

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 264, 265, 268, and 270

[FRL-3981-7]

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

SW-846 Third Edition, Update I

- Disclaimer
- Abstract
- Table of Contents
- Method Index and Conversion Table
- Preface
- Acknowledgements
- Chapter One—Quality Control
 - 1.0 Introduction
 - 2.0 QA Project Plan
 - 3.0 Field Operations
 - 4.0 Laboratory Operations
 - 5.0 Definitions
 - 6.0 References
- Chapter Two—Choosing the Correct Procedure
 - 2.1 Purpose
 - 2.2 Required Information
 - 2.3 Implementing the Guidance
 - 2.4 Characteristics
 - 2.5 Ground Water
 - 2.6 References
- Chapter Three—Metallic Analytes
 - 3.1 Sampling Considerations
 - 3.2 Sample Preparation Methods
 - Method 3005A: Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by Flame Atomic Absorption (FAA) or Inductively Coupled Plasma (ICP) Spectroscopy
 - Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame Atomic Absorption (FAA) or Inductively Coupled Plasma (ICP) Spectroscopy
 - Method 3020A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Graphite Furnace Atomic Absorption (GFAA) Spectroscopy
 - Method 3040: Dissolution Procedure for Oils, Greases, or Waxes
 - Method 3050A: Acid Digestion of Sediments, Sludges, and Soils
 - 3.3 Methods for Determination of Metals

¹ Other comments, together with the Agency's response thereto, have been placed in the official record for this rulemaking. (Docket No. F-93-WTMF-FFFFF)

² A suffix of "A" in the method number indicates revision one (the method has been revised once).

