		279.61(a)(2)(i)					
		279.61(a)(2)(ii)					
◆ specific boilers	112	279.61(a)(2)(iii)					
hazardous waste incinerators subject to Subpart O of Part 264 or 265	112	279.61(a)(3)					
burners may not process used oil unless they also comply with Subpart F of Part 279	112	279.61(b)(1)					
used oil burners may aggregate off-specification used oil with virgin oil or on-specification used oil for the purposes of burning but may not aggregate to produce on-specification used oil	112	279.61(b)(2)					
NOTIFICATION							
◆, 14 burners, who have not done so, must comply with the notification requirements of RCRA §3010 and obtain an EPA ID number	112,122	279.62(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
a used oil burner without an EPA ID number may obtain one by submitting:	112	279.62(b)					
completed EPA Form 8700-12	112	279.62(b)(1)					
a letter requesting an EPA ID number; what the letter should include	112	279.62(b)(2)					
		279.62(b)(2)(i)					
		279.62(b)(2)(ii)					
		279.62(b)(2)(iii)					
		279.62(b)(2)(iv)					
		279.62(b)(2)(v)					
		279.62(b)(2)(vi)					
REBUTTABLE PRESUMPTION FOR USED OIL							
◆ owner/operator of a burner facility must determine whether the total halogen content of used oil managed at the facility exceeds or is less than 1,000 ppm	112	279.63(a)					
◆ how the owner/operator must make this determination	112	279.63(b)					
		279.63(b)(1)					
		279.63(b)(2)					
		279.63(b)(3)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆, 26	if the used oil contains ≥1,000 ppm total halogens, it is presumed to be a hazardous waste; how the owner/operator may rebut the presumption; SW-846 example; where to obtain SW-846	112,130	279.63(c)					
27	rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins if processed through a tolling arrangement to reclaim metalworking oils/fluids; presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner or disposed	112	279.63(c)(1)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
27	rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units if the CFCs are destined for reclamation; presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units	112	279.63(c)(2)					
	records described in 279.63(a), (b) and (c) must be maintained for at least 3 years	112	279.63(d)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
USED OIL STORAGE							
used oil burners are also subject to applicable Spill Prevention, Control and Countermeasures (40 CFR Part 112); used oil burners are subject to Underground Storage Tank (40 CFR Part 280) standards for used oil stored in underground tanks, whether or not the used oil exhibits any hazardous waste characteristics, in addition to Subpart G requirements	112,122	279.64					
used oil burners may not store used oil in units other than tanks, containers, or units subject to regulation under Part 264 or 265	112	279.64(a)					
containers and aboveground tanks must be:	112	279.64(b)					
in good condition	112	279.64(b)(1)					
not leaking	112	279.64(b)(2)					
storage containers must have a secondary containment system	112	279.64(c)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	what the secondary containment system must include, at a minimum	112	279.64(c)(1)					
			279.64(c)(1)(i)					
			279.64(c)(1)(ii)					
	containment system must prevent used oil released into system from migrating out of system to soil, groundwater, or surface water	112	279.64(c)(2)					
	existing aboveground tanks must have a secondary containment system	112	279.64(d)					
	what the secondary containment system must include at a minimum	112	279.64(d)(1)					
			279.64(d)(1)(i)					
			279.64(d)(1)(ii)					
			279.64(d)(1)(iii)					
	entire containment system must be sufficiently impervious to used oil to prevent used oil released into system from migrating out of system to soil, groundwater, or surface water	112	279.64(d)(2)					
28	new aboveground tanks must have a secondary containment system	112	279.64(e)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
		279.64(e)(1)					
what the secondary containment system must include at a minimum	112	279.64(e)(1)(i) 279.64(e)(1)(ii) 279.64(e)(1)(iii)					
entire containment system must be sufficiently impervious to used oil to prevent used oil released into system from migrating out of system to soil, groundwater, or surface water	112	279.64(e)(2)					
labels	112	279.64(f)					
containers and aboveground tanks must be clearly marked "Used Oil"	112	279.64(f)(1)					
fill pipes used to transfer used oil into underground storage tanks must be clearly marked "Used Oil"	112	279.64(f)(2)					
upon detection of a release of used oil to the environment not subject to Part 280, Subpart F which has occurred after the effective date of the authorized used oil program for the State in which the release is located, a burner must perform these cleanup steps:	112	279.64(g)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
stop the release	112	279.64(g)(1)					
contain the released used oil	112	279.64(g)(2)					
clean up and properly manage the released used oil and other materials	112	279.64(g)(3)					
repair or replace any leaking oil storage containers or tanks before returning them to service	112	279.64(g)(4)					
TRACKING							
◆ burners must keep record of each shipment accepted; forms record may take; what the records for each shipment must include:	112	279.65(a)					
