

RULES AND REGULATIONS

Title 25—ENVIRONMENTAL PROTECTION

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CH. 93]

Triennial Review of Water Quality Standards

The Environmental Quality Board (Board) is amending Chapter 93 (relating to water quality standards) as set forth in Annex A. This order was adopted by the Board at its meeting of January 20, 2009.

A. *Effective Date*

These amendments will be effective upon publication in the *Pennsylvania Bulletin* as final-form rulemaking.

B. *Contact Persons*

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C. *Statutory Authority*

The final-form rulemaking is being made under the authority of 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 in 40 CFR 131.32 (relating to Pennsylvania) set forth certain requirements for portions of the Commonwealth's antidegradation program and the Federal regulation in 40 CFR 131.41 (relating to bacteriological criteria for those states not complying with Clean Water Act section 303(i)(1)(A)) sets forth bacteria criteria for coastal recreation waters in this Commonwealth.

D. *Background and Summary*

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 Commonwealth's water quality standards (WQS), which are codified in Chapter 93 and portions of Chapter 92 (relating to National Pollutant Discharge Elimination System Permitting, Monitoring and Compliance), are designed to implement sections 5 and 402 of The Clean Streams Law and section 303 of the Federal Clean Water Act. The WQS consist of the designated and existing uses of the surface waters of this Commonwealth, along with the specific numeric and narrative criteria necessary to

achieve and maintain those uses and an antidegradation policy. Thus, WQS are in-stream water quality goals that are implemented by imposing specific regulatory requirements, such as treatment requirements and effluent limitations, on individual sources of pollution. These revised amendments constitute the Commonwealth's current triennial review of its WQSs.

The triennial review amendments, originally approved by the Board at its meeting of September 16, 2008, were reviewed by the General Counsel, Secretary of the Budget and the Secretary of Planning and Policy, in accordance with the Governor's Executive Order dated February 6, 1996, and titled "Regulatory Review and Promulgation." Their review and approval of these amendments is evidence of the Commonwealth's "compelling interest" to protect human health even though the amendments may exceed Federal standards.

The Independent Regulatory Review Commission (IRRC), however, met on November 20, 2008, and disapproved that final-form rulemaking. IRRC's sole reason for disapproval of the final-form rulemaking focused on the addition of a water quality criterion for molybdenum (Mo), a toxic substance.

Under the Regulatory Review Act (71 P. S. §§ 745.1—745.12), an agency has three options to respond to a disapproval of its final-form rulemaking by IRRC. An agency may withdraw the amendment from further consideration, or an agency may decide to resubmit the amendment to IRRC with or without revisions. The Board decided to modify its triennial review rulemaking and to resubmit it to IRRC with revisions.

In response to IRRC's disapproval order, dated November 20, 2008, the Department asked the Board to reconsider its earlier approval of the triennial review rulemaking package and to remove the Mo water quality criterion at its January 20, 2009, meeting. At this meeting the Board amended its previous approval (dated September 16, 2008) by deleting the water quality criterion for Mo.

The Board deleted the water quality criterion for Mo to avoid further delay in final adoption of the triennial review final-form rulemaking. The final-form rulemaking contains many other needed revisions to the Commonwealth's water quality standards. Any further delay in final publication of these other needed changes is a problem because the Department is required by the Environmental Protection Agency (EPA) to complete its triennial review in a timely manner, and submission of a final triennial review to EPA is already beyond the 3-year due date. It is anticipated that removal of the Mo criterion from this final-form rulemaking will allow the amended regulation to be approved as a final-form rulemaking under the Regulatory Review Act because Mo was the only issue identified by IRRC in its disapproval order. The revised rulemaking otherwise remains as it was considered and approved by the Board on September 16, 2008.

In light of the continuing disagreement with IRRC concerning the need for and justification for a Statewide Mo criterion, the Department plans to return to the Board in the near future with a new proposed rulemaking to adopt a Statewide Mo water quality criterion. With this new proposed rulemaking, there will be an opportunity to seek additional scientific support from the public for the criterion development. Until a future rulemaking adopts

Mo as a Statewide criterion, the Department will continue to exercise its existing authority to develop Mo criteria for individual permits on a case-by-case basis.

Regulatory revisions in this triennial review final-form rulemaking include: updating the water quality criteria; removing the Statewide criterion for Mo; merging sections of Chapter 16 (relating to water quality toxics management strategy—statement of policy) into Chapter 93; adding a definition in § 93.1 to clarify the term “conventional treatment” for potable water supply (PWS) that is used in § 93.3 (relating to protected water uses), Table 1 and clarifying in the footnote to Table 3 in § 93.7 (relating to specific water quality criteria) that other sensitive “critical uses” may apply; and correcting and changing drainage lists and other typographic and grammatical errors.

The triennial review also requires that states reexamine water body segments that do not meet the fishable or swimmable uses specified in section 101(a)(2) of the Federal Clean Water Act (33 U.S.C.A. § 1252(a)(2)). The Department evaluated these two water bodies in this Commonwealth where the uses are not currently met: (1) the Harbor Basin and entrance channel to Outer Erie Harbor/Presque Isle Bay (Drainage List X, § 93.9x); and (2) several zones in the Delaware Estuary (Drainage Lists E and G, §§ 93.9e and 93.9g).

The swimmable use designation was deleted from the Harbor Basin and entrance channel demarcated by United States Coast Guard buoys and channel markers on Outer Erie Harbor/Presque Isle Bay because pleasure boating and commercial shipping traffic pose a serious safety hazard in this area. This decision was further supported by a Use Attainability (UAA) study conducted by the Department in 1985. Because the same conditions and hazards exist today, no change to the designated use for Outer Erie Harbor/Presque Isle Bay is proposed.

In April 1989, the Department cooperated with the Delaware River Basin Commission (DRBC), EPA and other DRBC signatory states on a comprehensive UAA study in the lower Delaware River and Delaware Estuary. This study resulted in appropriate recommendations relating to the swimmable use, which the DRBC included in water use classifications and water quality criteria for portions of the tidal Delaware River in May 1991. The appropriate DRBC standards were referenced in §§ 93.9e and 93.9g (relating to drainage list E; and drainage list G) in 1994. The primary water contact use remains excluded from the designated uses for river miles 108.4 to 81.8 because of continuing significant impacts from combined sewer overflows, and hazards associated with commercial shipping and navigation.

The Department provided extensive opportunities for the public to comment on this final-form rulemaking. The Department's Water Resources Advisory Committee (WRAC), provided input on the proposed rulemaking at its May 10, 2006, October 13, 2006, and May 9, 2007. In addition, the Department presented the proposed rulemaking package to the Agricultural Advisory Board on August 22, 2007.

The amendments were adopted by the Board as proposed rulemaking at its October 16, 2007, meeting. The proposed rulemaking was published at 38 Pa.B. 236, 248 (January 12, 2008) with provision for a 45-day public comment period, including two public meetings and hearings that were held at the Department's Southcentral Regional Office in Harrisburg, PA on February 14, 2008. A correction was published at 38 Pa.B. 612 (February 2,

2008) to correct the criteria for two chemicals found in the proposed Table 5, § 93.8c (relating to human health and aquatic life criteria for toxic substances). Based on a request received, the public comment period was extended an additional 30 days and closed on March 27, 2008, as published at 38 Pa.B. 976 (February 23, 2008). The Board received public comments from 10 commentators including oral testimony from three witnesses at the February 14 public hearings. The comments received on the proposed rulemaking are summarized in Section E as follows.

The draft final-form rulemaking was discussed with WRAC on July 22, 2008, when the committee deliberated on aspects of the rulemaking including the adoption of Statewide criterion for Mo and the proposed definition of “conventional treatment.” Although WRAC approved the draft final-form rulemaking for consideration by the Board, some members of the WRAC expressed their concerns with the Mo criterion and the health data used to create the particular criterion. WRAC also provided recommendations to further clarify the proposed definition for “conventional treatment,” as it relates to the protection of the PWS use. 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 this final-form rulemaking. The Board has considered all of the public comments received on its proposed rulemaking, and all claims asserted in the November 20, 2008, IRRC's Disapproval Order in preparing this final-form rulemaking.