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- Method 6010A: Inductively Coupled Plasma-Atomic Emission Spectroscopy
- Method 7000A: Atomic Absorption Methods
- Method 7020: Aluminum (AA, Direct Aspiration)
- Method 7040: Antimony (AA, Direct Aspiration)
- Method 7041: Antimony (AA, Furnace Technique)
- Method 7060: Arsenic (AA, Furnace Technique)
- Method 7061A: Arsenic (AA, Gaseous Hydride)
- Method 7080: Barium (AA, Direct Aspiration)
- Method 7081: Barium (AA, Furnace Technique)
- Method 7090: Beryllium (AA, Direct Aspiration)
- Method 7091: Beryllium (AA, Furnace Technique)
- Method 7130: Cadmium (AA, Direct Aspiration)
- Method 7131: Cadmium (AA, Furnace Technique)
- Method 7140: Calcium (AA, Direct Aspiration)
- Method 7190: Chromium (AA, Direct Aspiration)
- Method 7191: Chromium (AA, Furnace Technique)
- Method 7195: Chromium, Hexavalent (Coprecipitation)
- Method 7196A: Chromium, Hexavalent (Colorimetric)
- Method 7197: Chromium, Hexavalent (Chelation/Extraction)
- Method 7198: Chromium, Hexavalent (Differential Pulse Polarography)
- Method 7200: Cobalt (AA, Direct Aspiration)
- Method 7201: Cobalt (AA, Furnace Technique)
- Method 7210: Copper (AA, Direct Aspiration)
- Method 7211: Copper (AA, Furnace Technique)
- Method 7380: Iron (AA, Direct Aspiration)
- Method 7381: Iron (AA, Furnace Technique)
- Method 7420: Lead (AA, Direct Aspiration)
- Method 7421: Lead (AA, Furnace Technique)
- Method 7430: Lithium (AA, Direct Aspiration)
- Method 7450: Magnesium (AA, Direct Aspiration)
- Method 7460: Manganese (AA, Direct Aspiration)
- Method 7461: Manganese (AA, Furnace Technique)
- Method 7470: Mercury in Liquid Waste (Manual Cold-Vapor Technique)
- Method 7471: Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)
- Method 7480: Molybdenum (AA, Direct Aspiration)
- Method 7481: Molybdenum (AA, Furnace Technique)
- Method 7520: Nickel (AA, Direct Aspiration)
- Method 7550: Osmium (AA, Direct Aspiration)
- Method 7610: Potassium (AA, Direct Aspiration)
- Method 7740: Selenium (AA, Furnace Technique)
- Method 7741: Selenium (AA, Gaseous Hydride)
- Method 7760A: Silver (AA, Direct Aspiration)
- Method 7761: Silver (AA, Furnace Technique)
- Method 7770: Sodium (AA, Direct Aspiration)
- Method 7780: Strontium (AA, Direct Aspiration)
- Method 7840: Thallium (AA, Direct Aspiration)
- Method 7841: Thallium (AA, Furnace Technique)
- Method 7870: Tin (AA, Direct Aspiration)
- Method 7910: Vanadium (AA, Direct Aspiration)
- Method 7911: Vanadium (AA, Furnace Technique)
- Method 7950: Zinc (AA, Direct Aspiration)
- Method 7951: Zinc (AA, Furnace Technique)
- Chapter Four—Organic Analytes
 - 4.1 General Considerations
 - 4.2 Sample Preparation Methods
 - 4.2.1 Extractions and Preparations
 - Method 3500A: Organic Extraction and Sample Preparation
 - Method 3510A: Separatory Funnel Liquid-Liquid Extraction
 - Method 3520A: Continuous Liquid-Liquid Extraction
 - Method 3540A: Soxhlet Extraction
 - Method 3550: Sonication Extraction
 - Method 3580A: Waste Dilution
 - Method 5030A: Purge-and-Trap
 - Method 5040: Protocol for Analysis of Sorbent Cartridges from Volatile Organic Sampling Train
 - 4.2.2 Cleanup
 - Method 3600A: Cleanup
 - Method 3610A: Alumina Column Cleanup
 - Method 3611A: Alumina Column Cleanup and Separation of Petroleum Wastes
 - Method 3620A: Florisil Column Cleanup
 - Method 3630A: Silica Gel Cleanup
 - Method 3640: Gel-Permeation Cleanup
 - Method 3650A: Acid-Base Partition Cleanup
 - Method 3660A: Sulfur Cleanup
 - 4.3 Determination of Organic Analytes
 - 4.3.1 Gas Chromatographic Methods
 - Method 8000A: Gas Chromatography
 - Method 8010A: Halogenated Volatile Organics by Gas Chromatography
 - Method 8011: 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane by Microextraction and Gas Chromatography
 - Method 8015A: Nonhalogenated Volatile Organics by Gas Chromatography
 - Method 8020: Aromatic Volatile Organics
 - Method 8021: Halogenated Volatiles by Gas Chromatography Using Photoionization and Electrolytic Conductivity Detectors in Series: Capillary Column Technique
 - Method 8030A: Acrolein and Acrylonitrile by Gas Chromatography
 - Method 8040A: Phenols by Gas Chromatography
 - Method 8060: Phthalate Esters by Gas Chromatography
 - Method 8070: Nitrosamines by Gas Chromatography
 - 4.3.2 Gas Chromatographic/Mass Spectroscopic Methods
 - Method 8240A: Volatile Organics by Gas Chromatography/Mass Spectrometry (GC/MS)
 - Method 8250: Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Packed Column Technique
 - Method 8260: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Capillary Column Technique
 - Method 8270A: Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS): Capillary Column Technique
 - Method 8280: The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans
 - 4.3.3 High Performance Liquid Chromatographic Methods
 - Method 8310: Polynuclear Aromatic Hydrocarbons
 - 4.4 Miscellaneous Screening Methods
 - Method 3810: Headspace
 - Method 3820: Hexadecane Extraction and Screening of Purgeable Organics
- Chapter Five—Miscellaneous Test Methods
 - Method 9010A: Total and Amenable Cyanide
 - Method 9012: Total and Amenable Cyanide (Colorimetric, Automated UV)
 - Method 9013: Cyanide Extraction Procedure for Solids and Oils
 - Method 9020A: Total Organic Halides (TOX)
 - Method 9021: Purgeable Organic Halides (POX)
 - Method 9022: Total Organic Halides (TOX) by Neutron Activation Analysis
 - Method 9030A: Acid-Soluble and Acid-Insoluble Sulfides
 - Method 9031: Extractable Sulfides
 - Method 9035: Sulfate (Colorimetric, Automated, Chloranilate)
 - Method 9036: Sulfate (Colorimetric, Automated, Methylthymol Blue, AA II)
 - Method 9038: Sulfate (Turbidimetric)
 - Method 9060: Total Organic Carbon
 - Method 9065: Phenolics (Spectrophotometric, Manual 4-AAP with Distillation)
 - Method 9066: Phenolics (Colorimetric, Automated 4-AAP with Distillation)
 - Method 9067: Phenolics (Spectrophotometric, MBTH with Distillation)
- Method 8080: Organochlorine Pesticides and PCBs
- Method 8090: Nitroaromatics and Cyclic Ketones
- Method 8100: Polynuclear Aromatic Hydrocarbons
- Method 8110: Haloethers by Gas Chromatography
- Method 8120: Chlorinated Hydrocarbons
- Method 8140: Organophosphorus Pesticides
- Method 8141: Organophosphorus Compounds by Gas Chromatography: Capillary Column Technique
- Method 8150A: Chlorinated Herbicides by Gas Chromatography