◆ name and address of transporter who delivered used oil to burner	112	279.65(a)(1)					
◆ name and address of generator or processor/re-refiner from whom used oil was sent	112	279.65(a)(2)					
◆ EPA ID number of the transporter	112	279.65(a)(3)					
◆ EPA ID number of generator or processor/re-refiner	112	279.65(a)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆ quantity accepted	112	279.65(a)(5)					
◆ date of acceptance	112	279.65(a)(6)					
◆ records described in 279.65(a) must be maintained for at least 3 years	112	279.65(b)					
NOTICES							
◆ before accepting the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide the generator, transporter, or processor/re-refiner a one-time written and signed notice; what the notice must certify	112	279.66(a) 279.66(a)(1) 279.66(a)(2)					
◆ certification described in 279.66(a) must be maintained for 3 years after burner last receives shipment of off-specification oil from that individual	112	279.66(b)					
MANAGEMENT OF RESIDUES							
residues from storage and burning must be managed as specified in 279.10(e)	112	279.67					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
SUBPART H - STANDARDS FOR USED OIL FUEL MARKETERS							
APPLICABILITY							
◆ this subpart applies to any person who:	112,122	279.70(a)					
◆ directs a shipment of off-specification used oil to a used oil burner	112	279.70(a)(1)					
◆ first claims that used oil that is to be burned for energy recovery meets the specifications of 279.11	112	279.70(a)(2)					
◆,29 persons who are not ◆,29 subject to Subpart H	112	279.70(b)					
		279.70(b)(1)					
		279.70(b)(2)					
any person subject to the requirements of Part 279 Subpart H must also comply with one of specified Part 279 Subparts	112	279.70(c)					
		279.70(c)(1)					
		279.70(c)(2)					
		279.70(c)(3)					
		279.70(c)(4)					
PROHIBITIONS							
◆ used oil fuel marketer may initiate a shipment of off-specification used oil only to a used oil burner who:	112	279.71					
◆ has an EPA ID number	112	279.71(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆ burns the used oil in an industrial furnace or boiler identified in 279.61(a)	112	279.71(b)					
ON-SPECIFICATION USED OIL FUEL							
◆ determination that used oil meets 279.11 fuel specifications may be made by performing analyses or obtaining copies of analyses or other information documenting that the used oil fuel meets those specifications	112,122	279.72(a)					
◆ generator, transporter, processor/re-refiner or burner who first claims used oil to be burned for energy recovery meets 279.11 specifications must keep analyses or other information for 3 years	112	279.72(b)					
NOTIFICATION							
◆, 30 a used oil fuel marketer, who has not previously done so, must comply with RCRA §3010 notification requirements and obtain an EPA ID number	112,122	279.73(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
a marketer without an EPA ID number may be obtain one by submitting either:	112	279.73(b)					
a completed EPA Form 8700-12; or	112	279.73(b)(1)					
a letter requesting an EPA ID number; what the letter should include	112	279.73(b)(2)					
		279.73(b)(2)(i)					
		279.73(b)(2)(ii)					
		279.73(b)(2)(iii)					
		279.73(b)(2)(iv)					
		279.73(b)(2)(v)					
TRACKING							
◆ marketer who directs a shipment of off-specification used oil to a burner must keep a record of each shipment; forms record may take; each record must include:	112,122	279.74(a)					
◆ name and address of transporter who delivers used oil to burner	112	279.74(a)(1)					
◆ name and address of burner receiving used oil	112	279.74(a)(2)					
◆ EPA ID number of transporter	112	279.74(a)(3)					
◆ EPA ID number of burner	112	279.74(a)(4)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
◆ quantity shipped	112	279.74(a)(5)					
◆ shipment date	112	279.74(a)(6)					
◆ generator, transporter, processor/re-refiner or burner who first claims used oil to be burned for energy recovery meets 279.11 specifications must keep a record of each shipment; each record must include:	112	279.74(b)					
◆ name and address of receiving facility	112	279.74(b)(1)					
◆ quantity delivered	112	279.74(b)(2)					
◆ date of shipment or delivery	112	279.74(b)(3)					
◆ cross-reference to analysis or other information used to determine that the oil meets 279.72(a) specification	112	279.74(b)(4)					
◆ records described in 279.74(a) and (b) must be maintained for at least 3 years	112	279.74(c)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
NOTICES							
◆ before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil fuel to a burner, burner must provide a one-time written and signed notice; what the notice must certify	112	279.75(a) 279.75(a)(1) 279.75(a)(2)					
◆ 279.75 certification must be maintained for 3 years from the date of the last shipment of off-specification used oil to the burner	112	279.75(b)					
SUBPART I - STANDARDS FOR USE AS A DUST SUPPRESSANT AND DISPOSAL OF USED OIL							
APPLICABILITY							
Subpart I applies to all used oils that cannot be recycled and are being disposed	112	279.80					
DISPOSAL							
used oils that are hazardous waste and cannot be recycled must be managed in accordance with Parts 260-266, 268, 270 and 124	112	279.81(a)					

