

US EPA ARCHIVE DOCUMENT

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 264, 265, and 266

[EPA F-97-WT3F-FFFFF; FRL-5839-6]

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 for testing and monitoring activities. This amendment adds new and revised methods as Update III to the Third Edition of the EPA-approved test methods manual "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846 and deletes several obsolete methods from SW-846 and the RCRA regulations. It also incorporates SW-846, Third Edition, as amended by Updates I (July 1992), II (September 1994) and IIA (August 1993 as part of the wood surface protection rule), IIB (January 1995, clarifying the temperature requirement for pH measurements of highly alkaline wastes), and III (December 1996). The intent of this action is to provide state-of-the-art analytical technologies for RCRA-related testing, thus promoting cost effectiveness and flexibility in choosing analytical test methods, as well as clarifying the RCRA Program's approach to working towards the Performance Based Measurement System (PBMS). Incorporation by reference was approved for the updates on the following dates: Update I, August 31, 1993, Update II, January 13, 1995, Update IIA, January 4, 1994 as part of the wood surface protection rule, and Update IIB, April 4, 1995, clarifying the temperature requirement for pH measurements of highly alkaline wastes.

DATES: This action is effective as of June 13, 1997. The incorporation by reference of the publication listed in the regulations is approved by the Director of the Federal Register as of June 13, 1997.

ADDRESSES: Supporting materials are available for viewing in the RCRA Information Center (RIC), located at Crystal Gateway I, First Floor, 1235 Jefferson Davis Highway, Arlington, VA. The Docket Identification Number is F-97-WT3F-FFFFF. The RIC is open from 9 a.m. to 4 p.m., Monday through Friday, excluding federal holidays. All comments received are in the docket for the proposed rule (Docket No. F-95-WT3P-FFFFF). Summaries of the comments together with the Agency's responses are in "Response to Public Comments Background Document, Promulgation of the Third Update to SW-846, Third Edition" which is in the docket for this final rule (Docket No. F-97-WT3F-FFFFF). To review docket materials, it is recommended that the

public make an appointment by calling (703) 603-9230. The public may copy a maximum of 100 pages of material from any regulatory docket at no charge. Additional copies cost \$0.15 per page. The docket index and rule are available electronically. See the SUPPLEMENTARY INFORMATION section for information on accessing it.

Copies of the Third Edition of SW-846, as amended by Updates I, II, IIA, IIB, and III, 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) 512-1800. The GPO document number is 955-001-00000-1. Copies of the Third Edition integrated manual and its updates are also available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650. The Third Edition integrated manual order number is PB95264073, and the Final Update III order number is PB97156137.

In addition, a CD-ROM version of SW-846, Third Edition, as amended by Updates I through IIB, is available from NTIS. In the future, the CD-ROM will be updated by NTIS to also include Update III to SW-846.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424-9346 or TDD (800) 553-7672 (hearing impaired). In the Washington, DC, metropolitan area, call (703) 412-9810 or TDD (703) 412-3323. For more detailed information on specific aspects of this rulemaking, contact Kim Kirkland, Office of Solid Waste(5307W), U. S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (703) 308-8855.

SUPPLEMENTARY INFORMATION: The docket index and the rule are available on the Internet. Follow these instructions to access the information electronically: From the World Wide Web (WWW), type WWW: <http://www.epa.gov/epaoswer/rules.htm>.

Regulated Entities

Entities potentially regulated by this action are those required to use SW-846 test methods during waste sampling and analysis for RCRA-related activities. Regulated categories and entities include: Industry (e.g., companies which handle hazardous wastes), and State, local and Federal government entities (e.g., government entities which handle hazardous wastes). Other entities not listed could also be regulated. To determine whether your organization is regulated by this action, you should carefully examine the applicability criteria in parts 260 through 299 of the Code of Federal Regulations. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding FOR FURTHER INFORMATION CONTACT section.

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I. Legal Authority

These regulations are being promulgated under the authority of sections 1006, 2002(a), 3001-3007, 3010, 3013-3018, and 7004 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(a), 6921-6927, 6930, 6934-6939, and 6974).

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 (RCRA), as amended. Use of some of these methods is required by some of the hazardous waste regulations under subtitle C of RCRA. In other situations, SW-846 functions as a guidance document setting forth acceptable, although not required, methods to be implemented by the

user, as appropriate, in satisfying RCRA-related sampling and analysis requirements. All of these methods are intended to promote accuracy, sensitivity, specificity, precision, and comparability of analyses and test results.

SW-846 is a document that changes 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 and cost effectiveness. Update III represents such an incorporation.

As a result of this final rule, SW-846 is being amended further to include the new and revised methods contained in Update III, and to delete those methods deemed obsolete.

III. Overview of July 25, 1995 NPRM and Summary of Responses to Public Comments

A. Overview of Proposal

On July 25, 1995 (60 FR 37974), the Agency proposed to amend its hazardous waste testing and monitoring regulations under subtitle C of RCRA by: (1) Adding revised methods and chapters and new methods as Update III to SW-846 and incorporating the Third Edition of SW-846 as amended by Updates I, II, IIA, IIB, and III, into 40 CFR 260.11(a) for use in complying with the requirements of subtitle C of RCRA, (2) deleting certain methods from SW-846 which are deemed obsolete, and (3) deleting certain references to Method 8240, Volatile Organics by Gas Chromatography/Mass Spectrometry (GC/MS), found in 40 CFR 264.1034, 264.1063, 265.1034, and 265.1063.

