

STATEMENTS OF POLICY

Title 4—ADMINISTRATION

PART II. EXECUTIVE BOARD

[4 PA. CODE CH.9]

Reorganization of the Department of Education

The Executive Board approved a reorganization of the Department of Education effective January 27, 2005.

The following organization chart at 35 Pa.B. 1224 (February 12, 2005) is published at the request of the Joint Committee on Documents under 1 Pa. Code § 3.1(a)(9) (relating to contents of code.)

(Editors Note: The Joint Committee on Documents has found organization charts to be general and permanent in nature. This document meets the criteria of 45 Pa.C.S. § 702(7) (relating to contents of Pennsylvania Code) as a document general and permanent in nature which shall be codified in the Pennsylvania Code.)

[Pa.B. Doc. No. 05-283. Filed for public inspection February 11, 2005, 9:00 a.m.]

Title 25—ENVIRONMENTAL PROTECTION

DEPARTMENT OF ENVIRONMENTAL PROTECTION

[25 PA. CODE CH. 16]

Water Quality Toxics Management Strategy

The Department of Environmental Protection (Department) is amending Chapter 16 (relating to water quality toxics management strategy—statement of policy). This statement of policy complements the review and revision of Chapter 93 (relating to water quality standards). See 35 Pa.B. 1197 (February 12, 2005) for the text of the final-form rulemaking.

A. Effective Date

These final amendments will be effective upon publication in the *Pennsylvania Bulletin*.

B. Contact Persons

For further information contact Edward R. Brezina, Chief, Division of Water Quality Assessment and Standards, Bureau of Water Supply and Wastewater Management, 11th Floor, Rachel Carson State Office Building, P. O. Box 8467, (717) 787-9637 or Michelle Moses, Assistant Counsel, Bureau of Regulatory Counsel, 9th Floor, Rachel Carson State Office Building, P. O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7060. Persons with a disability may use the AT&T Relay Service by calling (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This statement of policy is available electronically through Department of Environmental Protection's (Department) website: www.dep.state.pa.us.

C. Statutory Authority

This statement of policy is amended under sections 5(b)(1) and 402 of The Clean Streams Law (35 P.S. §§ 691.5(b)(1) and 691.402), which authorize the Board to develop and adopt rules and regulations to implement provisions of The Clean Streams Law and section 1920-A

of The Administrative Code of 1929 (71 P.S. § 510-20), which grants to the Board the power and duty to formulate, adopt and promulgate rules and regulations for the proper performance of the work of the Department. In addition, section 303 of the Federal Clean Water Act (33 U.S.C.A. § 1313) sets forth requirements for water quality standards and the Federal regulations at 40 CFR 131.32 (relating to Pennsylvania) set forth certain requirements for portions of the Commonwealth's antidegradation program. Section 303(c)(1) of The Clean Water Act requires that states periodically, but at least once every 3 years, review and revise as necessary, their water quality standards. This statement of policy is part of the Commonwealth's current triennial review of its water quality standards.

D. Background and Summary

The Commonwealth's water quality standards in Chapters 16 and 93 implement the provisions of section 5 and 402 of The Clean Streams Law and section 303 of the Federal Clean Water Act. Water quality standards consist of the uses of the surface waters of this Commonwealth, the specific numeric and narrative criteria necessary to achieve and maintain those uses and antidegradation regulations. Chapter 16 is a water quality policy for managing toxic pollutants. It sets forth the guidelines for development of criteria for toxic substances, and lists the water quality criteria and analytical methods and detection limits for toxic substances. Chapter 16 is directly referenced as a support policy document § 93.8a (relating to toxic substances).

The revisions to Chapter 16 will streamline and clarify requirements, update the policy to be consistent with Federal requirements and preserve Pennsylvania-specific requirements to serve the citizens. This statement of policy may affect persons who discharge wastewater into surface waters of this Commonwealth, or otherwise conduct activities, which may impact the waters.

The Department's Water Resources Advisory Committee (WRAC), provided input on the proposed statement of policy at its November 13, 2002, and September 10, 2003, meetings. The proposal was published at 33 Pa.B. 5190 (October 18, 2003) with provision for a 60-day public comment period that closed on December 17, 2003. Comments were received from six commentators as a result of the public comment period and the public hearings. The Department considered all of the public comments received on its proposal in preparing for this statement of policy. The draft statement of policy was discussed with WRAC on July 14, 2004. The valuable input from the public and the collective knowledge and experience drawn from advisory committees and others on this proposal has been utilized to develop a policy which carefully balances the needs of citizens and the regulated community in assuring the protection of this Commonwealth's waters. The comments received on the proposed statement of policy are summarized in Section E.