E. *Summary of Responses to Comments and Changes to the Proposed Rulemaking*

Comments were received from 10 commentators, as a result of the public hearings and public comment period, including IRRC and the EPA Region 3. The comments received covered four major topics: 1) the proposed Statewide Mo criterion; 2) clarification of language being added to § 93.7(a) concerning intervening critical uses; 3) moving the toxics criteria from Chapter 16 to Chapter 93; and 4) clarification on how the site-specific criteria in Chapter 16, Appendix A, Table 1A will be used.

Most of the comments received on the proposed rulemaking involved requests for the Board to justify the proposed Statewide criterion for Mo. For those facilities currently known to discharge Mo, the biological and chemical conditions of the receiving waters are not different from the conditions for other waters within this Commonwealth. Therefore, the Department believed it would be more effective and efficient to establish consistent, Statewide protection from the toxic effects of Mo. A more detailed analysis of the justification for a Mo criterion is described in Section F of this order.

Comments were received during the public comment period, and discussed during the July 22, 2008, WRAC, which suggested the Department used inappropriate data and methods to develop the proposed water quality criterion for Mo. The commentators contended that the Department did not consider the most recent and technically justifiable toxicological data in establishing the proposed Mo standard, nor did it properly calculate the standard. Commentators suggested that the Department base the determination on another study, *Effects of Molybdenum on Fertility of Male Rats* by Pandey and Singh, (BioMetals. 15: 65-72, 2002), which they contended contained better data. Based on this study, commentators suggested the Department use the Benchmark Dose Method (BMD), which may be used in calculating human health criteria, as an alternative to calculating the refer-

ence dose (RfD). Commentators believed BMD is an improved method in comparison to using the NOAEL/LOAEL (no observed adverse effects level/lowest observed adverse effects level), which is the approach used by the Department to calculate the RfD for the Mo criterion. While the EPA has approved the use of the BMD, its use must be based on the most sensitive endpoint. Data input to the BMD must be obtained from reviewing several critical studies to establish the most sensitive endpoint. This endpoint is then used to calculate the RfD.

The commentators singled out one study upon which they requested the RfD be calculated. The EPA's and the Department's evaluation of the request found that the study did not represent the most sensitive study population or the most sensitive endpoint. Therefore, due to insufficient data for BMD determination, the EPA recommended that the Department use the NOAEL/LOAEL approach to calculate the reference dose.

The Department used information from the *U.S. EPA Integrated Risk Information System (IRIS)* to obtain supporting studies in developing a criterion for Mo. IRIS is an electronic database containing information on human health effects that may result from exposure to various substances in the environment. IRIS is prepared and maintained by the EPA's National Center for Environmental Assessment within the Office of Research and Development.

The Department originally developed a criterion for Mo using only toxicity data available in the IRIS data base. At the request of a commentator, the EPA Headquarters approved supplementing the IRIS database with additional sources of toxicity information obtained from a peer-reviewed toxicity report from the Institute of Medicine (IOM), which was published by the National Academy Press. This updated, combined dataset was then used to develop the best available scientifically calculated Mo criterion.

EPA Headquarters and EPA Region 3 staff reviewed and concurred that the Department used the appropriate data and methodologies, and developed an appropriate recommended Statewide human health criterion for Mo.

Although no public comments were received regarding the proposed definition for "conventional treatment," further refinements were made to the definition on final-form rulemaking based on discussion and recommendations by WRAC. Conventional treatment, for the purpose of surface water protection of the PWS use, should reflect the treatment processes required to filter and disinfect water. The water supply treatment scheme will not have to bear the burden of removing nonconventional pollutants that should otherwise be controlled by those discharging the pollutants.

A comment received expressed concern that there may be confusion if all provisions in 40 CFR 131.41 are adopted by reference in § 93.9x (relating to drainage list X). The commentator recommended the adoption of only subsection (c) of the Federal regulation. Upon further evaluation, 40 CFR 131.41(a)–(e) is incorporated into the State regulations on final-form rulemaking. Only subsection (f) is excluded since it identifies a scheme for compliance schedules which is already addressed in Chapter 92.

Based on comments received, revisions to the "Critical Use" footnote in § 93.7(a) regarding "other intervening, more sensitive uses" were made. Protected and Statewide water uses, identified in §§ 93.3 and 93.4 (relating to Statewide water use), will be protected using criteria in

§§ 93.6 (relating to general water criteria), 93.7 and 93.8c and site-specific criteria developed under § 93.8d (relating to development of site-specific water quality criteria). Based on activities in the watershed that require the protection of intervening uses, site-specific criteria will be developed on a case-by-case basis.

Other commentators requested clarification on why the Board was moving criteria from Chapter 16 into Chapter 93. Moving the criteria for toxic substances into Chapter 93 will give these criteria the full effect and advantage of regulation. This is appropriate since these criteria are not being changed or supplemented as frequently as originally anticipated. The original incentive for listing criteria as a Statement of Policy in Chapter 16 was to allow for flexibility in the timing of criteria development and revision.

The EPA supported the movement of criteria into regulation but requested clarification in § 93.8d(e) on how the site-specific criteria in Chapter 16, Appendix A, Table 1A will be used. Background or natural conditions are site-specific by nature, so the EPA is unsure how that criteria will be incorporated into Table 5, which appears to include only Statewide criteria. A new criterion to be placed in Chapter 16, Appendix A, Table 1A will remain a site-specific criterion as originally developed and be incorporated into the appropriate portion of §§ 93.9a–93.9z that relates to "Exceptions to Specific Criteria" unless, during rulemaking, it is determined that the same criterion has general Statewide applicability.

A detailed description of the revisions to the Chapter 93 proposal follows:

Section 93.1. Definitions.

The proposed definition for "conventional treatment" is revised. The definition will reflect the treatment processes required to filter and disinfect water.

Conventional treatment—for the purpose of surface water protection of the Potable Water Supply (PWS) use, conventional treatment is coagulation, followed by filtration for the removal of solids and disinfection for the control of pathogens to produce water for drinking and other human consumption.

Section 93.7. Specific water quality criteria.

The footnote for "Critical Use" in Table 3 is revised to clarify that intervening uses on a waterbody may be protected.

* *Critical Use.* The designated or existing use criteria are designed to protect. More stringent site-specific criteria may be developed to protect other more sensitive, intervening uses.

In § 93.7(d), the reference to Chapter 16, Appendix A, Table 1A will not be added, as proposed, because it is not applicable to a natural quality determination.

Section 93.8c. Human health and aquatic life criteria for toxic substances.

On January 20, 2009, the Board approved an amendment to this final-form rulemaking by removing the Mo criterion from Table 5 in response to IRRC's disapproval.

Section 93.8d. Development of site-specific water quality criteria.

Section 93.8d is restructured to further clarify how site-specific water quality criteria will be developed, reviewed and promulgated. The Department will consider a request for site-specific criteria when: (1) there exist site-specific biological or chemical conditions of receiving

waters which differ from conditions upon which the Statewide water quality criteria were based; (2) more stringent criteria are needed for a parameter listed in § 93.7 to protect more sensitive, intervening uses; or (3) there exists a need for a site-specific criterion for a substance not listed in Chapter 93, Table 5.

All scientific studies shall be performed in accordance with the procedures and guidance in Chapter 16 and the Water Quality Standards Handbook (EPA 1994), as amended and updated, including: "Guidance on the Determination and Use of Water-Effect Ratios for Metals" (EPA-823-B-94-001, February 1994); and the "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health" (2000). Other guidance approved by the Department, which is based on other EPA-approved or scientifically defensible methodologies, may be used. A proposed plan of study shall be submitted to the Department for review, consideration and approval prior to conducting these studies.

If the Department determines that site-specific criteria are appropriate according to one of the three conditions indicated previously, and the studies were conducted according to appropriate scientific methodologies, the Department will: (1) publish the site-specific criterion in the *Pennsylvania Bulletin*, along with other special conditions under § 92.61(a)(5) (relating to public notice of permit application and public hearing) and provide for public participation and public hearing in accordance with §§ 92.61, 92.63 and 92.65 (relating to public access information; and notice of reissuance of permits); (2) maintain publicly available lists of site-specific criteria; (3) submit the methodologies used for site-specific criteria development to the EPA's Regional Administrator for review and approval, within 30 days of the Department's final action; and (4) prepare a recommendation to the Board in the form of proposed rulemaking, incorporating that criterion for the waterbody segment.