The Agency solicited comments on each of these proposed changes. On December 22, 1995 (60 FR 49239), the Agency extended the comment period to allow resolution of problems involving the shipping of Proposed Update III to many SW-846 subscribers. The extension allowed the subscribers an opportunity to review the Proposed Update III package and supply comments to the Agency.

Items B through D of this section summarize the major comments received and the actions taken by the Agency in response to those comments.¹

B. Responses to Comments Regarding the Addition of Update III Methods and Chapters to SW-846

¹ All comments received are in the docket for the proposed rule (Docket No. F-95-WT3P-FFFFF). Summaries of the comments together with the Agency's responses are in "Response to Public Comments Background Document, Promulgation of the Third Update to SW-846, Third Edition" which is in the docket for this final rule (Docket No. F-97-WT3F-FFFFF).

The Agency proposed, as part of Update III to SW-846, to revise 37 methods and 6 chapters already contained in the Third Edition of SW-846, as amended by Updates I, II, IIA, and IIB, incorporated by reference in 40 CR 260.11. The revisions were proposed to improve the methods and provide additional performance information for these methods. As part of Update III, the Agency also proposed to add 61 new methods to SW-846.

The Agency received very few negative comments on the proposal to add the new methods and revised methods and chapters of Update III to SW-846. The comments received by the Agency on the addition of new methods and the revision of existing methods and chapters were minor editorial changes. Details on these comments and the Agency's responses may be found in the background document to this rulemaking. The Agency has incorporated several of the suggested changes into the Update III package, as described in the background document.

C. Deletion of Obsolete Methods

The Agency proposed, as part of Update III to SW-846, to delete sixteen obsolete methods from the Third Edition of SW-846, for the reasons delineated in the sections to follow. Table 1 (Method Deletion/Replacement Table) lists the methods being deleted and identifies the appropriate replacement methods currently found in SW-846, Third Edition, as amended by Updates I, II, IIA, IIB, and III. The replacement methods are approved for analyses previously conducted by the deleted methods. Regarding the deletion of packed-column methods from SW-846, the Agency notes that packed columns can still be used in the replacement capillary column methods for required purposes, provided that method performance is appropriate for the intended application.

TABLE 1
[Method Deletion/Replacement Table]¹

Deetailed method No.	Deleted method title	Replacement method No.	Replacement method title
5040A	Analysis of Sorbent Cartridges from Volatile Organic Sampling Train (VOST): Gas Chromatography/Mass Spectrometry Technique	5041A	Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST).
8010B	Halogenated Volatile Organics by Gas Chromatography .	8021B	Halogenated and Aromatic Volatiles by Gas Chromatography Using Photoionization and Electrolytic Conductivity Detectors.
8020A	Aromatic Volatile Organics by Gas Chromatography . . .	8021B	Halogenated and Aromatic Volatiles by Gas Chromatography Using Photoionization and Electrolytic Conductivity Detectors.
8030A	Acrolein and Acrylonitrile by Gas Chromatography	8260B	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
		8316	Acrylamide, Acrylonitrile and Acrolein by High Performance Liquid Chromatography (HPLC).
8040A	Phenols by Gas Chromatography	8041	Phenols by Gas Chromatography.
8060	Phthalate Esters	8061A	Phthalate Esters by Gas Chromatography with Electron Capture Detection (GC/ECD).

8080A	Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography	8081A	Organochlorine Pesticides by Gas Chromatography.
		8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
8090	Nitroaromatics and Cyclic Ketones	8091	Nitroaromatics and Cyclic Ketones.
8110	Haloethers by Gas Chromatography	8111	Haloethers by Gas Chromatography.
8120A	Chlorinated Hydrocarbons by Gas Chromatography	8121	Chlorinated Hydrocarbons by Gas Chromatography.
8140	Organophosphorus Pesticides	8141A	Organophosphorus Compounds by Gas Chromatography.
8150B	Chlorinated Herbicides by Gas Chromatography	8151A	Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization.
8240B	Volatile Organics by Gas Chromatography/Mass Spectrometry (GC/MS)	8260B	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
8250A	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	8270C	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
9200	Nitrate	9210	Potentiometric Determination of Nitrate in Aqueous Samples with Ion-Selective Electrode.
		9056	Determination of Inorganic Anions by Ion Chromatography.
9252A	Chloride (Titrimetric, Mercuric Nitrate)	9056	Determination of Inorganic Anions by Ion Chromatography.
		9250	Chloride (Colorimetric, Automated Ferricyanide AAI).
		9251	Chloride (Color-metric, Automated Ferricyanide AAI).
		9253	Chloride (Titrimetric, Silver Nitrate).

¹ The Agency notes that packed columns can still be used in the replacement capillary column methods for required purposes, provided that method performance is appropriate for the intended application. The analysts should also see the Preface and Overview and Chapter Two of SW-846, as well as Method 8000 before beginning any GC analysis (Note: A more detailed discussion on this issue can be found in Section III. C.1 of the preamble).