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
used oils that are not hazardous wastes and cannot be recycled must be disposed in accordance with Parts 257 and 258	112	279.81(b)					
USE AS A DUST SUPPRESSANT							
use of used oil as a dust suppressant is prohibited; exception	112	279.82(a)					
a State may petition EPA to allow the use of used oil meeting specific requirements as a dust suppressant; what State must show; program must minimize impact on the environment	112	279.82(b)					
list of states (reserved)	112	279.82(c)					

1 These changes correct an error in the May 20, 1992 final rule (57 FR 21534, Revision Checklist 104) by redesignating the subparagraphs sequentially. The exclusion for non-terne plated used oil filters was added by the May 20, 1992 rule as subparagraph (b)(15) of § 261.4 even though EPA had not yet promulgated subparagraphs (b)(13) or (b)(14).

2 Note that the July 1, 1992 final rule (57 FR 29220; Revision Checklist 107) also affected the code previously designated as 261.4(b)(15) and now designated as 261.4(b)(13).

3 The May 3, 1993 final rule inadvertently removes a correction made by the August 25, 1992 Federal Register (57 FR 38558, Revision Checklist 111). The August 25, 1992 rule changed "subparts C, D, F, or G" to "subparts C, F, G, or H"; the May 3, 1993 rule lists the old version of these internal references. The correct reference is as shown in the August 25, 1992 rule. States may want to not make this change.

4 This definition may be changed in the future by EPA to better explain what is meant by a "used oil processor/re-refiner."

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

[5] There are two typographical errors in this paragraph in the May 3, 1993 Federal Register. The heading "Characteristic hazardous waste" should be in italics, as it appeared in the September 10, 1992 final rule (57 FR 41566, Revision Checklist 112). The phrase "hazardous waste characteristic" should be "hazardous waste characteristics" to reflect the possibility of more than one characteristic.