If the Department determines that new Statewide criteria or modifications to Statewide criteria are appropriate, the Department will prepare a recommendation to the Board in the form of proposed rulemaking, incorporating the criteria into Chapter 93. The new criteria and changes to the criteria will become effective following adoption by the Board as final-form rulemaking and publication in the *Pennsylvania Bulletin*.

F. Summary of Response to the Independent Regulatory Review Commission's Disapproval Order

IRRC's disapproval order determined that this triennial review amendment is consistent with the statutory authority of The Clean Streams Law and the intention of the General Assembly. IRRC, however, also found that the Mo criterion portion of the proposed rulemaking was not in the public interest, based on criteria of the Regulatory Review Act.

IRRC's sole objection was the adoption of a Statewide water quality criterion for Mo. In its disapproval order, IRRC asserted three reasons for the disapproval: 1) IRRC questioned whether the Department had offered sufficient justification regarding the specific interest of the Commonwealth to exceed Federal water quality standards; 2) IRRC stated that the Board had not sufficiently addressed the economic and fiscal impact of imposing this new water quality criterion on the regulated community; and 3) IRRC stated that the Board had not fully demonstrated the impact of the consumption of Mo on the public health.

First, State-specific standards are often developed based on the types of industry, and pollutants related to

those industries, that are located in this Commonwealth. Industries located in this Commonwealth that may discharge Mo include specialty steel, coal mining and coal-fired power generation.

Mo is shown to cause gout-like symptoms, characterized by pain, swelling, inflammation and deformities of the joints, and in all cases, an increase in the uric acid content of the blood. In addition, disorders of the gastrointestinal tract, liver, kidneys and the central nervous system, including brain function, have been documented. Mo is considered to be a toxic metal and has also been labeled an embryonic mammalian teratogen because it can cause developmental deformities, as described in the Toxicity Profile—Toxicity Summary for Molybdenum prepared by the Oak Ridge National Laboratory and available at the online *Risk Assessment Information System (RAIS)*.

Possible human exposure pathways for Mo include dermal, inhalation and ingestion. The Mo criterion was developed considering the ingestion pathway through both drinking water and fish consumption. Exposure conditions used include two liters of water per day and 17.5 grams of fish per day (as recommended by the EPA) for a 70 kg adult.

In Chapter 93, a "toxic substance" is defined as "a chemical or compound in sufficient quantity or concentration which is, or may become, harmful to human, animal or plant life." Scientific literature shows that crops contaminated by Mo can be fatal to livestock if ingested. This condition has been documented in this Commonwealth. Based on the scientific evidence and the fact that industries in this Commonwealth discharge Mo, it is appropriate for the Commonwealth to "exceed" Federal water quality standards by adopting a standard for Mo.

Jon Capacasa, Director of EPA Region 3's Water Protection Division, provided a November 18, 2008, letter of support to Chairperson Coccodrilli of IRRC, in which he states that "PADEP developed [a] numeric criterion for molybdenum to protect human health in accordance with its own state regulations (Chapter 16, Guidelines for Development of Human Health-Based Criteria), using the guidelines in PA Code § 16.32 for threshold level toxic effects and EPA's Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (EPA-822-B-00-004, October 2000)." Jon Capacasa went on to say that EPA Region 3 supports "both the methodologies and the variables that PADEP used to develop a human health criterion for molybdenum. EPA also supports PADEP's determination that a molybdenum criterion is necessary to protect Pennsylvania's statewide potable water supply use."

The Department coordinated its Mo criteria development effort with EPA's regional water quality standards staff and its headquarters toxicologists. Even in the absence of a Federal standard, the EPA supports the numeric criterion that the Department developed for Mo.

Second, as the EPA properly indicated in its comments to IRRC, "economic and technological factors may not be used to justify adoption of criteria" under the Federal Clean Water Act. Water quality criteria are strictly based on science and are developed to protect water uses. Economic and technological factors are considered at the National Pollutant Discharge Elimination System (NPDES) permitting stage, when the conditions are established under which a permittee may discharge.

Although the Department is not obligated or permitted to evaluate technology when developing science-based

water quality criteria, in response to IRRC's concerns, the Department provided a list of available wastewater treatment methods for Mo. The Federal Clean Water Act establishes a goal of pollution elimination. See 33 U.S.C. § 1251(a). The law envisions science-based water quality standards that drive technology development to further the goal of eliminating water quality degradation.

The application of technology and the compliance time available to employ the technology are considered at the permitting stage. As stated at IRRC's public hearing, to the extent that new treatment technology is being developed or tested, the Department will work with a discharger to provide for an appropriate time to achieve permit limits.

Finally, although IRRC asserts that there is a lack of data demonstrating adverse health impacts on the residents of this Commonwealth, the EPA and states regularly rely on National health data to support the development of water quality standards. The Department is concerned that IRRC has misapprehended or disregarded the strong scientific and supportive evidence during its review of this regulation. The Department based its scientific review on references that rely on a compilation of approximately 680 scientific papers. The Department has the expertise in developing water quality criteria and IRRC should defer to the Department's expertise on these scientific issues.

G. *Benefits, Costs and Compliance*

1. *Benefits.* Overall, the Commonwealth, its citizens and natural resources will benefit from these recommended changes because they provide the appropriate level of protection to preserve the integrity of existing and designated uses of surface waters in this Commonwealth. Protecting water quality provides economic values to present and future generations in the form of clean water, recreational opportunities and aquatic life protection. It is important that the citizens of this Commonwealth realize all of these benefits, and the Department ensures that activities that depend on surface water or that may affect its chemical, biological and physical integrity can continue in a manner that is environmentally, socially and economically sound. Maintenance of water quality ensures its future availability for all uses.

2. *Compliance Costs.* These final-form amendments to Chapter 93 may impose additional compliance costs on the regulated community. These regulatory changes are necessary to improve total pollution control. The expenditures necessary to meet new compliance requirements may exceed that which is required under existing regulations.

Persons conducting or proposing activities or projects shall comply with the regulatory requirements relating to designated and existing uses. Persons expanding a discharge or adding a new discharge point to a stream could be adversely affected if they need to provide a higher level of treatment to meet the more stringent criteria for selected parameters or there are changes in designated and existing uses of the stream. These increased costs may take the form of higher engineering, construction or operating cost for wastewater treatment facilities. Treatment costs are site-specific and depend upon the size of the discharge in relation to the size of the stream and many other factors. Therefore, it is not possible to precisely predict the actual change in costs. Economic impacts would primarily involve the potential for higher treatment costs for new or expanded discharges to streams that are redesignated. The initial costs from

technologically improved treatments may be offset over time by potential savings from and increased value of improved water quality through these improved and possibly more effective or efficient treatments.

3. *Compliance Assistance Plan.* The final-form rulemaking has been developed as part of an established program that has been implemented by the Department since the early 1980s. The revisions are consistent with, and based on existing Department regulations.

This final-form rulemaking will be implemented through the Department's permit and approval actions. For example, the NPDES permitting program bases effluent limitations on the water uses of the stream. Permit conditions are established to assure water quality criteria are achieved and water uses are protected. No new compliance assistance measures are anticipated. Staff is available to assist regulated entities in complying with the regulatory requirements if questions arise.

4. *Paperwork Requirements.* These regulatory revisions should have no significant paperwork impact on the Commonwealth, its political subdivisions, or the private sector. There may be some additional paperwork requirements for new or expanding dischargers to streams upgraded to "high quality" or "exceptional value." For example, NPDES general permits are not available for new or expanding discharges to these streams. Thus, an individual permit and its associated paperwork would be required. Additionally, paperwork associated with demonstrating social and economic justification may be required for discharges to certain high quality waters and consideration of nondischarge alternatives is required for discharges to these special protection waters.

H. *Pollution Prevention*

WQS are a major pollution prevention tool because they protect water quality and designated and existing uses. The final-form rulemaking will be implemented through the Department's permit and approval actions. For example, the NPDES bases effluent limitations on the designated use of the stream and the water quality criteria necessary to achieve designated and existing uses.

I. *Sunset Review*

This final-form rulemaking will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulations effectively fulfill the goals for which they were intended.

J. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P. S. § 745.5(a)), on December 21, 2007, the Department submitted a copy of the proposed rulemaking published at 38 Pa.B. 236, to IRRC and to the Chairpersons of the Senate and House Environmental Resources and Energy Committees (Standing Committees) for review and comment.

Under section 5(c) of the Regulatory Review Act, the Department provided IRRC and the Standing Committees with copies of the comments received on the proposed rulemaking, as well as other documentation. The Department and Board have considered all public comments in preparing this final-form rulemaking.

Under section 5.1(j.2) of the Regulatory Review Act (71 P. S. § 745.5a(j.2)), on November 19, 2008, the Board's final-form rulemaking, dated September 16, 2008, was deemed approved by the House Standing Committee. The Senate Standing Committee, however, recommended, on

October 8, 2008, that IRRC disapprove the original final-form rulemaking, and requested additional time to review IRRC's action on that final-form rulemaking. Under section 5.1(e) of the Regulatory Review Act, IRRC met on November 20, 2008, and disapproved the Board's final-form rulemaking dated September 16, 2008.

Under section 7(c) of the Regulatory Review Act (71 P. S. § 745.7(c)), on February 6, 2009, the Department submitted a copy of the revised final-form rulemaking to IRRC and the Standing Committees.

Under section 7(c.1) of the Regulatory Review Act (71 P. S. § 745.7(c.1)), on February 26, 2009, IRRC approved the revised final-form rulemaking. Under section 7(d) of the Regulatory Review Act, on March 13, 2009, the revised final-form rulemaking was deemed approved by the House and Senate Standing Committees.

K. Findings of the Board

The Board finds that:

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P. L. 769, No. 240) (45 P. S. §§ 1201 and 1202) and regulations promulgated thereunder in 1 Pa. Code §§ 7.1 and 7.2.

(2) A public comment period was provided as required by law. In addition, Board hearings were held, and the public comment period was extended. All comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposal published at 38 Pa.B. 236 or the correction published at 38 Pa.B. 612.

(4) This final-form rulemaking is necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

L. Order of the Board

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department, 25 Pa. Code Chapter 93, are amended by amending §§ 93.1, 93.3, 93.7, 93.8a, 93.8d, 93.9, 93.9d, 93.9f, 93.9i, 93.9l, 93.9m, 93.9q, 93.9v and 93.9x, by deleting § 93.8 and by adding §§ 93.8b, 93.8c and 93.8e to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.

(Editor's Note: In addition to the amendments ordered in subsection (a), the regulations of the Department are amended by adding the designation "MF" upon codification in §§ 93.9a—93.9o and 93.9z.)

(b) The Chairperson of the Board shall submit this order and Annex A to the Office of General Counsel and the Office of Attorney General for approval and review as to legality and form, as required by law.

(c) The Chairperson shall submit this order and Annex A to IRRC and the Standing Committees as required by the Regulatory Review Act.

(d) The Chairperson of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau, as required by law.

(e) This order shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

JOHN HANGER,
Chairperson

(Editor's Note: For the text of the order of the Independent Regulatory Review Commission relating to this document, see 39 Pa.B. 1369 (March 14, 2009).)

(Editor's Note: For a Statements of Policy relating to this rulemaking, see 39 Pa.B. _____ (May 16, 2009).)

Fiscal Note: Fiscal Note 7-421 remains valid for the final adoption of the subject regulations.

Annex A

**TITLE 25. ENVIRONMENTAL PROTECTION
PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION**

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

**CHAPTER 93. WATER QUALITY STANDARDS
GENERAL PROVISIONS**

§ 93.1. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

* * * * *

Conventional treatment—For the purpose of surface water protection of the Potable Water Supply (PWS) use, coagulation, followed by filtration for the removal of solids, and disinfection for the control of pathogens to produce water for drinking and other human consumption.

* * * * *

Toxic substance—A chemical or compound in sufficient quantity or concentration which is, or may become, harmful to human, animal or plant life. The term includes, but is not limited to, priority pollutants and those substances, which are identified in Tables 5 and 6. Additional toxic substances are also described in Chapter 16 Appendix A, Table 1A (relating to site-specific water quality criteria for toxic substances).

WER—Water Effect Ratio—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 that is toxic under certain physical, chemical or biological conditions.

* * * * *

§ 93.3. Protected water uses.

Water uses which shall be protected, and upon which the development of water quality criteria shall be based, are set forth, accompanied by their identifying symbols, in Table 1:

TABLE 1

<i>Symbol</i>	<i>Protected Use</i>
Aquatic Life	* * * * *
MF	<i>Migratory Fishes</i> —Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which move to or from flowing waters to complete their life cycle in other waters.
	* * * * *

Symbol Protected Use

Water Supply

* * * * *

IRS Irrigation—Used to supplement precipitation for crop production, maintenance of golf courses and athletic fields and other commercial horticultural activities.

* * * * *

§ 93.7. Specific water quality criteria.

(a) Table 3 displays specific water quality criteria and associated critical uses. The criteria associated with the Statewide water uses listed in § 93.4, Table 2 apply to all surface waters, unless a specific exception is indicated in §§ 93.9a—93.9z. Other specific water quality criteria apply to surface waters as specified in §§ 93.9a—93.9z. All applicable criteria shall be applied in accordance with this chapter, Chapter 96 (relating to water quality standards implementation) and other applicable State and Federal laws and regulations.

TABLE 3

Parameter	Symbol	Criteria	Critical Use*
		* * * * *	
Ammonia Nitrogen	Am	The maximum total ammonia nitrogen concentration (in mg/L) at all times shall be the numerical value given by: un-ionized ammonia nitrogen (NH ₃ -N) x (log ⁻¹ [pK _T -pH] + 1), where:	CWF, WWF, TSF, MF
		* * * * *	

* Critical Use: The designated or existing use the criteria are designed to protect. More stringent site-specific criteria may be developed to protect other more sensitive, intervening uses.

(b) Table 4 contains specific water quality criteria that apply to the water uses to be protected. When the symbols listed in Table 4 appear in the Water Uses Protected column in §§ 93.9a—93.9z, they have the meaning listed in the second column of Table 4. Exceptions to these standardized groupings will be indicated on a stream-by-stream or segment-by-segment basis by the words “Add” or “Delete” followed by the appropriate symbols described elsewhere in this chapter.

* * * * *

(d) If the Department determines that natural quality of a surface water segment is of lower quality than the applicable aquatic life criteria in Table 3 or 5, the natural quality shall constitute the aquatic life criteria for that segment. All draft natural quality determinations will be published in the *Pennsylvania Bulletin* and be subject to a minimum 30-day comment period. The Department will maintain a publicly available list of surface waters and parameters where this subsection applies, and will, from time to time, submit appropriate amendments to §§ 93.9a—93.9z.

§ 93.8. (Reserved).

§ 93.8a. Water quality criteria for toxic substances.

* * * * *

(b) Water quality criteria for toxic substances shall be established as described under Chapter 16 (relating to water quality toxics management strategy—statement of policy). The Department will develop water quality criteria for toxic substances not listed in Chapter 93, Table 5 in accordance with § 93.8d (relating to development of site-specific water quality criteria) and Chapter 16. Appendix A, Table 1A in Chapter 16 lists site-specific human health and aquatic life criteria that have been recently developed or adopted by the Department based on approved methodologies and the best scientific information currently available. The approved analytical procedures and detection limits for these substances will also be

listed in Chapter 16. Chapter 16, along with changes made to it, is hereby specifically incorporated by reference.

* * * * *

(h) The Department will periodically, but at least once every 3 years, review, revise as necessary, and publish new or revised water quality criteria for toxic substances, and revised procedures for criteria development in the *Pennsylvania Bulletin*.

* * * * *

(j) The requirements for discharges to and antidegradation requirements for the Great Lakes System are as follows:

(1) *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.A (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.

Open Waters of the Great Lakes—The waters within the Great Lakes in this Commonwealth lakeward from a line

drawn across the mouth of the tributaries to the lakes, including the waters enclosed by constructed breakwaters, but not including the connecting channels.

(2) *Total Maximum Daily Loads (TMDLs)*. TMDLs for Open Waters of the Great Lakes shall be derived following the procedures in 40 CFR Part 132, Appendix F, Procedure 3.D (relating to Great Lakes Water Quality Initiative implementation procedures).