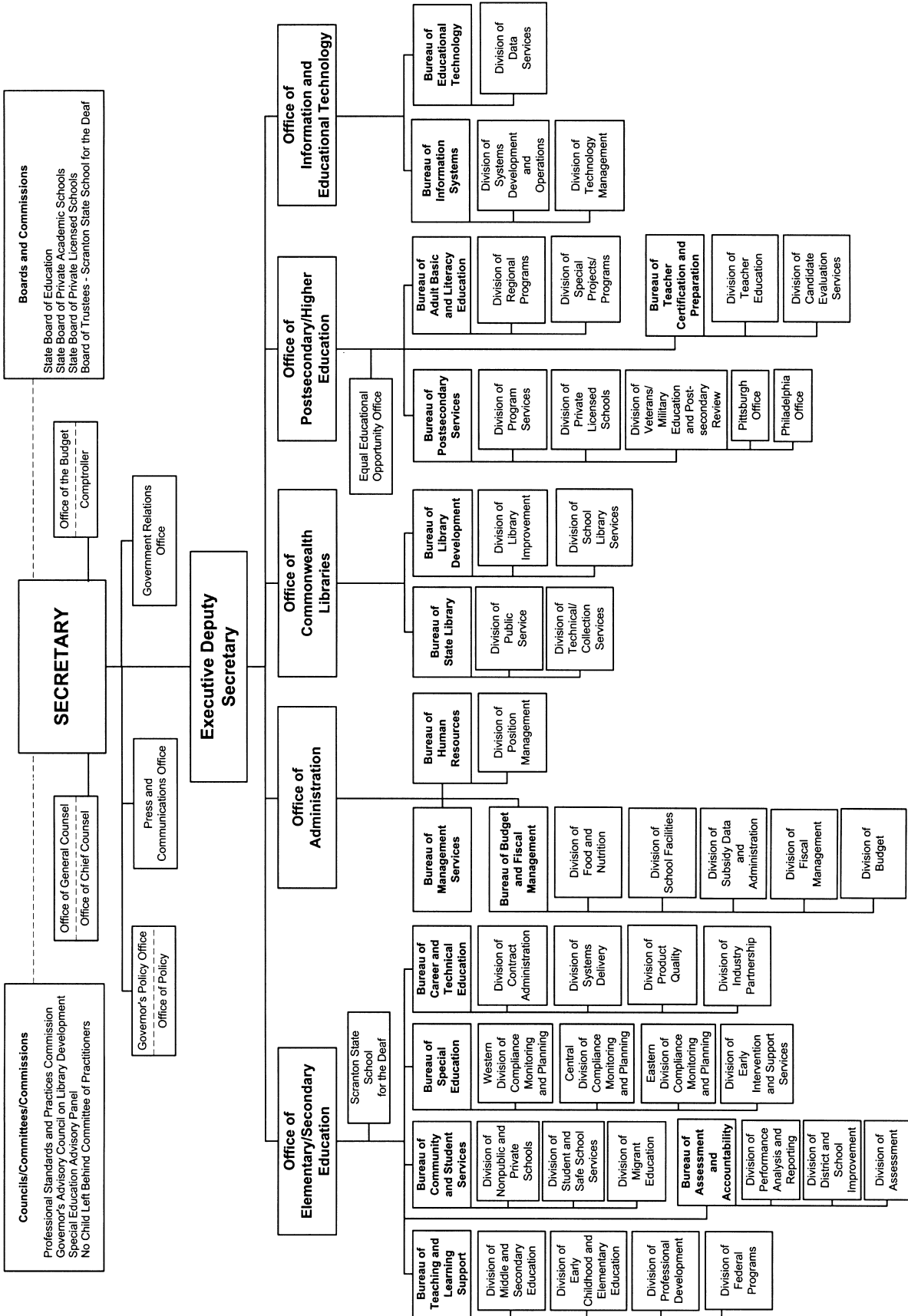
E. Summary of Comments and Responses on the Proposed Amendments

No changes were made to the proposal based on the comments received.

§ 16.32. (relating to threshold level toxic effects)

A comment stated that the Department should adopt the Environmental Protection Agency's (EPA) new fish consumption estimates in calculating its toxics criteria.

DEPARTMENT OF EDUCATION



The Department has not yet developed site-specific data and is considering the most appropriate fish consumption rate for use in updating the criteria at a future time.

§ 16.102. *General, Appendix A, Table 1*

A comment requested that the Department reexamine the Chapter 16 toxics criteria for comparison to Safe Drinking Water Act maximum contaminant levels (MCLs). The Commonwealth's ambient water quality criteria are developed under the Federal Clean Water Act. Safe Drinking Water Act requirements are different. Nevertheless, many water quality criteria are more stringent than MCLs.

The EPA requested that the Commonwealth consider a new human health criterion for arsenic. The Department will consider adopting the MCL or water quality criterion for arsenic, after the MCL requirements are put into place and the ambient water quality criterion is recommended.

Although requested, the Department is not adopting the EPA's human health criterion for methylmercury because the EPA has not yet developed sufficient implementation guidance for a water quality criterion that is based on concentration in fish and shellfish tissue.

The request to adopt the criteria continuous concentration (CCC) for aluminum did not result in any changes to

this section. The Department has no new information to support the CCC for aluminum.

The comment on the application of the CCC for mercury did not result in any changes. The Commonwealth adopted the EPA's 304(a) recommended aquatic life criterion for mercury based on the 1995 update of the Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water (EPA-820-B-96-001, September 1996) and the EPA has not provided scientific rationale for a change.

The Department has prepared a Comment and Response document for the proposed amendments. Copies are available from the Division of Water Quality Assessment and Standards at the address in Section B.

KATHLEEN A. MCGINTY,
Secretary

(Editor's Note: The regulations of the Department, 25 Pa. Code, are amended by amending a statement of policy in §§ 16.24, 16.61, 16.101 and 16.102, Appendix A Table 1 and by establishing Tables 2A and 2B from existing text, with ellipses referring to the existing text.)

Fiscal Note: 7-511. No fiscal impact; (8) recommends adoption.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart A. PRELIMINARY PROVISIONS

ARTICLE II. STATEMENTS OF POLICY

CHAPTER 16. WATER QUALITY TOXICS MANAGEMENT STRATEGY—STATEMENT OF POLICY

Subchapter A. GUIDELINES FOR DEVELOPMENT OF CRITERIA FOR TOXIC SUBSTANCES AND WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

GUIDELINES FOR DEVELOPMENT OF AQUATIC LIFE CRITERIA

§ 16.24. Metals criteria.