- Method 9070: Total Recoverable Oil and Grease (Gravimetric, Separatory Funnel Extraction)
- Method 9071: Oil and Grease Extraction Method for Sludge Samples
- Method 9131: Total Coliform: Multiple Tube Fermentation Technique
- Method 9132: Total Coliform: Membrane-Filter Technique
- Method 9200: Nitrate
- Method 9250: Chloride (Colorimetric, Automated Ferricyanide AAI)
- Method 9251: Chloride (Colorimetric, Automated Ferricyanide AAI)
- Method 9252: Chloride (Titrimetric, Mercuric Nitrate)
- Method 9320: Radium-226
- Chapter Six—Properties
- Method 1320: Multiple Extraction Procedure
- Method 1330A: Extraction Procedure for Oily Wastes
- Method 9040: pH Electrometric Measurement
- Method 9041A: pH Paper Method
- Method 9045A: Soil pH
- Method 9050: Specific Conductance
- Method 9080: Cation-Exchange Capacity of Soils (Ammonium Acetate)
- Method 9081: Cation-Exchange Capacity of Soils (Sodium Acetate)
- Method 9090A: Compatibility Test for Wastes and Membrane Liners
- Method 9095: Paint Filter Liquids Test
- Method 9100: Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability
- Method 9310: Gross Alpha and Gross Beta
- Method 9315: Alpha-Emitting Radium Isotopes
- Chapter Seven—Introduction and Regulatory Definitions
- 7.1 Ignitability
- 7.2 Corrosivity
- 7.3 Reactivity
 - Test Method to Determine Hydrogen Cyanide Released from Wastes
 - Test Method to Determine Hydrogen Sulfide Released from Wastes
- 7.4 Toxicity Characteristic Leaching Procedure
- Chapter Eight—Methods for Determining Characteristics
- 8.1 Ignitability
 - Method 1010: Pensky-Martens Closed-Cup Method for Determining Ignitability
 - Method 1020A: Setaflash Closed-Cup Method for Determining Ignitability
- 8.2 Corrosivity
 - Method 1110: Corrosivity Toward Steel
- 8.3 Reactivity
- 8.4 Toxicity
 - Method 1310A: Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test
 - Method 1311: Toxicity Characteristic Leaching Procedure
- Chapter Nine—Sampling Plan
- 9.1 Design and Development
- 9.2 Implementation
- Chapter Ten—Sampling Methods
- Method 0010: Modified Method 5 Sampling Train
- Appendix A: Preparation of XAD-2 Sorbent Resin
- Appendix B: Total Chromatographable Organic Material Analysis

- Method 0020: Source Assessment Sampling System (SASS)
- Method 0030: Volatile Organic Sampling Train
- Chapter Eleven—Ground Water Monitoring
- 11.1 Background and Objectives
- 11.2 Relationship to the Regulations and to Other Documents
- 11.3 Revisions and Additions
- 11.4 Acceptable Designs and Practices
- 11.5 Unacceptable Designs and Practices
- Chapter Twelve—Land Treatment Monitoring
- 12.1 Background
- 12.2 Treatment Zone
- 12.3 Regulatory Definition
- 12.4 Monitoring and Sampling Strategy
- 12.5 Analysis
- 12.6 References and Bibliography
- Chapter Thirteen—Incineration
- 13.1 Introduction
- 13.2 Regulatory Definition
- 13.3 Waste Characterization Strategy
- 13.4 Stack-Gas Effluent Characterization Strategy
- 13.5 Additional Effluent Characterization Strategy
- 13.6 Selection of Specific Sampling and Analysis Methods
- 13.7 References
- Appendix—Company References

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 and 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 this change. Comments received in response 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 within the notice. Items B through K of this 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. A request has been made that, before being proposed or recommended, the method should be tested for all of the matrix 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-846 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 47 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 E926-88 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-WTMP-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.

* * * * *

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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