Note: A suffix of "A" in the method number indicates revision one (the method has been revised once). A suffix of "B" in the method number indicates revision two (the method has been revised twice). A suffix of "C" in the method number indicates revision three (the method has been revised three times).

1. Deletion of Packed Column Gas Chromatographic Methods

Fourteen packed column gas chromatographic (GC) methods were proposed for deletion from SW-846 because they have been superseded by capillary column methods or other method techniques that provide better resolution, selectivity and sensitivity. Most of the commenters did not comment on the proposal to remove the packed column methods from SW-846. Of those that did, four commenters were in favor of the removal of the packed column methods, while thirteen opposed the action. In general, both sets of commenters agreed with the Agency that most laboratories use capillary columns, and that capillary columns are a better technology and generate

more reliable data than the packed columns. However, all of those opposing the action preferred that the Agency retain the packed column methods as approved for RCRA-related testing and considered their deletion from SW-846 to be either arbitrary or unnecessary. These commenters noted that the capillary columns can be and are used in the packed column methods. The commenters stated that, since SW-846 is a guidance document, the regulated community should have the option of using the packed column methods as long as the generated data are adequate for regulatory purposes. Some commenters in particular desired this option regarding the use of Method 8080, "Organochlorine Pesticides and Polychlorinated Biphenyls by Gas Chromatography".

First, the Agency disagrees with comments that removal of the packed column methods is arbitrary or unnecessary. It is the Agency's responsibility to maintain SW-846 as a manual of standardized methods which EPA believes will provide adequate data for compliance determinations and other RCRA-related analyses. As noted in the proposal (and also observed by the commenters), capillary columns have an inherently greater ability to separate analytes than packed columns. No commenters refuted this finding. In addition, a survey performed in 1991 found that few analysts actually use packed columns in their laboratories anymore (Environmental Science and Technology, 26, 1285-1287, 1992).

The packed column GC methods of SW-846 were also proposed for deletion to be consistent with other Agency program offices, e.g., the Office of Water, which has withdrawn packed column methods from its list of approved drinking water methods (see 59 FR 62456, December 5, 1994). The Agency is also considering a similar action regarding the methods approved for wastewater analyses. Cross-program consistency regarding the use and approval of packed column methods is important and cost-effective for both the Agency and the regulated community.

In addition, as shown by Table 1, the Agency is not proposing to delete a packed column method unless at least one other method which uses a commercially available and adequate technology is in SW-846 to replace it.

Regarding the continued use of any of the packed column methods by the regulated community, the Agency notes that packed columns can still be used in the replacement capillary column methods for required purposes, provided that method performance is appropriate for the intended application. The performance data included in SW-846 methods are not intended to be used as absolute QC acceptance criteria for method performance. The data are intended as guidance providing typical method performance in typical matrices, to assist the analyst in the selection of an appropriate method for the intended application. It is the analyst's responsibility to establish the analytical operating parameters and acceptance criteria that are appropriate for that intended application. In addition, the public may continue to use packed column methods, including Method 8080, for applications for which the methods are appropriate.

Some commenters opposed the deletion of the packed column methods because many of the methods are included in formally approved documents such as permits, EPA-approved Quality Assurance Project Plans, and Consent Decrees. This should not be a cause for concern. Permits

and other plans formally approved by regulatory authorities that specify the use of packed column methods for required analyses continue in effect unless they are changed, for example, by amending a consent decree or modifying a permit. In addition, when the permits, etc., are revised, the performance data contained in the packed column methods are not intended to be used as absolute QC acceptance criteria. As with any other methods in SW-846, they are typical performance data expected for typical matrices. The replacement capillary column methods provide superior performance with regard to sensitivity, chromatographic separation, etc., and therefore, the Agency does not believe that amending a permit will be a problem or expense because equivalent methods are already included in SW-846 to meet the analytical requirements stated in permits. Further, the Agency believes that laboratories have been using capillary column methods for these RCRA applications.

The removal of the packed column methods is a direct example of the Agency's interpretation of PBMS. Capillary column methods represent state-of-the-art in Gas Chromatography technology. Under the PBMS approach, the Agency requires that the generator/analyst be able to demonstrate the ability to meet the Data Quality Objectives (DQOs) for any particular application. For those isolated instances for which the analyst wishes to use a packed column method and can demonstrate the ability to meet project specific DQOs for a particular RCRA application, packed column methods may continue to be used. It is the Agency's policy under the Performance-Based Measurement System (PBMS), that the analytical performance criteria established in the RCRA permit be achieved. The Environmental Monitoring Management Council (EMMC) defines PBMS as "a set of processes wherein the data quality needs, mandates or limitations of a program or project are specified, and serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner." Under such a system, EPA would specify performance criteria and data producers that would show that their proposed methods meet these specific performance standards. Data producers would be required to document method performance and certify the use of appropriate quality assurance and quality control procedures. The system would apply to those physical, chemical, and biological methods used both in laboratories and in the field. PBMS is a system for specifying monitoring requirements that imposes legal accountability for the achievement of specific data or measurement quality objectives, without prescribing the particular procedures, techniques, or instrumentation that is to be used for achieving such objectives. These performance criteria are defined by the permit, not by a specified method number.