(a) The criteria are established to control the toxic portion of a substance in the water column. Depending upon available data, aquatic life criteria for metals are expressed as either dissolved or total recoverable. As information develops, the chemical identifiers for the toxic portion may be added, changed or refined. The criteria form one of the bases for water quality-based effluent limitations, which are expressed as total recoverable metal.

(b) Dissolved criteria are indicated in Appendix A, Table 1 with "*", and have been developed by applying the most current EPA conversion factors to the total recoverable criteria. The EPA factors are listed in the following Conversion Factors Table.

Conversion Factors Table

	<i>Chronic</i>	<i>Acute</i>	<i>Source</i>
Arsenic	1.000 (As3+)	1.000 (As3+)	1,2
Cadmium	1.101672 - (ln[H] × 0.041838)	1.136672 - (ln[H] × 0.041838)	2
Chromium VI	0.962	0.982	1,2
Copper	0.960	0.960	1,2
Lead*		1.46203 - (ln[H] × 0.041838)	
Mercury	0.85	0.85	1,2
Nickel	0.997	0.998	1,2
Selenium	0.922	0.922	1
Silver	NA	0.85	2
Zinc	0.986	0.978	1,2

*Conversion factor is for both acute and chronic criteria.

Source 1—Final Water Quality Guidance for the Great Lakes System (60 FR 15366, March 23, 1995)

2—Establishment of Numeric Criteria for Priority Pollutants; Revision of Metals Criteria-Interim Final Rule (60 FR 22229, May 4, 1995)

(c) Chemical translators are used to convert dissolved criteria into effluent limitations which are required by Federal regulations to be expressed as total recoverable metal. The default chemical translator used by the Department is the reciprocal of the conversion factor (listed in the Conversion Factors Table) that was used to determine the dissolved criterion.

(d) NPDES dischargers may request alternate effluent limitations by using site-specific water quality characteristics. This is accomplished by performing a site-specific chemical translator study for a dissolved criterion. A water effect ratio (WER) study may also be conducted, based on either total recoverable or dissolved criteria, depending on the form of the criterion.

(e) A WER is a factor that expresses the difference between the measures of the toxicity of a substance in laboratory water and the toxicity in site water. The WER provides a mechanism to account for that portion of a metal which is toxic under certain physical, chemical or biological conditions. At this time, WERs are applicable only to certain metals, which are listed by the EPA in "Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994), as amended and updated. Subject to Departmental approval of the testing and its results, the Department will use the WER to establish an alternate site-specific criterion.

(f) Chemical translator studies must be conducted in accordance with the EPA's interim final document, "The Metals Translator: A Guidance for calculating a total recoverable permit limit from a dissolved criterion" (June 1996), as amended and updated.

(g) Final reports on the studies shall be submitted to the Department within 60 days of completion. Upon approval of the study results, the Department will use the chemical translator or WER, or both, to determine revised effluent limitations.

GREAT LAKES SYSTEM

§ 16.61. Special provisions for the Great Lakes System.

(a) *Definitions.* The following words and terms, when used in this section, have the following meanings, unless the context clearly indicates otherwise:

BAF—Bioaccumulation Factor—The ratio in liters per kilogram of a substance's concentration in tissues of an aquatic organism to its concentration in the ambient water, when both the organism and its food are exposed and the ratio does not change substantially over time.

BCC—Bioaccumulative Chemical of Concern—A chemical that has the potential to cause adverse effects which, upon entering the surface waters, by itself or its toxic transformation product, accumulates in aquatic organisms by a human health BAF greater than 1,000, after

considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation, under the methodology in 40 CFR Part 132 Appendix B (relating to Great Lakes Water Quality Initiative). Current BCCs are listed in 40 CFR 132.6, Table 6 (relating to pollutants of initial focus in the Great Lakes Water Quality Initiative).

Great Lakes System—The streams, rivers, lakes and other bodies of surface water within the drainage basin of the Great Lakes in this Commonwealth.

(b) *Water quality criteria for the Great Lakes System.*

(1) *Aquatic life criteria.* Aquatic life criteria for toxic substances in the Great Lakes System will be developed under the methodologies in § 16.22 (relating to criteria development) to the extent they are consistent with 40 CFR Part 132, Appendix A (relating to Great Lakes Water Quality Initiative methodologies for developments of aquatic life values). If there are insufficient data to develop aquatic life criteria for a toxic substance identified in a discharge into these waters, the Department will develop or require a discharger to develop, subject to Department approval, protective aquatic life values using the methodologies in 40 CFR Part 132, Appendix A and guidance issued by the Department. For non-BCCs, WETT may be used in lieu of Tier II values to determine aquatic toxicity.

(2) *Human health criteria.* Human health criteria for the Great Lakes System will be developed using the methods in §§ 16.32 and 16.33 (relating to threshold level toxic effects; and nonthreshold effects (cancer)), except that fish consumption is 15 grams per day. If there are insufficient data to develop human health threshold criteria for a toxic substance identified in a discharge into these waters, the Department will develop, or require the discharger to develop, subject to Department approval, protective human health values using the methodologies in 40 CFR Part 132, Appendix C, Section III, as it relates to Tier II values, and guidance issued by the Department.

(3) *BAFs.* Human health criteria for BCCs will be developed under the methodologies in 40 CFR Part 132, Appendix B relating to bioaccumulation factors, and will be listed by the EPA in the GLI Clearinghouse. Because substances other than BCCs (Non-BCCs) bioaccumulate to a much lesser degree, BAFs for Non-BCCs are similar to bioconcentration factors (BCFs). Field measured BAFs, or BAFs equal to BCFs will be used for the development of non-BCC criteria in the Great Lakes.