[6] The May 3, 1993, final rule (58 FR 26420; Revision Checklist 122) replaced the original 279.10(c) added by Revision Checklist 112 (September 10, 1992; 57 FR 41566) with a new paragraph introducing several new subparagraphs.

[7] Subparagraphs 279.10(e)(4)(i)&(ii) were added by Revision Checklist 112 and were subsequently removed by Revision Checklist 122.

[8] The March 4, 1994 final rule (59 FR 10550; Revision Checklist 130) replaced the original 279.10(g) added by Revision Checklist 112 (September 10, 1992; 57 FR 41566) with a new paragraph introducing several new subparagraphs.

[9] There is an error in the Federal Register for Revision Checklist 122 (May 3, 1993; 58 FR 26420); according to EPA, "who market" should be "who market or burn."

[10] States are not required to adopt notes, but a State may want to include an analog to this note for clarity.

[11] The March 4, 1994 final rule (59 FR 10550; Revision Checklist 130) revised and redesignated the original 279.20(b)(2) added by Revision Checklist 112 (September 20, 1992; 57 FR 41566) as 279.20(b)(2)(i) and introduced a new subparagraph 279.20(b)(2)(ii).

[12] As introduced into the code by Revision Checklist 112, these paragraphs were numbered 279.23(a) and (a)(1)-(3); 279.23(b) was reserved. Checklist 122 preserved the original wording and order of these paragraphs, but redesignated them as 279.23 and 279.23(a)-(c).

[13] The September 10, 1992 Federal Register included an extraneous phrase, "of this partuel Marketers", between "subpart H" and "of this part". The May 3, 1993 Federal Register intended to remove this phrase, but misquoted the phrase to be removed as "of the partial Marketers." The correct wording is "subpart H of this part" rather than "subpart H of this partuel Marketers of this part."

[14] The May 3, 1993 (58 FR 26420) rule changed the text found in the September 10, 1992 (57 FR 41566; Revision Checklist 112) rule, to include renotification. However, the June 17, 1993 (58 FR 33341) rule changed the text back to the original wording in the September 10, 1992 rule.

[15] Note that there is an error in the September 10, 1992 Federal Register at 279.43(c)(3)(i); there should be a comma after "171.15".

[16] Note that there is a typographical error in the September 10, 1992 Federal Register at 279.43(c)(5); "used oil discharged that occurs" should be "used oil discharge that occurs".

[17] Note that there is a typographical error in the September 10, 1992 Federal Register at 279.44(a); "used oil being transporter" should be "used oil being transported".

CONSOLIDATED CHECKLIST: Recycled Used Oil Management Standards
as of June 30, 1994 (cont'd)

[18] The Federal Register for 279.45(a) says "subpart F of this chapter" and should more specifically say "subpart F of this part".

[19] Revision Checklist 130 (March 4, 1994; 59 FR 10550) amended and redesignated the original 279.46(a)(5) introduced by Revision Checklist 112 (September 10, 1992; 57 FR 41566) as 279.46(a)(5)(i) and added a new 279.46(a)(5)(ii).

[20] Revision Checklist 130 (March 4, 1994; 59 FR 10550) amended and redesignated the original 279.46(b)(5) introduced by Revision Checklist 112 (September 10, 1992; 57 FR 41566) as 279.46(b)(5)(i) and added a new 279.46(b)(5)(ii).

[21] The September 10, 1992 Federal Register texts for 279.52(a) and 279.52(b) include two typographical errors: "processors" should be "processing" and "re-refiners" should be "re-refining".

[22] The September 10, 1992 Federal Register for 279.52(b)(1)(ii) says "release or used oil" but should say "release of used oil".

[23] Note, there is an error in the September 10, 1992 Federal Register at 279.54(g)(3); "mange" should be "manage".

[24] There is a typographical error in the September 10, 1992 Federal Register at 279.57(a)(2)(ii): "an specified" should be "as specified".

[25] In § 279.59, "re-fining", as found in the September 10, 1992 Federal Register, is an error and has been replaced in this checklist with "re-refining".