2. Deletion of Methods 9200 and 9252A

The Agency also proposed to delete Method 9200 (the brucine-sulfanilamide method for nitrate determination), because it generated unreliable results, and Method 9252A ("Chloride, Titrimetric, Mercuric Nitrate), because it generates a mercury-containing RCRA hazardous waste. The Agency did not receive any comments regarding the deletion of these two methods. Therefore, Methods 9200 and 9252 have been deleted and are no longer part of the Third Edition of SW-846 as revised by Final Update III.

3. Replacing References to Method 8240 With References to Method 8260 in §§264.1034(d)(1)(iii) and (f), 264.1063(d)(2), 265.1034(d)(1)(iii) and (f), and 265.1063(d)(2)

The Agency proposed to delete all references to Method 8240 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry) of SW-846 found in §§264.1034(d)(1)(iii) and (f), 264.1063(d)(2), 265.1034(d)(1)(iii) and (f), and 265.1063(d)(2). The Agency did not propose to replace the references to Method 8240 with references to Method 8260 of SW-846, the capillary column replacement method for Method 8240. There were no significant comments objecting to the removal of references to Method 8240 in those sections. However, there was comment that the compound-specific methodology should not be discontinued, leaving only a method that measures total organic concentration. Rather, the preferred capillary column technology should be used in place of the former packed column technology in the analysis of volatile organic compounds by Gas Chromatography/Mass Spectrometry; i.e., Method 8240 should be replaced by Method 8260 in the subject regulations. The Agency agrees with this comment and therefore has replaced references to Method 8240 with references to Method 8260 in 40 CFR 264.1034(d)(1)(iii) and (f), 264.1063(d)(2), 265.1034(d)(1)(iii), and 265.1063(d)(2) and (f) of the RCRA regulations. As stated in method 8000B, "Determinative Chromatographic Separations", the method which provides the Agency's guidance on analytical chromatography, other columns may be substituted in SW-846 methods to improve performance provided that (1) the requirements of Secs. 8.3 (Instrument QC Requirements) and 8.4 (Initial Demonstration of proficiency) of Method 8000B are satisfied, and (2) Target analytes are sufficiently resolved from one another, and from co-extracted interferences.

(Note: A method reference found within the RCRA regulations refers to the latest promulgated revision of the method, even though the method number does not include the appropriate letter suffix. For example, in the regulatory sections discussed above, the referenced Method 8260 refers to the last promulgated version of that method, which is Method 8260B of Update III to SW-846.)

IV. Additional Editorial Changes

The Agency is taking this opportunity to make several additional editorial changes resulting from the promulgation of Update III to SW-846, Third Edition. These changes include:

- Revising Methods 9010A and 9030A to create new modular format Methods 9010B, 9030B, 9014, and 9034, and Editorial Changes to Chapter Seven.
- Removing section 3.0, "Sampling and Analytical Methods", from appendix IX to 40 CFR part 266 because all of the methods can now be found in SW-846.
- Revising footnote 5 of appendix IX to 40 CFR part 264 to address the status of packed column methods in SW-846.
- Revising the Disclaimer and Chapter Two of SW-846 to include clarifying editorial changes regarding flexibility allowed during the use of SW-846 methods.

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 public comment.² These changes are discussed in detail below.

A. Changes to Methods 9010A and 9030A to Create New Modular Format Methods 9010B, 9030B, 9014, and 9034; and Editorial Changes to Chapter Seven

Methods 9010B (Total and Amenable Cyanide: Distillation), 9014 (Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide), 9030B (Acid Soluble and Acid-Insoluble Sulfides: Distillation), and 9034 (Titrimetric Procedure for Acid-Soluble and Acid Insoluble Sulfides) of Update III are modular versions of the inclusive Methods 9010A (Total and Amenable Cyanide) and 9030A (Acid-Soluble and Acid-Insoluble Sulfides) of SW-846. The modular versions were created by dividing the preparative and determinative steps of Methods 9010A and 9030A into four separate methodologies. Specifically, revised Method 9010B contains the preparative distillation steps of Method 9010A, and revised Method 9030B contains the preparative distillation steps of Method 9030A. New Method 9014 contains the determinative steps of Method 9010A, and new method 9034 contains the determinative steps of Method 9030A. This modular approach is common to SW-846, and increases flexibility by allowing the selection of preparative and determinative steps that are appropriate to the sample matrix and data end use. (Inclusive methods are desirable, when practicable, i.e., for a specific application in a specific medium or matrix. However, modular methods are more appropriate and practicable when dealing with analyses involving multiple media, as is the case with these two methods.) The text and technical content of Methods 9010A and 9030A were not changed when the methods were divided into Methods 9010B, 9014, 9030B, and 9034.

As a result of dividing Methods 9010 and 9030 into two new methods, the Agency is also correcting those method references in Chapter Seven, steps 2.1, 7.6, and 8.1 of section 7.3.3.2 (Test Method to Determine Hydrogen Cyanide Released from Wastes) and steps 2.1, 7.6, 7.7 and 9.1 of section 7.3.4.2 (Test Method to Determine Hydrogen Sulfide Released from Wastes). Specifically, certain incorrect references to "Method 9010" and "Method 9030" have been replaced with correct references to "Method 9014" and "Method 9034".