(3) Statewide antidegradation requirements in this chapter and Chapter 96 (relating to water quality standards implementation) and in the Federal regulation in 40 CFR 131.32(a) (relating to Pennsylvania) as applicable, apply to all surface waters of the Great Lakes System.

(4) If, for any BCC, the quality of the surface water exceeds the levels necessary to support the propagation of fish, shellfish and wildlife and recreation in and on the waters, that quality shall be maintained and protected, unless the Department finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface water is located.

§ 93.8b. Metals criteria.

Dissolved criteria are footnoted in Table 5, 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] × 0.145712)	
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 applies to both acute and chronic criteria.

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

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

§ 93.8c. Human health and aquatic life criteria for toxic substances.

(a) Table 5 and Chapter 16, Appendix A, Table 1A (relating to site-specific water quality criteria for toxic substances) list the aquatic life and human health criteria for toxic substances which the Department uses in development of effluent limitations in NPDES Permits and for other purposes. The human health criteria, which include probable modes of exposure (such as, but not limited to ingestion from drinking water and fish consumption, inhalation and dermal absorption), are further defined as to the specific effect (that is, cancer or threshold health effects). For those aquatic life criteria which are hardness related and specified as a formula, such as several of the heavy metals, the Department will use the specific hardness of the receiving stream after mixing with the waste discharge in calculating criteria on a case-by-case basis. The priority pollutant numbers (PP NO) used by the EPA to identify priority pollutants are included in Table 5 for reference purposes. The toxics without a PP NO are nonpriority pollutants or State-derived criteria.

(b) Some of these criteria may be superseded for the Delaware Estuary, Ohio River Basin, Lake Erie Basin, and Genesee River Basin under interstate and international compact agreements with the Delaware River Basin Commission, Ohio River Valley Sanitation Commission and International Joint Commission, respectively. The criteria in Table 5 do not apply to the Great Lakes System. Water quality criteria for the Great Lakes System are contained in § 93.8e (relating to special criteria for the Great Lakes System) and Table 6 (relating to Great Lakes Aquatic Life and Human Health Criteria). Criteria may be developed for the Great Lakes System for substances other than those listed in § 93.8e under the methodologies in § 16.61 (relating to special provisions for the Great Lakes system).

TABLE 5

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

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>	
1M	ANTIMONY	07440360	220	1100	5.6	H
2M	ARSENIC	07440382	150 (As3+)	340 (As3+)	10	H
3M	BERYLLIUM	07440417	N/A	N/A	N/A	-
4M	CADMIUM	07440439	$\{1.101672 - (\ln[H] \times 0.041838)\} \times$ $\text{Exp}(0.7409 \times \ln[H] - 4.719)$ (ex: @H=100, CCC=0.25)	$\{1.136672 - (\ln[H] \times 0.041838)\} \times$ $\text{Exp}(1.0166 \times \ln[H] - 3.924)$ (ex: @H=100, CMC=2.0)	N/A	-
5M	CHROMIUM III	16065831	$0.860 \times \text{Exp}(0.819 \times \ln[H] + 0.6848)$ (ex: @H=100, CCC=74)	$0.316 \text{Exp}(0.819 \times \ln[H] + 3.7256)$ (ex: @H=100, CMC=570)	N/A	-
5M	CHROMIUM VI	18540299	*10	*16	N/A	-
6M	COPPER	07440508	$0.960 \times \text{Exp}(0.8545 \times \ln[H] - 1.702)$ (ex: @H=100, CCC=9.0)	$0.960 \times \text{Exp}(0.9422 \times \ln[H] - 1.700)$ (ex: @H=100, CMC=13)	N/A	-
7M	LEAD	07439921	$\{1.46203 - (\ln[H] \times 0.145712)\} \times$ $\text{Exp}(1.273 \times \ln[H] - 4.705)$ (ex: @H=100, CCC=2.5)	$\{1.46203 - (\ln[H] \times 0.145712)\} \times$ $\text{Exp}(1.273 \times \ln[H] - 1.460)$ (ex: @H=100, CMC=65)	N/A	-
8M	MERCURY	07439976	*0.77 (Hg2+)	*1.4 (Hg2+)	0.05	H
9M	NICKEL	07440020	$0.997 \times \text{Exp}(0.846 \times \ln[H] + 0.0584)$ (ex: @H=100, CCC=52)	$0.998 \times \text{Exp}(0.846 \times \ln[H] + 2.255)$ (ex: @H=100, CMC=470)	610	H
10M	SELENIUM	07782492	*4.6	N/A	N/A	-
11M	SILVER	07440224	N/A	$0.850 \times \text{Exp}(1.72 \times \ln[H] - 6.590)$ (ex: @H=100, CMC=3.2)	N/A	-
12M	THALLIUM	07440280	13	65	0.24	H
13M	ZINC	07440666	$0.986 \times \text{Exp}(0.8473 \times \ln[H] + 0.884)$ (ex: @H=100, CCC=120)	$0.978 \times \text{Exp}(0.8473 \times \ln[H] + 0.884)$ (ex: @H=100, CMC=120)	N/A	-
14M	CYANIDE, FREE	00057125	5.2	22	140	H
1A	2-CHLOROPHENOL	00095578	110	560	81	H
2A	2,4-DICHLORO-PHENOL	00120832	340	1700	77	H
3A	2,4-DIMETHYL-PHENOL	00105679	130	660	380	H
4A	4,6-DINITRO-o-CRESOL	00534521	16	80	13	H
5A	2,4-DINITRO-PHENOL	00051285	130	660	69	H
6A	2-NITROPHENOL	00088755	1600	8000	N/A	-
7A	4-NITROPHENOL	00100027	470	2300	N/A	-
8A	P-CHLORO-m-CRESOL	00059507	30	160	N/A	-
9A	PENTACHLORO-PHENOL	00087865	$\text{Exp}(1.005 \times [\text{pH}] - 5.134)$ @pH= 6.5 7.8 9.0 Crit= 4.1 15 50	$\text{Exp}(1.005 \times [\text{pH}] - 4.869)$ @pH= 6.5 7.8 9.0 Crit= 5.3 19 65	0.27	CRL
10A	PHENOL	00108952	N/A	N/A	21000	H

PP NO	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human Health Criteria (ug/L)	
			Criteria Continuous Concentrations (ug/L)	Criteria Maximum Concentration (ug/L)		
11A	2,4,6-TRICHLOROPHENOL	00088062	91	460	1.4	CRL
1V	ACROLEIN	00107028	1	5	190	H
2V	ACRYLONITRILE	00107131	130	650	0.051	CRL
3V	BENZENE	00071432	130	640	1.2	CRL
5V	BROMOFORM	00075252	370	1800	4.3	CRL
6V	CARBON TETRACHLORIDE	00056235	560	2800	0.23	CRL
7V	CHLORO-BENZENE	00108907	240	1200	130	H
8V	CHLORODIBRO- MO-METHANE	00124481	N/A	N/A	0.40	CRL
9V	CHLOROETHANE	00075003	N/A	N/A	N/A	-
10V	2-CHLOROETHYL VINYL ETHER	00110758	3500	18000	N/A	-
11V	CHLOROFORM	00067663	390	1900	5.7	CRL
12V	DICHLOROBROMO- METHANE	00075274	N/A	N/A	0.55	CRL
14V	1,1-DICHLORO-ETHANE	00075343	N/A	N/A	N/A	-
15V	1,2-DICHLORO-ETHANE	00107062	3100	15000	0.38	CRL
16V	1,1-DICHLORO-ETHYLENE	00075354	1500	7500	33.0	H
17V	1,2-DICHLORO-PROPANE	00078875	2200	11000	N/A	-
18V	1,3-DICHLORO-PROPYLENE	00542756	61	310	0.34	CRL
19V	ETHYLBENZENE	00100414	580	2900	530	H
20V	METHYL BROMIDE	00074839	110	550	47	H
21V	METHYL CHLORIDE	0074873	5500	28000	N/A	-
22V	METHYLENE CHLORIDE	00075092	2400	12000	4.6	CRL
23V	1,1,2,2-TETRA- CHLOROETHANE	00079345	210	1000	0.17	CRL
24V	TETRACHLORO-ETHYLENE	00127184	140	700	0.69	CRL
25V	TOLUENE	00108883	330	1700	1300	H
26V	1,2-trans-DICHLORO- ETHYLENE	00156605	1400	6800	140	H
27V	1,1,1-TRICHLORO-ETHANE	00071556	610	3000	N/A	-
28V	1,1,2-TRICHLORO-ETHANE	00079005	680	3400	0.59	CRL
29V	TRICHLORO-ETHYLENE	00079016	450	2300	2.5	CRL
31V	VINYL CHLORIDE	00075014	N/A	N/A	0.025	CRL
1B	ACENAPHTHENE	00083329	17	83	670	H
2B	ACENAPHTHYLENE	00208968	N/A	N/A	N/A	-