[26] Note that there is an error in the September 10, 1992 Federal Register at 279.63(c); the "/" after "hazardous waste" should be deleted.

[27] Paragraphs 279.63(c)(1)&(2) contain new exemptions from the rebuttable presumption that were not part of the November 29, 1985 final rule (50 FR 49164; Revision Checklist 19) and are, thus, not HSWA provisions.

[28] The paragraph title and first sentence in the September 10, 1992 Federal Register do not agree. Because 279.64(d) referred to existing aboveground tanks, this checklist assumes that 279.64(e) refers to new aboveground tanks.

[29] Only 279.70(b)(1)&(2) are designated as HSWA provisions.

[30] The May 3, 1993 Federal Register shows two different changes to this paragraph. Only the first change (revision 43) correcting the wording found in the September 10, 1992 (57 FR 41566, Revision Checklist 112) version of the paragraph should be made. While the May 3, 1993 (58 FR 26420) rule changed the rest of the text so that renotification was required, the June 17, 1993 (58 FR 33341) rule changed the text back to that found in the September 10, 1992 rule.

Consolidated Checklist for Treatability Studies Sample Exemption as of June 30, 1994

The following consolidated checklist should be inserted in SAM Appendix K

CONSOLIDATED CHECKLIST
for the
Treatability Studies Sample Exemption as of June 30, 1994

Note: 1) This checklist consolidates the changes to Federal code addressed by the following Treatability Studies Sample Exemption checklists through June 30, 1994:

- Revision Checklist 49 (53 FR 27290; July 29, 1988)
- Revision Checklist 129 (59 FR 8362; February 18, 1994).

2) The standards addressed by 261.4(e) and (f) and introduced by the July 29, 1988 rule (53 FR 27290; Revision Checklist 49) are less stringent than existing Federal requirements; thus, authorized States are not required to adopt them. EPA strongly encourages States to do so, however, to facilitate evaluating remediation alternatives for CERCLA clean-ups and for the RCRA Corrective Action Program. These requirements will also speed research and development for treatment alternatives to land disposal and waste minimization, recycling, and reuse. These requirements were amended by a February 18, 1994 rule (59 FR 8362-8366; Revision Checklist 129) which increases the quantity and time limits for contaminated media to be used in treatability studies. States which are not authorized for Revision Checklist 49 and who choose to adopt this checklist are encouraged to adopt the revisions addressed in Revision Checklist 129 at the same time the requirements addressed by Revision Checklist 49 are adopted.

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
	PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL							
	SUBPART B - DEFINITIONS							
	DEFINITIONS							
†	add "treatability study"	49	260.10					
	PART 261 - IDENTIFICATION AND LISTING OF HAZARDOUS WASTE							
	SUBPART A - GENERAL							
†	**EXCLUSIONS**							
	regulation of treatability study samples and relation to quantity determination of 261.5 and 262.34(d)	49	261.4(e)(1)					
	collection and preparation of sample for transport	49	261.4(e)(1)(i)					

CONSOLIDATED CHECKLIST: Treatability Studies Sample Exemption **SPA 15**
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
accumulation or storage of sample prior to transport	49	261.4(e)(1)(ii)					
transport of sample to laboratory or testing facility	49	261.4(e)(1)(iii)					
introductory paragraph regarding provisions for exemption under (e)(1)	49	261.4(e)(2)					
sample size limits by hazardous waste type for sample collector	49,129	261.4(e)(2)(i)					
weight limit for each sample shipment	49,129	261.4(e)(2)(ii)					
packaging requirements for sample	49	261.4(e)(2)(iii)					
compliance with U.S. DOT, USPS or other for transport	49	261.4(e)(2)(iii)(A)					
information required if DOT, USPS, or other do not apply to shipment	49	261.4(e)(2)(iii)(B) (1)-(5)					
laboratory or testing facility requirements	49	261.4(e)(2)(iv)					
3 year maintenance of specified records	49	261.4(e)(2)(v)					
records which must be maintained	49	261.4(e)(2)(v)(A)-(C)					
biennial report requirements	49	261.4(e)(2)(vi)					