B. Revision of Section 3.0 (Sampling and Analytical Methods) of Appendix IX to 40 CFR Part 266

The Agency has revised appendix IX of 40 CFR part 266 whereby the text of section 3.0, Sampling and Analytical Methods, has been removed, and a note has been added referencing SW-846. With the promulgation of Update III, all of the methods in section 3.0 of part 266, appendix IX, are now available in SW-846. Table 2 (BIF/EPA Methods) identifies the methods in section 3.0 of part 266, appendix IX, and the equivalent SW-846 method. (Note: The method number has changed for some of the methods to reflect the SW-846 method numbering system.) This technical change was necessary to eliminate redundancy and to remove the possibility that a

² The APA provides an exception to the notice and comment requirement where it would be unnecessary. 5 U.S.C. 553(b)(3)(B).

discrepancy might exist between two versions of the same method. This technical change only revises where the methods are found; it does not change required or intended uses of the methods.

Since these methods have been removed from appendix IX of part 266 and replaced with a note referencing SW-846, and since §§ 266.104(e)(1), 266.106(g) (1) and (2), and 266.107(f) refer (directly or indirectly) to the methods in that appendix, the Agency has also revised §§ 266.104(e)(1), 266.106(g) (1) and (2), and 266.107(f) to refer to the equivalent methods of SW-846.

Table 2
[BIF/EPA Methods]

BIF manual section	BIF manual method name	BIF method No.	SW-846 method No.
3.1	Methodology for the Determination of Metals Emissions In Exhaust Gases from Hazardous Waste Incineration and Similar Combustion Processes	0012	0060
3.2	Determination of Hexavalent Chromium Emissions from Stationary Sources	0013	0061
3.3.1	Isokinetic HCl/Cl ₂ Emission Sampling Train	0050	0050
3.3.2	Midget Impinger HCl/Cl ₂ Emission Sampling Train	0051	0051
3.3.3	Protocol for Analysis of Samples from HCl/Cl ₂ Emission Sampling Train	9057	9057
3.4	Determination of Polychlorinated Dibenzo-p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) from Stationary Sources	23	0023
3.5	Sampling for Aldehydes and Ketones Emissions From Stationary Sources	0011	0011
3.6	Analysis for Aldehydes and Ketones by High Performance Liquid Chromatography (HPLC)	0011A	8315

C. Revision of Footnote 5 of Appendix IX to 40 CFR Part 264

Appendix IX to 40 CFR part 264 contains the ground-water monitoring list of analytes and suggested methods for analyte determination. Footnote 5 to the appendix notes that the listing of suggested methods refers to analytical procedure numbers used in SW-846. However, the listing of suggested methods includes packed column GC methods, which have been removed from SW-846 with the addition of Update III. The Agency, therefore, has revised footnote 5 of appendix IX to 40 CFR part 264 to also note that the packed column methods were promulgated methods through Update IIB of SW-846 and that, as of Update III, the Agency has replaced the methods with capillary column GC methods.

D. Removing the 47 Analytical Test Methods Incorporated by Reference in § 260.11(a)

The Agency is today removing the list of 47 methods found at the end of § 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 in § 260.11, Incorporation by Reference, is redundant and unnecessary. It was the intent of the Agency to finalize this action in a previous rulemaking (August 31, 1993, 58 FR 46040).

However, due to an error in the regulatory language contained in that rule, the 47 methods were not removed from § 260.11(a) at that time.

E. Revising the Disclaimer and Chapter Two of SW-846 to Include Clarifying Editorial Changes Regarding Flexibility Allowed During the Use of SW-846 Methods

The Agency believes that language in SW-846 which clarifies the flexibility inherent to SW-846 methods is useful to the regulated community. SW-846 methods are written so that they may be used as quantitative trace analytical methods to demonstrate that a waste "does not contain" constituents that require it to be managed as a hazardous waste. If particular RCRA applications do not require this rigor, looser analytical criteria may be applied, provided that they satisfy the data quality requirements for the particular application. Therefore, the Agency has revised the Disclaimer and Chapter Two of SW-846 to include editorial changes which explain that glassware, reagents, supplies, equipment and settings other than those specified in SW-846 may be employed, provided that method performance appropriate for the intended RCRA application is documented. Such performance includes consideration of precision, accuracy (or bias), recovery, representativeness, comparability, and sensitivity (detection, quantitation, or reporting limits) relative to the data quality objectives for the intended use of the analytical results. In other words, the Agency is following a Performance-Based Measurement System (PBMS) approach where the analyst must be able to demonstrate the ability to determine the analytes of concern in the matrix(es) of concern at the level (concentration) of concern for any particular RCRA application. RCRA regulations basically specify "what" needs to be determined and leaves the "how" up to the analyst. "Any reliable analytical method" may be used for this demonstration. If in response to this inherent flexibility an alternative analytical procedure is employed, the laboratory should demonstrate and document that the procedure is capable of providing the appropriate performance. The Disclaimer and Chapter Two explain that the performance data included in the SW-846 methods are not intended to be used as absolute QC acceptance criteria for method performance. The data are intended to only be guidance, by providing typical method performance in certain representative matrices to assist the analyst in the selection of an appropriate method for an intended RCRA application.