(4) *Criteria for Great Lakes System.* Human health and aquatic life criteria for the Great Lakes System are contained in the following table. For any pollutant not listed in the table, criteria to protect existing and designated uses will be developed by the Department as needed in accordance with this section.

GREAT LAKES AQUATIC LIFE AND HUMAN HEALTH CRITERIA

Fish and Aquatic Life Criteria

<i>PP NO</i>	<i>Chemical Name</i>	<i>CAS Number</i>	<i>Criteria Continuous Concentrations (ug/L)</i>	<i>Criteria Maximum Concentration (ug/L)</i>	<i>Human Health Criteria (ug/L)</i>
4M	Cadmium	07440439	*{1.101672-(ln[H]×0.041838)}× Exp(0.7852×ln[H]-2.715) (ex:@H=100, CCC=2.24)	*{1.136672-(ln[H]×0.041838)}× Exp(1.128×ln[H]-3.6867) (ex:@H=100, CMC=4.26)	N/A

PP NO	Chemical Name	CAS Number	Criteria Continuous Concentrations (ug/L)					Criteria Maximum Concentration (ug/L)	Human Health Criteria (ug/L)	
			*	*	*	*	*			
4P	gamma-BHC (Lindane)	00058899	N/A					0.95	0.47	H
	PCBs		N/A					N/A	0.00000039	CRL

(6) *Additional requirements.* Additivity of toxic effects for chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans will be accounted for under 40 CFR Part 132, Appendix F, Procedure 4 (relating to Great Lakes Water Quality Initiative implementation procedures).

Subchapter B. ANALYTICAL METHODS AND DETECTION LIMITS FOR TOXIC SUBSTANCES GENERAL PROVISIONS

§ 16.101. Introduction.

(a) This subchapter contains information on the final EPA Guidelines establishing test procedures for the analysis of priority pollutants under the Federal Water Pollution Control Act, known as the Clean Water Act (33 U.S.C.A. § 1251—1376). The procedures of analysis for the organic compounds are contained in 40 CFR 136 (relating to guidelines establishing test procedures). Procedures for inorganic substances are cited in this source, but details are found elsewhere. Analytical procedures for free cyanide are approved by the Department and are contained in Appendix A, Table 2A.

(b) This information provides the expected levels of analytical detectability for toxic priority pollutants. It is intended as a basis for review of NPDES application forms, and for establishing appropriate detection limits and methods of analysis to accompany final effluent limitations in permits.

(c) The Department recommends that clean techniques be employed as appropriate in collecting, handling, storing, preparing and analyzing samples. Clean techniques refer to methods that reduce contamination and enable the accurate and precise measurement of substances, and to related issues concerning detection limits, quality control and quality assurance. Clean techniques are those requirements or practices for sample collection and handling necessary to produce reliable analytical data in the microgram per liter (μl) or part per billion range. The use of clean techniques reduces the incidence of overstatement of environmental concentrations of trace substances.

§ 16.102. Approved EPA Analytical Methods and Detection Limits.

(a) Appendix A, Tables 2A and 2B contain the following data elements and is to be used as follows:

(1) Parameter + (CAS) is the chemical name preceded by an alphanumeric code for the priority pollutants. Other inorganics (metals) listed on the application form have also been included. The Chemical Abstracts Service (CAS) number, a unique chemical identifier, is also listed for completeness of identification. The CAS number should always be verified to ensure proper identification, particularly with chemicals with ambiguous or unfamiliar names, or both.

(2) Method number + (description) includes the approved EPA procedures by identifying number and an abbreviated description of each. The methods are detailed in one or more of the following sources:

(i) *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-020, Revised March 1984.

(ii) 40 CFR Part 136 (relating to guidelines establishing test procedures). The EPA provides a list of still other sources for these methods in 40 CFR Part 136. Methods that were not developed by the EPA, that is, have no EPA identifying method number, but are approved by the EPA for use in NPDES related analyses are marked with an asterisk (*) in Appendix A, Tables 2A and 2B.

(iii) *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, APHA-AWWA-WEF, 1998.

(iv) *Hach Handbook of Wastewater Analysis*, Hach Chemical Company, 1979.

(v) *Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029*. Applied Research Laboratories, Inc., 1986-Revised 1991, Fison Instruments, Inc.

(vi) *ASTM Annual Book of Standards, Section 11, Water*. American Society for Testing and Materials, 1999.

(3) MDL is the method detection limit for each chemical for each method. The MDL is defined as the minimum concentration that can be measured and reported with 99% confidence that the value is above zero—that is, something is really there. The MDL concentrations listed were obtained using reagent water. Similar results were achieved using representative wastewaters. The MDL achieved in a given analysis will vary depending on instrument sensitivity and matrix effects.

(i) *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-020, Revised March 1984.

(ii) 40 CFR Part 136 (relating to guidelines establishing test procedures). The EPA provides a list of still other sources for these methods in 40 CFR Part 136. Methods that were not developed by the EPA, that is, have no EPA identifying method number, but are approved by the EPA for use in NPDES related analyses are marked with an asterisk (*) in Appendix A, Table 2.

(iii) *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, APHA-AWWA-JWPCF, 1998.

(iv) The primary source for detection limits in Appendix A, Tables 2A and 2B is EPA MDL studies. However, when the EPA has not performed an MDL study or reported the detection limit, other sources—particularly, Standard Methods—are consulted. When there is no literature on detection limit, the Department's Bureau of Laboratories may be asked to determine the detection limit based on an MDL study.