PP NO	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human Health Criteria (ug/L)	
			Criteria Continuous Concentrations (ug/L)	Criteria Maximum Concentration (ug/L)		
3B	ANTHRACENE	00120127	N/A	N/A	8300	H
4B	BENZIDINE	00092875	59	300	0.000086	CRL
5B	BENZO(a)-ANTHRACENE	00056553	0.1	0.5	0.0038	CRL
6B	BENZO(a)PYRENE	00050328	N/A	N/A	0.0038	CRL
7B	3,4-BENZO-FLUORANTHENE	00205992	N/A	N/A	0.0038	CRL
8B	BENZO(ghi)-PERYLENE	00191242	N/A	N/A	N/A	-
9B	BENZO(k)-FLUORANTHENE	00207089	N/A	N/A	0.0038	CRL
10B	BIS(2-CHLORO-ETHOXY)METHANE	00111911	N/A	N/A	N/A	-
11B	BIS(2-CHLORO-ETHYL)ETHER	00111444	6000	30000	0.030	CRL
12B	BIS(2-CHLORO-ISOPROPYL)ETHER	00108601	N/A	N/A	1400	H
13B	BIS(2-ETHYL-HEXYL)PHTHALATE	00117817	910	4500	1.2	CRL
14B	4-BROMOPHENYL PHENYL ETHER	00101553	54	270	N/A	-
15B	BUTYLBENZYL PHTHALATE	00085687	35	140	150	H
16B	2-CHLORO-NAPHTHALENE	00091587	N/A	N/A	1000	H
17B	4-CHLORO-PHENYL PHENYL ETHER	07005723	N/A	N/A	N/A	-
18B	CHRYSENE	00218019	N/A	N/A	0.0038	CRL
19B	DIBENZO(a,h)-ANTHRACENE	00053703	N/A	N/A	0.0038	CRL
20B	1,2-DICHLORO-BENZENE	00095501	160	820	420 for dichloro-benzene	H
21B	1,3-DICHLORO-BENZENE	00541731	69	350	See 20B	H
22B	1,4-DICHLORO-BENZENE	00106467	150	730	See 20B	H
23B	3,3-DICHLORO-BENZIDINE	00091941	N/A	N/A	0.021	CRL
24B	DIETHYL PHTHALATE	00084662	800	4000	17000	H
25B	DIMETHYL PHTHALATE	00131113	500	2500	270000	H
26B	DI-N-BUTYL PHTHALATE	00084742	21	110	2000	H
27B	2,4-DINITRO-TOLUENE	00121142	320	1600	0.05 for dinitro-toluene	CRL
28B	2,6-DINITRO-TOLUENE	00606202	200	990	See 27B	CRL
29B	DI-N-OCTYL PHTHALATE	00117840	N/A	N/A	N/A	-
30B	1,2-DIPHENYL-HYDRAZINE	00122667	3	15	0.036	CRL

PP NO	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human Health Criteria (ug/L)	
			Criteria Continuous Concentrations (ug/L)	Criteria Maximum Concentration (ug/L)		
31B	FLUORANTHENE	00206440	40	200	130	H
32B	FLUORENE	00086737	N/A	N/A	1100	H
33B	HEXACHLORO-BENZENE	00118741	N/A	N/A	0.00028	CRL
34B	HEXACHLORO-BUTADIENE	00087683	2	10	0.44	CRL
35B	HEXACHLORO- CYCLOPENTADIENE	00077474	1	5	40	H
36B	HEXACHLORO-ETHANE	00067721	12	60	1.4	CRL
37B	INDENO(1,2,3-cd)PYRENE	00193395	N/A	N/A	0.0038	CRL
38B	ISOPHORONE	00078591	2100	10000	35	H
39B	NAPHTHALENE	00091203	43	140	N/A	-
40B	NITROBENZENE	00098953	810	4000	17	H
41B	N-NITROSO- DIMETHYLAMINE	00062759	3400	17000	0.00069	CRL
42B	N-NITROSODI-N- PROPYLAMINE	00621647	N/A	N/A	0.005	CRL
43B	N-NITROSO- DIPHENYLAMINE	00086306	59	300	3.3	CRL
44B	PHENANTHRENE	00085018	1	5	N/A	-
45B	PYRENE	00129000	N/A	N/A	830	H
46B	1,2,4-TRICHLORO-BENZENE	00120821	26	130	35	H
1P	ALDRIN	00309002	0.1	3	0.000049	CRL
2P	alpha-BHC	00319846	N/A	N/A	0.0026	CRL
3P	beta-BHC	00319857	N/A	N/A	0.0091	CRL
4P	gamma-BHC (LINDANE)	00058899	N/A	0.95	0.098	H
5P	delta-BHC	00319868	N/A	N/A	N/A	-
6P	CHLORDANE	00057749	0.0043	2.4	0.00080	CRL
7P	4,4-DDT	00050293	0.001	1.1	0.00022	CRL
8P	4,4-DDE	00072559	0.001	1.1	0.00022	CRL
9P	4,4-DDD	00072548	0.001	1.1	0.00031	CRL
10P	DIELDRIN	00060571	0.056	0.24	0.000052	CRL
11P	alpha-ENDOSUL-FAN	00959988	0.056	0.22	62 for endosulfan	H
12P	beta-ENDOSULFAN	33213659	0.056	0.22	See 11P	H
13P	ENDOSULFAN SULFATE	01031078	N/A	N/A	N/A	-
14P	ENDRIN	00072208	0.036	0.086	0.059	H
15P	ENDRIN ALDEHYDE	07421934	N/A	N/A	0.29	H

Fish and Aquatic Life Criteria

PP NO	Chemical Name	CAS Number	Criteria Continuous Concentrations (ug/L)	Criteria Maximum Concentration (ug/L)	Human Health Criteria (ug/L)	
16P	HEPTACHLOR	00076448	0.0038	0.52	0.000079	CRL
17P	HEPTACHLOR EPOXIDE	01024573	0.0038	0.5	0.000039	CRL
18P	PCB		0.014	N/A	0.000064 for PCBs	CRL
25P	TOXAPHENE	08001352	0.0002	0.73	0.00028	CRL
PP	2,3,7,8-TCDD	01746016	N/A	N/A	5.0 E-9	CRL
—	ACETONE	00067641	86000	450000	3500	H
—	ALUMINUM	07429905	N/A	750	N/A	-
—	BARIUM	07440393	4100	21000	2400	H
—	BORON	07440428	1600	8100	3100	H
—	COBALT	07440484	19	95	N/A	-
—	p-CRESOL	00106445	160	800	N/A	-
—	DIAZINON	333415	0.17	0.17	N/A	-
—	FORMALDEHYDE	00050000	440	2200	700	H
—	2-HEXANONE	00591786	4300	21000	N/A	-
—	LITHIUM	07439932	N/A	N/A	N/A	-
—	METHYLETHYL KETONE	00078933	32000	230000	21000	H
—	METHYLISO-BUTYL KETONE	00108101	5000	26000	N/A	-
—	METOLACHLOR	51218452	NA	NA	69	H
—	1-PROPANOL	00071238	46000	230000	N/A	-
—	2-PROPANOL	00067630	89000	440000	N/A	-
—	1,2,3-TRICHLORO-PROPANE	00096184	N/A	N/A	210	H
—	VANADIUM	07440622	100	510	N/A	-
—	XYLENE	01330207	210	1100	70000	H

Acronyms and Footnotes to Table 5

* Indicates dissolved metal criterion; others are total recoverable metals. Each listed dissolved criterion in Table 5 is equal to the corresponding total recoverable criterion before rounding (from the EPA National Ambient Water Quality Criteria Documents) multiplied by the conversion factor (from the Conversion Factors Table); a criterion that is expressed as a hardness (H)-based equation is shown in Table 5 as the conversion factor (listed) multiplied by the hardness criterion equation; an example criterion at hardness=100mg/L is included.