The flexibility described in the Disclaimer and Chapter Two of SW-846 is applicable when any regulating entity (e.g., State Government) specifies the use of methods found in SW-846. The following language from the Preface and Overview should help clarify the flexibility inherent in the SW-846 manual:

The procedures described in this manual are meant to be comprehensive and detailed, coupled with the realization that the problems encountered in sampling and analytical situations require a certain amount of flexibility. The solutions to these problems will depend, in part, on the skill, training, and experience of the analyst. For some situations, it is possible to use this manual in rote fashion. In other situations, it will require a combination of technical abilities, using the manual as guidance rather than in a step-by-step, word-by-word fashion. Although this puts an extra burden on the user, it is unavoidable because of the variety of sampling and analytical conditions found with hazardous wastes.

However, as explained in the Disclaimer and Chapter Two, this flexibility does not apply to method-defined parameters where the analytical result is wholly dependant on the measurement process, such as during the use of the Toxicity Characteristic Leaching Procedure (Method 1311) and other characteristic tests. In these instances, changes to the specific methods may change the end result and incorrectly identify a waste as non-hazardous. Therefore, when the measurement of such method-defined parameters is required by regulation, those methods are not subject to the flexibility afforded to other methods.

V. Overview of Final Rule

This rule makes final the Agency's proposal to remove certain methods and add revised methods and chapters and new methods as Update III to SW-846 and to incorporate the Third Edition as amended by Updates I, II, IIA, IIB, and III in 40 CFR 260.11(a) for use in complying with the requirements of subtitle C of RCRA.

Table 3, Final Update III of SW-846, Third Edition lists all of the revised methods and chapters and new methods that are approved by the Agency for inclusion in Final Update III to SW-846. The table lists the chapters and methods of Update III in the order of their relative location in SW-846. The vertical "*" notation indicates portions of SW-846, Third Edition (as amended by Updates I, IIA, and IIB) which are unchanged by Final Update III.

Table 3.--Final Update III of SW-846, Third Edition

Method No.	Title
	Disclaimer.
* * *	
	Table of Contents.
* * *	
	Preface.
* * *	
	Chapter Two--Choosing the Correct Procedure.
	Chapter Three--Inorganic Analytes.
	3.1 Sampling Considerations.
	3.2 Sample Preparation Methods.
* * *	
3031	Acid Digestion of Oils for Metals Analysis by FLAA or ICP Spectroscopy.
3040A	Dissolution Procedures for Oils, Greases, or Waxes.
3050B	Acid Digestion of Sediments, Sludges, and Soils.
3052	Microwave Assisted Acid Digestion of Siliceous and Organically Based Matrices.
3060A	Alkaline Digestion for Hexavalent Chromium.
	3.3 Methods for Determination of Inorganic Analytes.
6010B	Inductively Coupled Plasma--Atomic Emission Spectroscopy.
* * *	
7063	Arsenic in Aqueous Samples and Extracts by Anodic Stripping Voltammetry (ASV).

7199	Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography.
*	*
7472	Mercury in Aqueous Samples and Extracts by Anodic Stripping Voltammetry (ASV).
*	*
7521	Nickel (Atomic Absorption, Furnace Method).
*	*
7580	White Phosphorus (P ₄) by Solvent Extraction and Gas Chromatography. Chapter Four--Organic Analytes. 4.1 Sampling Considerations. 4.2 Sample Preparation Methods. 4.2.1 Extractions and Preparations.
3500B	Organic Extraction and Sample Preparation.
3510C	Separatory Funnel Liquid-Liquid Extraction.
3520C	Continuous Liquid-Liquid Extraction.
3535	Solid-Phase Extraction (SPE).
3540C	Soxhlet Extraction.
*	*
3542	Extraction of Semivolatile Analytes Collected Using Modified Method 5 (Method 0010) Sampling Train.
3545	Pressurized Fluid Extraction (PFE).
3550B	Ultrasonic Extraction.
3560	Supercritical Fluid Extraction of Total Recoverable Petroleum Hydrocarbons.
3561	Supercritical Fluid Extraction of Polynuclear Aromatic Hydrocarbons.
*	*
3585	Waste Dilution for Volatile Organics.
5000	Sample Preparation for Volatile Organic Compounds.
5021	Volatile Organic Compounds in Soils and Other Solid Matrices Using Equilibrium Headspace Analysis.
5030B	Purge-and-Trap for Aqueous Samples.
5031	Volatile, Nonpurgeable, Water-Soluble Compounds by Azeotropic Distillation.
5032	Volatile Organic Compounds by Vacuum Distillation.
5035	Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples.
5041A	Analysis for Desorption of Sorbent Cartridges from Volatile Organic Sampling Train (VOST). 4.2.2 Cleanup.
3600C	Cleanup.
3610B	Alumina Cleanup.
3611B	Alumina Column Cleanup and Separation of Petroleum Wastes.
3620B	Florisil Cleanup.
3630C	Silica Gel Cleanup.
*	*
3650B	Acid-Base Partition Cleanup.
3660B	Sulfur Cleanup.