(4) Permittees will be required to meet the detection limits listed in Appendix A, Tables 2A and 2B. If the detection limit is not listed, a permittee shall develop a detection limit using an MDL study.

(5) When permittees cannot meet a listed detection limit, they may be granted case-specific MDLs if they submit complete documentation demonstrating a matrix effect in their particular effluent. The permittees shall follow the procedure for determining MDLs published as Appendix B of 40 CFR Part 136 (relating to guidelines establishing test procedures). The Bureau of Laboratories will evaluate the data and advise the regional office of their decision.

(b) Appendix A, Table 3 gives a more detailed description of the EPA 600-series of analytical procedures for organic pollutants. Further detail is contained in 40 CFR Part 136.

APPENDIX A

TABLE 1

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

Fish and Aquatic Life Criteria

PP NO	Chemical Name	CAS Number	Criteria Continuous Concentration (ug/L)					Criteria Maximum Concentration (ug/L)	Human Health Criteria (ug/L)
			*	*	*	*	*		
4M	Cadmium	07440439	*{1.101672-(ln[H]×0.041838)}×Exp(0.7409 × ln[H]-4.719) (ex:@H=100, CCC=0.25)					*{1.136672-(ln[H]×0.041838)}×Exp(1.0166 × ln[H]-3.924) (ex:@H=100, CMC=2.01)	N/A
7P	4,4-DDT	00050293	0.001					1.1	0.00059 CRL

APPENDIX A

TABLE 1

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

Acronyms and Footnotes to Table 1

* * * * *

H—Threshold effect human health criterion; incorporates additional uncertainty factor for some Group C carcinogens.

CRL—Cancer risk level at 1×10^{-6}

lnH—Natural Logarithm of the Hardness of stream as mg/l CaCO₃

N/A—Insufficient data to develop criterion.

* * * * *

TABLE 2A

APPROVED EPA ANALYTICAL METHODS AND DETECTION LIMITS: INORGANICS

Parameter (CAS)	Method Number (Description) *Source	Detection Limit (µg/l)
— ALUMINUM (07429905)	202.1 (AA, flame)	100
	202.2 (AA, furnace)	3
	200.7 (ICP)	45
	3500 Al B* ¹ (Colorimetric)	6
	D4190-94* ⁴ (DCP)	NA
1M ANTIMONY (07440360)	204.1 (AA, flame)	200
	204.2 (AA, furnace)	3
	200.7 (ICP)	32

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<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (µg/l)</i>
3M BERYLLIUM (07440417)	210.1 (AA, flame)	5
	210.2 (AA, furnace)	0.2
	200.7 (ICP)	0.3
	3500-Be D* ¹ (Colorimetric)	5
	D4190-94* ⁴ (DCP)	NA
— BORON (07440428)	212.3 (Colorimetric)	0.2
	200.7 (ICP)	5
	D4190-94* ⁴ (DCP)	NA
4M CADMIUM (07440439)	213.1 (AA, flame)	5
	213.2 (AA, furnace)	0.1
	200.7 (ICP)	4
	3500-Cd D* ¹ (Colorimetric)	0.5
	D3557-95(C)* ⁴ (Voltametry)	NA
	D4190-94* ⁴ (DCP)	NA
5M CHROMIUM TOTAL (07440473)	218.1 (AA, flame)	50
	218.2 (AA, furnace)	1
	218.3 (AA, extraction)	1
	200.7 (ICP)	7
	D4190-94* ⁴ (DCP)	NA
	3500-Cr B* ¹ (Colorimetric)	NA
5M CHROMIUM VI (07440473)	218.4 (AA extraction)	10
	3500-Cr B* ¹ (Colorimetric)	NA
— COBALT (07440484)	219.1 (AA, flame)	50
	219.2 (AA, furnace)	1
	200.7 (ICP)	7
	D4190-94* ⁴ (DCP)	NA
6M COPPER (07440508)	220.1 (AA, flame)	20
	220.2 (AA, furnace)	1
	200.7 (ICP)	6
	3500-Cu B* ¹ (Colorimetric)	3
	3500-Cu C* ¹ (Colorimetric)	20
	D4190-94* ⁴ (DCP)	NA
— IRON (07439921)	236.1 (AA, flame)	30
	236.2 (AA, furnace)	1
	200.7 (ICP)	7
	3500-Fe B* ¹ (Colorimetric)	10
	D4190-94* ⁴ (DCP)	NA
7M LEAD (07439921)	239.1 (AA, flame)	100
	239.2 (AA, furnace)	1
	200.7 (ICP)	42
	3500-Pb B* ¹ (Colorimetric)	NA
	D3559-96(C)* ⁴ (Voltametry)	NA
	D4190-94* ⁴ (DCP)	NA
— MAGNESIUM (07439954)	242.1 (AA, flame)	1
	200.7 (ICP)	30
	3500-Mg D* ¹ (Gravimetric)	NA
	—* ³ (DCP)	NA
— MANGANESE (07439965)	243.1 (AA, flame)	10
	243.2 (AA, furnace)	0.2
	200.7 (ICP)	2
	3500-Mn B* ¹ (Colorimetric)	6
	8034-* ² (Colorimetric)	NA
	D4190-94* ⁴ (DCP)	NA