CONSOLIDATED CHECKLIST: Treatability Studies Sample Exemption SPA 15
as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
1	granting requests for an additional two years for treatability studies involving bioremediation; granting of requests for quantities in excess of the 261.4(e)(2)(i)&(ii) and 261.4(f)(4) limits; application procedure	49,129	261.4(e)(3)					
1	factors to be considered when reviewing requests for authorization to ship, store and conduct treatability studies on additional quantities in advance of commencing treatability studies	129	261.4(e)(3)(i)					
1	factors to be considered when reviewing requests for authorization to ship, store and conduct treatability studies on additional quantities after initiation or completion of initial treatability studies	49,129	261.4(e)(3)(ii)					

CONSOLIDATED CHECKLIST: Treatability Studies Sample Exemption SPA 15

as of June 30, 1994 (cont'd)

	FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
1	additional quantities and timeframes are subject to all of the provisions of paragraph 261.4(e)(1) and 261.4(e)(2)(iii)-(vi); the sample collector must provide the following information:	49,129	261.4(e)(3)(iii)					
	reason for request and additional time or quantity needed	49,129	261.4(e)(3)(iii)(A)					
	required documentation	49,129	261.4(e)(3)(iii)(B)					
	description of technical modifications	49,129	261.4(e)(3)(iii)(C)					
	equipment and mechanical failure information	49,129	261.4(e)(3)(iii)(D)					
	other information	49,129	261.4(e)(3)(iii)(E)					
	requirements for samples undergoing treatability studies at labs and testing facilities	49	261.4(f)					
	notification requirements	49	261.4(f)(1)					
	EPA identification number of laboratory or testing facility	49	261.4(f)(2)					
	single day quantity restrictions on initiation of treatment studies	49,129	261.4(f)(3)					

CONSOLIDATED CHECKLIST: Treatability Studies Sample Exemption as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIVALENT	LESS STRINGENT	MORE STRINGENT	BROADER IN SCOPE
quantity limitations on storage of treatability study samples; limitation does not include treatment materials	49,129	261.4(f)(4)					
90 days/1 year limitations (two years for treatability studies involving bioremediation) on duration of exemption; up to 500 kg of treated materials from a particular wastestream may be archived for up to 5 years	49,129	261.4(f)(5)					
land placement and open burning of study samples not allowed	49	261.4(f)(6)					
3 year maintenance and storage of treatability study records	49	261.4(f)(7)					
list of specific information needed for each treatability study	49	261.4(f)(7)(i)-(vii)					
3 year maintenance of shipping records and treatability study contract	49	261.4(f)(8)					
laboratory or treatability study facility annual report requirement	49	261.4(f)(9)					

CONSOLIDATED CHECKLIST: Treatability Studies Sample Exemption SPA 15
as of June 30, 1994 (cont'd)

FEDERAL REQUIREMENTS	CHECKLIST REFERENCE	FEDERAL RCRA CITATION	ANALOGOUS STATE CITATION	STATE ANALOG IS: EQUIV-ALENT	LESS STRIN-GENT	MORE STRIN-GENT	BROADER IN SCOPE
required annual report information	49	261.4(f)(9)(i)-(vii)					
hazardous waste determination for unused samples by facility	49	261.4(f)(10)					
notification when facility discontinues treatability studies	49	261.4(f)(11)					

1 The original 261.4(e)(3) was introduced to the code by Revision Checklist 49 and was revised by Revision Checklist 129. This checklist split off portions of the old 261.4(e)(3) and designated them as 261.4(e)(3)(ii)&(iii), added a new 261.4(e)(3)(i), and redesignated the old 261.4(e)(3)(i)-(v) as 261.4(e)(3)(iii)(A)-(E).

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