3665A	.....	Sulfuric Acid/Permanganate Cleanup. 4.3 Determination of Organic Analytes. 4.3.1 Gas Chromatographic Methods.
8000B	.....	Determinative Chromatographic Separations.
*	* * *	* * * * *
8015B		Nonhalogenated Organics Using GC/FID.
8021B		Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and Electrolytic Conductivity Detectors in Series.
*	* * *	* * * * *
8032A	.....	Acrylamide by Gas Chromatography.
8033	.....	Acetonitrile by Gas Chromatography with Nitrogen-Phosphorus Detection.
8041	.....	Phenols by Gas Chromatography.
8061A	.....	Phthalate Esters by Gas Chromatography with Electron Capture Detection (GC/ECD).
8070A	.....	Nitrosamines by Gas Chromatography.
8081A	.....	Organochlorine Pesticides by Gas Chromatography.
8082	.....	Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
8091	.....	Nitroaromatics and Cyclic Ketones by Gas Chromatography.
*	* * *	* * * * *
8111	.....	Haloethers by Gas Chromatography.
*	* * *	* * * * *
8131	.....	Aniline and Selected Derivatives by Gas Chromatography.
*	* * *	* * * * *
8151A	.....	Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization. 4.3.2 Gas Chromatographic/Mass Spectroscopic Methods.
8260B	.....	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
8270C	.....	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
8275A	.....	Semivolatile Organic Compounds (PAHs and PCBs) in Soils/Sludges and Solid Wastes Using Thermal Extraction/Gas Chromatography/Mass Spectrometry (TE/GC/MS).
8280A	.....	The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry (HRGC/LRMS).
*	* * *	* * * * *
		4.3.3 High Performance Liquid Chromatographic Methods.
*	* * *	* * * * *
8315A		Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC).
*	* * *	* * * * *
8321A	.....	Solvent Extractable Nonvolatile Compounds by High Performance Liquid Chromatography/Thermospray/Mass Spectrometry (HPLC/TS/MS) or Ultraviolet (UV) Detection.
8325	.....	Solvent Extractable Nonvolatile Compounds by High Performance Liquid Chromatography/Particle Beam/Mass Spectrometry (HPLC/PB/MS).
*	* * *	* * * * *
8332	.....	Nitroglycerine by High Performance Liquid Chromatography. 4.3.4 Infrared Methods.
*	* * *	* * * * *

8430	Analysis of Bis(2-chloroethyl) Ether Hydrolysis Products by Direct Aqueous Injection GC/FT-IR.
8440	Total Recoverable Petroleum Hydrocarbons by Infrared Spectrophotometry. 4.3.5 Miscellaneous Spectrometric Methods.
8520	Continuous Measurement of Formaldehyde in Ambient Air. 4.4 Immunoassay Methods.
40000	Immunoassay.
4010A	Screening for Pentachlorophenol by Immunoassay.
4015	Screening for 2,4-Dichlorophenoxyacetic Acid by Immunoassay.
4020	Screening for Polychlorinated Biphenyls by Immunoassay.
4030	Soil Screening for Petroleum Hydrocarbons by Immunoassay.
4035	Soil Screening for Polynuclear Aromatic Hydrocarbons by Immunoassay.
4040	Soil Screening for Toxaphene by Immunoassay.
4041	Soil Screening for Chlordane by Immunoassay.
4042	Soil Screening for DDT by Immunoassay.
4050	TNT Explosives in Soils by Immunoassay.
4051	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in Soil by Immunoassay. 4.5 Miscellaneous Screening Methods.
* * *	* * *
8515	Colorimetric Screening Method for Trinitrotoluene (TNT) in Soil.
9078	Screening Test Method for Polychlorinated Biphenyls in Soil.
9079	Screening Test Method for Polychlorinated Biphenyls in Transformer Oil. Chapter Five--Miscellaneous Test Methods.
* * *	* * *
9010B	Total and Amenable Cyanide(Colorimetric, Manual).
9012A	Total and Amenable Cyanide (Colorimetric, Automated UV).
* * *	* * *
9014	Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide.
* * *	* * *
9023	Extractable Organic Halides (EOX) in Solids.
9030B	Acid-Soluble and Acid-Insoluble Sulfides.
* * *	* * *
9034	Titrimetric Procedure for Acid-Soluble and Acid-Insoluble Sulfides.
* * *	* * *
9057	Determination of Chloride from HCl/Cl ₂ Emission Sampling Train (Methods 0050 and 0051) by Anion Chromatography.
* * *	* * *
9210	Potentiometric Determination of Nitrate in Aqueous Samples with Ion-Selective Electrode.
9211	Potentiometric Determination of Bromide in Aqueous Samples with Ion-Selective Electrode.
9212	Potentiometric Determination of Chloride in Aqueous Samples with Ion-Selective Electrode.
9213	Potentiometric Determination of Cyanide in Aqueous Samples and Distillates with Ion-Selective Electrode.
9214	Potentiometric Determination of Fluoride in Aqueous Samples with Ion-Selective Electrode.

9215	Potentiometric Determination of Sulfide in Aqueous Samples and Distillates with Ion-Selective Electrode.
*	*
1030	Ignitability of Solids.
1120	Dermal Corrosion.
*	*
9050A	Specific Conductance.
*	*
9095A	Paint Filter Liquids Test.
*	*
	Chapter Seven--Characteristics Introduction and Regulatory Definitions.
	Chapter Eight--Methods for Determining Characteristics.
*	*
	Chapter Ten--Sampling Methods.
*	*
0011	Sampling for Selected Aldehyde and Ketone Emissions from Stationary Sources.
0023A	Sampling Method for Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofuran Emissions from Stationary Sources.
*	*
0031	Sampling method for Volatile Organic Compounds (SMVOC).
0040	Sampling of Principal Organic Hazardous Constituents from Combustion Sources Using Tedlar® Bags.
0050	Isokinetic HCl/Cl ₂ Emission Sampling Train.
0060	Determination of Metals in Stack Emissions.
0061	Determination of Hexavalent Chromium Emissions from Stationary Sources.
0051	Midget Impinger HCl/Cl ₂ Emission Sampling Train.
0100	Sampling for Formaldehyde and Other Carbonyl Compounds in Indoor Air.
*	*

Note: A suffix of "A" in the method number indicates revision one (the method has been revised once). A suffix of "B" in the method number indicates revision two (the method has been revised twice). A suffix of "C" in the method number indicates revision three (the method has been revised three times).