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<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (µg/l)</i>
8M	MERCURY (07439976)	245.1 (Cold vapor, Man)
		245.2 (Cold vapor, Auto)
		1631 (Cold vapor, Atomic Fluor.)
	* * * * *	
9M	NICKEL (07440020)	249.1 (AA, flame)
		249.2 (AA, furnace)
		200.7 (ICP)
		3500-Ni D* ¹ (Colorimetric)
		D4190-94* ⁴ (DCP)
10M	SELENIUM (07782492)	270.2 (AA, furnace)
		200.7 (ICP)
		3114 B* ¹ (AA, gaseous hydride)
	* * * * *	
13M	ZINC (07440666)	200.7 (ICP)
		3500-Zn E* ¹ (Colorimetric)
		3500-Zn B* ¹ (Colorimetric)
		D4190-94* ⁴ (DCP)
14M	CYANIDE, TOTAL (00057125)	4500-CN D* ¹ (Titrimetric)
		335.2 (Spectrophometric)
		335.3 (Color., Auto)
**14M	CYANIDE, FREE (00057125)	—(DEP Free CN method, Auto)
		Not EPA approved
		4500-CN I* ¹ Not EPA approved
		335.1 (Amenable to Chlor.)
	* * * * *	

* Not an EPA developed method, but approved by EPA

Source is:

¹—Standard Methods for the Examination of Water and Wastewater, 20th Edition. APHA-AWWA-WEF, 1998. The approved methods may also be found in Standard Methods for the Examination of Water and Wastewater, 18th or 19th Editions, but with different identifying numbers. For Selenium, the method number quoted is from the 19th Edition.

²—Hach Handbook of Wastewater Analysis. 1979.

³—Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029. Applied Research Laboratories, Inc., 1986—Revised 1991.

⁴—ASTM Annual Book of Standards, Section 11, Water. American Society for Testing and Materials, 1999.

** EPA currently measures “total cyanide” to satisfy cyanide limits and has not yet approved analytical methods for “free cyanide.” Free cyanide is a DEP required analysis, and either of the three listed methods are acceptable for its determination.

NOTE: Metal samples are to be unfiltered and predigested for measurement of the total recoverable (not dissolved) fraction. Samples for dissolved measurement are to be field filtered.

TABLE 2B

APPROVED EPA ANALYTICAL METHODS AND DETECTION LIMITS: ORGANICS

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
1A	2-CHLOROPHENOL (00095578)	604—GC/FID
		604—GC/ECD
		625—GC/MS
		1625B—GC/MS(isotope)
2A	2,4-DICHLOROPHENOL (00120832)	604—GC/FID
		604—GC/ECD
		625—GC/MS
		1625B—GC/MS(isotope)
3A	2,4-DIMETHYLPHENOL (00105679)	604—GC/FID
		604—GC/ECD
		625—GC/MS
		1625B—GC/MS(isotope)

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<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
4A 4,6-DINITRO-o-CRESOL (00534521)	604—GC/FID	16.0
	604—GC/ECD	NA
	625—GC/MS	24
	1625B—GC/MS(isotope)	20
5A 2,4-DINITROPHENOL (00051285)	604—GC/FID	13.0
	604—GC/ECD	NA
	625—GC/MS	42
	1625B—GC/MS(isotope)	50
6A 2-NITROPHENOL (00088755)	604—GC/FID	0.45
	604—GC/ECD	0.77
	625—GC/MS	3.6
	1625B—GC/MS(isotope)	20
7A 4-NITROPHENOL (00100027)	604—GC/FID	2.8
	604—GC/ECD	0.70
	625—GC/MS	2.4
	1625B—GC/MS(isotope)	50
8A p-CHLORO-m-CRESOL (00059507)	604—GC/FID	0.36
	604—GC/ECD	1.8
	625—GC/MS	3.0
	1625B—GC/MS(isotope)	10
9A PENTACHLOROPHENOL (00087865)	604—GC/FID	7.4
	604—GC/ECD	0.59
	625—GC/MS	3.6
	1625B—GC/MS(isotope)	50
10A PHENOL (00108952)	604—GC/FID	0.14
	604—GC/ECD	2.2
	625—GC/MS	1.5
	1625B—GC/MS(isotope)	10
11A 2,4,6-TRICHLOROPHENOL (00088062)	604—GC/FID	0.64
	604—GC/ECD	0.58
	625—GC/MS	2.7
	1625B—GC/MS(isotope)	10
1V ACROLEIN ⁽¹⁾ (00107028)	603—GC/FID	0.7
	624—GC/MS	NA
	1624B—GC/MS(isotope)	50
2V ACRYLONITRILE ⁽¹⁾ (00107131)	603—GC/FID	0.5
	624—GC/MS	NA
	1624B—GC/MS(isotope)	50
3V BENZENE (00071432)	602—GC/PID	0.20
	624—GC/MS	4.4
	1624B—GC/MS(isotope)	10
5V BROMOFORM (00075252)	601—GC/Hal.	0.20
	624—GC/MS	4.7
	1624B—GC/MS(isotope)	10
6V CARBON TETRACHLORIDE (00056235)	601—GC/Hal.	0.12
	624—GC/MS	2.8
	1624B—GC/MS(isotope)	10
7V CHLOROBENZENE (00108907)	601—GC/Hal.	0.25
	602—GC/PID	0.20
	624—GC/MS	6.0
	1624B—GC/MS(isotope)	10
8V CHLORODIBROMOMETHANE (00124481)	601—GC/Hal.	0.09
	624—GC/MS	3.1
	1624B—GC/MS(isotope)	10
9V CHLOROETHANE (00075003)	601—GC/Hal.	0.52
	624—GC/MS	NA
	1624B—GC/MS(isotope)	50
10V 2-CHLOROETHYL VINYL ETHER (00110758)	601—GC/Hal.	0.13
	624—GC/MS	NA
	1624B—GC/MS(isotope)	10