CAS—Chemical Abstract Service number

CRL—Cancer risk level at 1×10^{-6}

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

ln [H]—Natural Logarithm of the Hardness of stream as mg/l CaCO₃

ug/L—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

§ 93.8d. Development of site-specific water quality criteria.

(a) The Department will consider a request for site-specific criteria when one or more of the following apply:

(1) There exist site-specific biological or chemical conditions of receiving waters which differ from conditions upon which the water quality criteria were based.

(2) More stringent criteria are needed for a parameter listed in § 93.7 (relating to specific water quality criteria) to protect more sensitive, intervening uses.

(3) There exists a need for a site-specific criterion for a substance not listed in § 93.8c, Table 5 (relating to water quality criteria for toxic substances).

(b) The request for site-specific criteria must include the results of scientific studies for the purpose of:

(1) Defining the areal boundaries for application of the site-specific criteria which will include the potentially affected wastewater dischargers identified by the Department, through various means, including, but not limited to, the total maximum daily load (TMDL) process described in Chapter 96 (relating to water quality standards implementation) or biological assessments.

(2) Developing site-specific criteria which protect the surface water's existing and designated uses.

(c) Scientific studies shall be performed in accordance with the procedures and guidance in the Water Quality Standards Handbook (EPA 1994), as amended and updated, including: "Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994); and the "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health" (2000). Other guidance approved by the Department, which is based on other EPA-approved or scientifically defensible methodologies, may be used.

(d) Prior to conducting studies specified in subsections (b) and (c), a proposed plan of study shall be submitted to the Department for review, consideration and approval.

(e) Signed copies of all reports including toxicity test data shall be submitted to the Department within 60 days of completion of the tests.

(f) If the Department determines that site-specific criteria are appropriate in accordance with subsection (a), the Department will do the following:

(1) Publish the site-specific criterion in the *Pennsylvania Bulletin*, along with other special conditions under § 92.61(a)(5) (relating to public notice of permit application; and public hearing) and provide for public participation and public hearing in accordance with § 92.61 and §§ 92.63 and 92.65 (relating to public access to information; and notice to other government agencies).

(2) Maintain publicly available lists of site-specific criteria.

(3) Submit the methodologies used for site-specific criteria development to the EPA's Regional Administrator for review and approval, within 30 days of Department's final action.

(4) Prepare a recommendation to the EQB in the form of proposed rulemaking, incorporating that criterion for the water body segment.

(g) If the Department determines that new Statewide criteria or modifications to Statewide criteria are appropriate, the Department will prepare a recommendation to the EQB in the form of proposed rulemaking, incorporating the criteria into this chapter. The new criteria and changes to the criteria will become effective following adoption by the EQB as final rulemaking and publication in the *Pennsylvania Bulletin*.

(h) A person challenging a Department action under this section shall have the burden of proof to demonstrate that the Department's action does not meet the requirements of this section.

§ 93.8e. Special criteria for the Great Lakes System.

(a) *Special criteria.* The special provisions in this section apply for the Great Lakes System, which includes 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.* Human health and aquatic life criteria for the Great Lakes System are contained in Table 6 (relating to Great Lakes aquatic life and human health criteria). 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 chapter and § 16.61 (relating to special provisions for the Great Lakes System).

TABLE 6
GREAT LAKES AQUATIC LIFE AND HUMAN HEALTH CRITERIA

Fish and Aquatic Life Criteria

<i>PP</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>	
2M	Arsenic	07440382	*148 (As3+)	*340 (As3+)	N/A	-
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	-
5M	Chromium, III	16065831	*0.860×Exp(0.819×ln[H]+0.6848) (ex: @H=100, CCC=74)	*0.316×Exp(0.819×ln[H]+3.7256) (ex: @H=100, CMC=570)	N/A	-
5M	Chromium, VI	18540299	*10.56	*15.73	N/A	-
6M	Copper	07440508	*0.960×Exp(0.8545×ln[H]-1.702) (ex: @H=100, CCC=8.96)	*(0.960×Exp(0.9422×ln[H]-1.700) (ex: @H=100, CMC=13.44)	N/A	
8M	Mercury	07439976	*0.77	*1.44	0.0031	H
9M	Nickel	07440020	*0.997×Exp(0.846×ln[H]+0.0584) (ex: @H=100, CCC=52.01)	*[0.998×Exp(0.846×ln[H]+2.255) (ex: @H=100, CMC=468.24)	N/A	H
10M	Selenium	07782492	*4.61	N/A	N/A	-
13M	Zinc	07440666	*0.986×Exp(0.8473×ln[H]+0.884) (ex: @H=100, CCC=118.14)	*0.978×Exp(0.8473×ln[H]+0.884) (ex: @H=100, CMC=117.18)	N/A	
14M	Cyanide, Free	00057125	5.2	22	600	H
3A	2,4-Dimethyl-phenol	00105679	N/A	N/A	450	H
5A	2,4-Dinitro-phenol	00051285	N/A	N/A	55	H
9A	Pentachlorophenol	00087865	Exp(1.005[pH]-5.134) @pH= 6.5 7.8 9.0 Crit = 4.05 14.95 49.95	Exp (1.005[pH]-4.869) @pH = 6.5 7.8 9.0 Crit = 5.28 19.49 65.10	N/A	-
3V	Benzene	00071432	N/A	N/A	1.2	CRL
7V	Chloro-benzene	00108907	N/A	N/A	470	H
22V	Methylene Chloride	00075092	N/A	N/A	4.7	CRL
25V	Toluene	00108883	N/A	N/A	5600	H
29V	Trichloro-ethylene	00079016	N/A	N/A	2.9	CRL
33B	Hexachloro-benzene	00118741	N/A	N/A	0.000045	CRL
36B	Hexachloro-ethane	00067721	N/A	N/A	0.53	CRL
4P	gamma-BHC (Lindane)	00058899	N/A	0.95	0.47	H
6P	Chlordane	00057749	N/A	N/A	0.000025	CRL
7P	4,4-DDT	00050293	N/A	N/A	0.000015	CRL
10P	Dieldrin	00060571	0.056	0.24	0.00000065	CRL
14P	Endrin	00072208	0.036	0.086	N/A	-
18P	PCBs		N/A	N/A	0.00000039	CRL
25P	Toxaphene	08001352	N/A	N/A	0.0000068	CRL
PP	2,3,7,8-TCDD	01746016	N/A	N/A	8.6 E-10	CRL
—	Parathion	00056382	0.013	0.065	N/A	-

Acronyms and Footnotes to Table 6

* Indicates dissolved metal criterion; others are total recoverable metals. Each listed dissolved criterion in Table 6 is equal to the corresponding total recoverable criterion before rounding (from the EPA National Ambient Water Quality Criteria Documents) multiplied by the conversion factor (from the Conversion Factors Table); a criterion that is expressed as a hardness (H)-based equation is shown in Table 6 as the conversion factor (listed) multiplied by the hardness criterion equation; an example criterion at hardness=100mg/L is included.

CAS—Chemical Abstract Service number

CRL—Cancer risk level at 1 x 10⁻⁶

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

ln [H]—Natural Logarithm of the Hardness of stream as mg/l CaCO₃

ug/L—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

(c) *Wildlife criteria.* Wildlife criteria will be developed for the bioaccumulative chemicals of concern (BCCs) in the Great Lakes System using methodologies contained in the Great Lakes guidance in 40 CFR Part 132, Appendix D (relating to Great Lakes Water Quality Initiative methodology for the development of wildlife criteria). The wildlife criteria are contained in the following table:

GREAT LAKES WILDLIFE CRITERIA

TABLE 7

PP NO	Chemical Name	Criterion (ug/L)
7-9P	DDT & METABOLITES	0.000011
8M	MERCURY	0.0013
18-24P	PCBs (TOTAL)	0.00012
PP	2,3,7,8-TCDD	3.1 E-9

DESIGNATED WATER USES AND WATER QUALITY CRITERIA

§ 93.9. Designated water uses and water quality criteria.