VI. State Authority

For these Regulatory cases where SW-846 is required, today's rule provides standards that are not immediately effective in authorized States since the requirements are being imposed pursuant to pre-HSWA authority. See RCRA section 3006. The requirements will be applicable only in those States that do not have final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law. Procedures and deadlines for State program revisions are set forth in 40 CFR 271.21. 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 allows rules to become effective in less than six months when, among other things, the Agency finds that the regulated community does not need six months to come into compliance. SW-846, as revised by Update III, inclusively provides greater flexibility to the regulated community in testing and monitoring solid waste by offering a greater selection of approved methods and by promoting more flexibility in method application. In addition, no method was deleted as part of Update III unless at least one other approved replacement method was also readily available in SW-846. Therefore, the Agency believes that the regulated community does not need six months to come into compliance. For the same reasons, 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. Therefore, this rule is effective June 13, 1997.

VIII. Regulatory Analyses

A. Executive Order 12866

The Agency has determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 because this rule does not create any new regulatory requirements and it does not require any new reports beyond those now required. Therefore, this rule is not subject to OMB review and the requirements of the Executive Order.

B. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA or the Act), Pub. L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of UMRA, EPA generally must prepare a written statement for rules with Federal mandates that may result in estimated costs to State, local, and tribal governments in the aggregate, or to the private sector, of \$100 million or more in any one year. When such a statement is required for EPA rules, under section 205 of the Act, EPA must identify and consider alternatives, including the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. EPA must select that alternative, unless the Administrator explains in the final rule why it was not selected or it is inconsistent with law. Before EPA establishes regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must develop under section 203 of the Act a small government agency plan. The plan must provide for notifying potentially affected small governments, giving them meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising them on compliance with the regulatory requirements.

EPA has determined that this rule does not include a Federal mandate that may result in estimated costs of \$100 million or more to State, local, and tribal governments in the aggregate, or to the private sector, in any one year. This is due to the fact that this rule simply revises available test methods for complying with existing regulatory requirements, and in most cases, the SW-846 test methods are provided as guidance, not requirements. Even where the use of a

specific test method is required, the Agency does not believe that the revised methods will result in significant cost increases and indeed, most of the revised methods are expected to result in reduced costs. For example, new immunoassay methods can be run in the field, replacing expensive gas chromatographic laboratory work; this will allow for more and faster sampling, helping to reduce the cost of cleanups. Thus, today's notice is not subject to the written statement requirements in sections 202 and 205 of the Act.

As for section 203 of the Act, today's rule is not expected to have any "unique" effects on small governments; the only expected effects on a small government would be where that government is itself managing hazardous wastes, and is using one or more test methods for complying with RCRA regulations. Further, for the reasons set out in the prior paragraph, the revised test methods would not be expected to have a "significant" effect on small governments (or other users of test methods). Thus, today's notice is not subject to the requirements of section 203 of the Act.

C. Certification Under the Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601-6012, whenever an Agency is required to publish a general notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions).

The EPA has determined that this rule will not have a significant economic impact on a substantial number of small entities. This rule does not create any new regulatory requirements and it does not require any new reports beyond those now required. Some of the methods found in Update III to SW-846, Third Edition, are required by some of the regulations under subtitle C of RCRA. Based on an evaluation of each of those methods and the regulatory requirements, the Agency determined that this update will not impose significant additional costs on any member of the regulated community. In addition, SW-846 functions in other situations as a guidance document and the net effect of an update to the document is to provide greater flexibility and utility to all of the regulated community, including small entities, by providing an increased choice of appropriate analytical methods for RCRA applications. Therefore, the EPA provides the following certification under the Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Flexibility Act. Pursuant to the provision at 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities. Thus the rule, does not require an RFA.

D. Submission to Congress and the General Accounting Office

Under 5 U.S.C. 801(a)(1)(A) as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the General Accounting Office prior to publication of the rule in today's Federal Register. This rule is not a "major rule" as defined by 5 U.S.C. 804(2).

E. Paperwork Reduction Act

There are no additional reporting, notification, or recordkeeping provisions associated with today's rule. Such provisions, were they included, would be submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq.

List of Subjects

40 CFR Part 260

Environmental protection, administrative practice and procedure, Confidential business information, Hazardous waste, Incorporation by reference, Reporting and recordkeeping requirements.

40 CFR Part 264

Air pollution control, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 265

Air pollution, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds, Water Supply.

40 CFR Part 266

Energy, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

Dated: May 29, 1997.

Timothy Fields, Jr.,
Acting Assistant Administrator, Office of Solid Waste and Emergency Response.