STATEMENTS OF POLICY

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
11V	CHLOROFORM (00067663)	601—GC/Hal. 0.05 624—GC/MS 1.6 1624B—GC/MS(isotope) 10
12V	DICHLOROBROMOETHANE (00075274)	601—GC/Hal. 0.10 624—GC/MS 2.2 1624B—GC/MS(isotope) 10
14V	1,1-DICHLOROETHANE (00075343)	601—GC/Hal. 0.07 624—GC/MS 4.7 1624B—GC/MS(isotope) 10
15V	1,2-DICHLOROETHANE (00107062)	601—GC/Hal. 0.03 624—GC/MS 2.8 1624B—GC/MS(isotope) 10
16V	1,1-DICHLOROETHYLENE (00075354)	601—GC/Hal. 0.13 624—GC/MS 2.8 1624B—GC/MS(isotope) 10
17V	1,2-DICHLOROPROPANE (00078875)	601—GC/Hal. 0.04 624—GC/MS 6.0 1624B—GC/MS(isotope) 10
18V	1,3-DICHLOROPROPYLENE (00542756)	601—GC/Hal. 0.34-cis 624—GC/MS 0.20-trans 1624B—GC/MS(isotope) 5.0-cis 10 trans
19V	ETHYLBENZENE (00100414)	602—GC/PID 0.20 624—GC/MS 7.2 1624B—GC/MS(isotope) 10
20V	METHYL BROMIDE (00074839)	601—GC/Hal. 1.18 624—GC/MS NA 1624B—GC/MS(isotope) 50
21V	METHYL CHLORIDE (00074873)	601—GC/Hal. 0.08 624—GC/MS NA 1624B—GC/MS(isotope) 50
22V	METHYLENE CHLORIDE (00075092)	601—GC/Hal. 0.25 624—GC/MS 2.8 1624B—GC/MS(isotope) 10
23V	1,1,2,2-TETRACHLOROETHANE (00079345)	601—GC/Hal. 0.03 624—GC/MS 6.9 1624B—GC/MS(isotope) 10
24V	TETRACHLOROETHYLENE (00127184)	601—GC/Hal. 0.03 624—GC/MS 4.1 1624B—GC/MS(isotope) 10
25V	TOLUENE (00108883)	602—GC/PID 0.20 624—GC/MS 6.0 1624B—GC/MS(isotope) 10
26V	1,2-trans-DICHLOROETHYLENE (00156605)	601—GC/Hal. 0.10 624—GC/MS 1.6 1624B—GC/MS(isotope) 10
27V	1,1,1-TRICHLOROETHANE (00071556)	601—GC/Hal. 0.03 624—GC/MS 3.8 1624B—GC/MS(isotope) 10
28V	1,1,2-TRICHLOROETHANE (00079005)	601—GC/Hal. 0.02 624—GC/MS 5.0 1624B—GC/MS(isotope) 10
29V	TRICHLOROETHYLENE (00079016)	601—GC/Hal. 0.12 624—GC/MS 1.9 1624B—GC/MS(isotope) 10
31V	VINYL CHLORIDE (00075014)	601—GC/Hal 0.18 624—GC/MS NA 1624B—GC/MS(isotope) 10

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<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
1B ACENAPHTHENE (00083329)	610—GC/FID	NA
	610—HPLC	1.8
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
2B ACENAPHTHYLENE (00208968)	610—GC/FID	NA
	610—HPLC	2.3
	625—GC/MS	3.5
	1625B—GC/MS(isotope)	10
3B ANTHRACENE (00120127)	610—GC/FID	NA
	610—HPLC	0.66
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
4B BENZIDINE ⁽²⁾ (00092875)	605—HPLC	0.08
	625—GC/MS	44
	1625B—GC/MS(isotope)	50
5B BENZO(a)ANTHRACENE (00056553)	610—GC/FID	NA
	610—HPLC	0.013
	625—GC/MS	7.8
	1625B—GC/MS(isotope)	10
6B BENZO(a)PYRENE (00050328)	610—GC/FID	NA
	610—HPLC	0.023
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	10
7B 3,4-BENZOFLUORANTHENE (00205992)	610—GC/FID	NA
	610—HPLC	0.018
	625—GC/MS	4.8
	1625B—GC/MS(isotope)	10
8B BENZO(ghi)PERYLENE (00191242)	610—GC/FID	NA
	610—HPLC	0.076
	625—GC/MS	4.1
	1625B—GC/MS(isotope)	20
9B BENZO(k)FLUORANTHENE (00207089)	610—GC/FID	NA
	625—GC/MS	0.017
	1625B—GC/MS(isotope)	2.5
		10
10B BIS(2-CHLOROETHOXY) METHANE (00111911)	611—GC/Hal.	0.5
	625—GC/MS	5.3
	1625B—GC/MS(isotope)	10
11B BIS(2-CHLOROETHYL) ETHER (00111444)	611—GC/Hal.	0.3
	625—GC/MS	5.7
	1625B—GC/MS(isotope)	10
12B BIS(2-CHLOROISOPROPYL) ETHER (39638329)	611—GC/Hal.	0.8
	625—GC/MS	5.7
	1625B—GC/MS(isotope)	10
13B BIS(2-ETHYLHEXYL) PHTHALATE (00117817)	606—GC/ECD	2.0
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	10
14B 4-BROMOPHENYL PHENYL ETHER (00101553)	611—GC/Hal.	2.3
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
15B BUTYLBENZYL PHTHALATE (00085687)	606—GC/ECD	0.34
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	10
16B 2-CHLORONAPHTHALENE (00091587)	612—GC/ECD	0.94
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
17B 4-CHLOROPHENYL PHENYL ETHER (07005723)	611—GC/Hal.	3.9
	625—GC/MS	4.2
	1625B—GC/MS(isotope)	10

STATEMENTS OF POLICY

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
18B CHRYSENE (00218019)	610—GC/FID	NA
	610—HPLC	0.15
	625—GC/MS	5.3
	1625B—GC/MS(isotope)	10
19B DIBENZO(a,h) ANTHRACENE (00053703)	610—GC/FID	NA
	610—HPLC	0.030
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	20
20B 1,2-DICHLOROBENZENE (00095501)	601—GC/Hal.	0.15
	602—GC/PID	0.40
	612—GC/ECD	1.14
	624—GC/MS	NA
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
21B 1,3-DICHLOROBENZENE (00541731)	601—GC/Hal.	0.32
	602—GC/PID	0.40
	612—GC/ECD	1.19
	624—GC/MS	NA
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
22B 1,4-DICHLOROBENZENE (00106467)	601—GC/Hal.	0.24
	602—GC/PID	0.30
	612—GC/ECD	1.34
	624—GC/MS	NA
	625—GC/MS	4.4
	1625B—GC/MS(isotope)	10
23B 3,3'-DICHLOROBENZIDINE ⁽²⁾ (00091941)	605—HPLC	0.13
	625—GC/MS	16.5
	1625B—GC/MS(isotope)	50
24B DIETHYL PHTHALATE (00084662)	606—GC/ECD	0.49
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
25B DIMETHYL PHTHALATE (00131113)	606—GC/ECD	0.29
	625—GC/MS	1.6
	1625B—GC/MS(isotope)	10
26B DI-N-BUTYL PHTHALATE (00084742)	606—GC/ECD	0.36
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	10
27B 2,4-DINITROTOLUENE (00121142)	609—GC/ECD	0.02
	625—GC/MS	5.7
	1625B—GC/MS(isotope)	10
28B 2,6-DINITROTOLUENE (00606202)	609—GC/ECD	0.01
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
29B DI-N-OCTYL PHTHALATE (00117840)	606—GC/ECD	3.0
	625—GC/MS	2.5
	1625B—GC/MS(isotope)	10
30B 1,2-DIPHENYLHYDRAZINE (00122667)	625—GC/MS	10
	1625B—GC/MS(isotope)	20
31B FLUORANTHENE (00206440)	610—GC/FID	NA
	610—HPLC	0.21
	625—GC/MS	2.2
	1625B—GC/MS(isotope)	10
32B FLUORENE (00086737)	610—GC/FID	NA
	610—HPLC	0.21
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10
33B HEXACHLOROBENZENE (00118741)	612—GC/ECD	0.05
	625—GC/MS	1.9
	1625B—GC/MS(isotope)	10

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (µg/l)</i>
34B	HEXACHLOROBUTADIENE (00087683)	612—GC/ECD 0.34
		625—GC/MS 0.9
		1625B—GC/MS(isotope) 10
35B	HEXACHLOROCYCLOPENTA- DIENE ⁽³⁾ (00077474)	612—GC/ECD 0.40
		625—GC/MS NA
		1625B—GC/MS(isotope) 10
36B	HEXACHLOROETHANE (00067721)	612—GC/ECD 0.03
		625—GC/MS 1.6
		1625B—GC/MS(isotope) 10
37B	INDEN0(1,2,3-cd)PYRENE (00193395)	610—GC/FID NA
		610—HPLC 0.043
		625—GC/MS 3.7
		1625B—GC/MS(isotope) 20
38B	ISOPHORONE (00078591)	609—GC/FID 5.7
		609—GC/ECD 15.7
		625—GC/MS 2.2
		1625B—GC/MS(isotope) 10
39B	NAPHTHALENE (00091203)	610—GC/FID NA
		610—HPLC 1.8
		625—GC/MS 1.6
		1625B—GC/MS(isotope) 10
40B	NITROBENZENE (00098953)	609—GC/FID 3.6
		609—GC/ECD 13.7
		625—GC/MS 1.9
		1625B—GC/MS(isotope) 10
41B	N-NITROSODIMETHYLAMINE ⁽⁴⁾ (00062759)	607—GC/N-PD 0.15
		625—GC/MS NA
		1625B—GC/MS(isotope) 50
42B	N-NITROSODI-N-PROPYLAMINE (00621647)	607—GC/ECD 0.46
		625—GC/MS NA
		1625B—GC/MS(isotope) 20
43B	N-NITROSODI-PHENYLAMINE ⁽⁴⁾ (00086306)	607—GC/N-PD 0.81
		625—GC/MS 1.9
		1625B—GC/MS(isotope) 20
44B	PHENANTHRENE (00085018)	610—GC/FID NA
		610—HPLC 0.64
		625—GC/MS 5.4
		1625B—GC/MS(isotope) 10
45B	PYRENE (00129000)	610—GC/FID NA
		610—HPLC 0.27
		625—GC/MS 1.9
		1625B—GC/MS(isotope) 10
46B	1,2,4-TRICHLORO-BENZENE (00120821)	612—GC/ECD 0.05
		625—GC/MS 1.9
		1625B—GC/MS(isotope) 10

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(2)—EPA says “When Benzidine is known to be present, screen with EPA 605.” However, because HPLC is a generally unavailable procedure at this time, GC-MS enhanced to achieve a detection level more sensitive than the EPA’s MDL can be used. Permit monitoring requirements for these two chemicals can also be set using EPA 625 as an acceptable analytical procedure.

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[Pa.B. Doc. No. 05-284. Filed for public inspection February 11, 2005, 9:00 a.m.]