(a) The tables in §§ 93.9a—93.9z display designated water uses and water quality criteria in addition to the water uses and criteria specified in Tables 2 and 3. Designated uses shall be protected in accordance with Chapters 95 and 96 (relating to wastewater treatment requirements; and water quality standards implementation) and any other applicable State and Federal laws and regulations. The tables also indicate specific exceptions to Tables 2 and 3 on a stream-by-stream or segment-by-segment basis by the words “add” or “delete” followed by the appropriate symbols described elsewhere in this chapter. The county column in §§ 93.9a—93.9z indicates the county in which the mouth of the stream or the downstream limit of the zone described for that entry is located. Abbreviations used in the Stream and the “Zone” columns are as follows:

* * * * *

(b) When appropriate, “Exceptions to Specific Criteria” provide reference to the Delaware River Basin Commission (DRBC) water quality regulations, Orsanco (Ohio River Valley Water Sanitation Commission) pollution control standards and the Great Lakes Water Quality Agreement (GLWQA) which specify the criteria that apply if a water quality standard is more stringent than those in this title. The applicable criteria can be obtained from the following:

* * * * *

(*Editor’s note:* A basin-wide migratory fishes (MF) designation is being applied to Drainage Lists A—O and Z, unless there are specific exceptions already noted for certain waterbodies or stream segments within one of these drainage lists. These specific changes to the drainage lists, however, are not reflected in this Annex, but will be added to the regulations upon codification in Chapter 93. Drainage lists A—G are located within the Delaware River Basin. Drainage lists H—O are located within the Susquehanna River Basin. Drainage list Z is located within the Potomac River Basin.)

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§ 93.9d. Drainage List D.

**Delaware River Basin in Pennsylvania
Lehigh River**

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
3—Penn Springs	Basin	Carbon	HQ-CWF, MF	None
3—Black Creek				
4—Hazle Creek	Basin	Carbon	HQ-CWF, MF	None
4—Beaver Creek	Basin	Carbon	CWF, MF	None
3—Black Creek	Main Stem, Confluence of Hazle Creek and Beaver Creek to Mouth	Carbon	CWF, MF	None
4—UNTs to Black Creek	Basins, Confluence of Hazle Creek and Beaver Creek to Mouth	Carbon	HQ-CWF, MF	None
4—Koons Creek	Basin	Carbon	HQ-CWF, MF	None
4—Quakake Creek	Basin, Source to Wetzel Creek	Carbon	HQ-CWF, MF	None

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
5—Wetzel Creek	Basin	Carbon	CWF, MF	None
4—Quakake Creek	Basin, Wetzel Creek to Mouth	Carbon	CWF, MF	None
4—Brushy Hollow Run	Basin	Carbon	HQ-CWF, MF	None
3—Maple Hollow	Basin	Carbon	HQ-CWF, MF	None

* * * * *

§ 93.9f. Drainage List F.

**Delaware River Basin in Pennsylvania
*Schuylkill River***

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
3—Monocacy Creek	Basin	Berks	WWF, MF	None
3—UNTs to Schuylkill River	Basins, (all UNT's along Montgomery County shore), Berks-Chester-Montgomery County Border to Valley Creek	Montgomery	WWF, MF	None
3—UNTs to Schuylkill River	Basins (all UNTs along Chester County shore except those in Spring City and Phoenixville), Berks-Chester-Montgomery County Border to Valley Creek	Chester	HQ-TSF, MF	None
3—UNTs to Schuylkill River	Basins, in Spring City and Phoenixville	Chester	WWF, MF	None
3—Valley Creek	Basin	Montgomery-Chester	EV, MF	None
3—UNTs to Schuylkill River	Basins, Valley Creek to Head of Tide	Philadelphia	WWF, MF	None
3—Trout Creek	Basin	Montgomery	WWF, MF	None

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§ 93.9i. Drainage List I.

**Susquehanna River Basin in Pennsylvania
*Susquehanna River***

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
2—Mehoopany Creek	Basin, Source to North Branch Mehoopany Creek	Wyoming	HQ-CWF, MF	None
3—North Branch Mehoopany Creek	Basin	Wyoming	CWF, MF	None
2—Mehoopany Creek	Basin, North Branch Mehoopany Creek to Mouth	Wyoming	CWF, MF	None
2—Taqes Creek	Basin	Wyoming	CWF, MF	None
2—Tunkhannock Creek	Main Stem, Source to Susquehanna-Wyoming County Border	Susquehanna-Wyoming	CWF, MF	None
3—UNTs to Tunkhannock Creek	Basins, Source to Susquehanna-Wyoming County Border	Susquehanna	CWF, MF	None
3—Bear Swamp Creek	Basin	Susquehanna	CWF, MF	None
3—Bell Creek	Basin	Susquehanna	CWF, MF	None

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
3—Nine Partners Creek	Basin	Susquehanna	CWF, MF	None
3—Partners Creek	Basin	Susquehanna	CWF, MF	None

* * * * *

§ 93.9l. Drainage List L.

**Susquehanna River Basin in Pennsylvania
West Branch Susquehanna River**

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
4—UNT 21134	Basin, Source to Rauchtown Creek	Lycoming	CWF, MF	None
5—Rauchtown Creek				
6—Rockey Run	Basin	Clinton	HQ-CWF, MF	None
6—Gottshall Run	Basin	Clinton	HQ-CWF, MF	None
5—Rauchtown Creek	Basin, Confluence of Rockey Run and Gottshall Run to Mouth	Lycoming	CWF, MF	None

* * * * *

§ 93.9m. Drainage List M.

**Susquehanna River Basin in Pennsylvania
Susquehanna River**

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
3—Trout Run	Basin	Northumberland	CWF, MF	None
3—Bennys Run	Basin	Northumberland	CWF, MF	None
3—Millers Run	Basin	Northumberland	CWF, MF	None

* * * * *

§ 93.9q. Drainage List Q.

**Ohio River Basin in Pennsylvania
Allegheny River**

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
4—Marsh Run	Basin	Crawford	CWF	None
4—Thompson Creek	Basin, Source to Shirley Run	Crawford	CWF	None
5—Shirley Run	Basin	Crawford	HQ-CWF	None
4—Thompson Creek	Basin, Shirley Run to Mouth	Crawford	CWF	None
5—Caldwell Creek	Basin, Source to West Branch Caldwell Creek	Warren	HQ-CWF	None
6—West Branch Caldwell Creek	Basin	Warren	EV	None
5—Caldwell Creek	Basin, West Branch Caldwell Creek to Mouth	Crawford	EV	None

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§ 93.9v. Drainage List V.

**Ohio River Basin in Pennsylvania
Monongahela River**

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
		* * * * *		
3—Bates Run	Basin	Fayette	WWF	None
3—Tenmile Creek	Basin, Source to South Fork Tenmile Creek	Greene-Washington	TSF	None
4—South Fork Tenmile Creek	Basin, Source to Browns Creek	Greene	HQ-WWF	None
5—Browns Creek	Basin	Greene	HQ-WWF	None
4—South Fork Tenmile Creek	Basin, Browns Creek to Mouth	Greene-Washington	WWF	None
3—Tenmile Creek	Basin, South Fork Tenmile Creek to Mouth	Greene-Washington-Fayette	WWF	None
		* * * * *		

§ 93.9x. Drainage List X.

Lake Erie

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
1—Lake Erie	All sections of lake in PA except Outer Erie Harbor and Presque Isle Bay	Erie	CWF	Delete Fe, DO1 and Bac1 See GLWQA Add E. coli per 40 CFR 131.41 (Except (f) and See 28 Pa. Code § 18.28(b)(2) and (3)
1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)	Portion of lake bordered by Presque Isle on west, longitude 80° 10' 18" on north, except harbor area and central channel dredged and maintained by United States Army Corps of Engineers.	Erie	WWF	Delete pH Add pH between 7 and 9 Add E. coli per 40 CFR 131.41 (Except (f) and See 28 Pa. Code § 18.28(b)(2) and (3)

RULES AND REGULATIONS

<i>Stream</i>	<i>Zone</i>	<i>County</i>	<i>Water Uses Protected</i>	<i>Exceptions To Specific Criteria</i>
1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)	Harbor area and central channel dredged and maintained by United States Army Corps of Engineers	Erie	WWF, Delete WC	Delete pH and Bac1 Add pH between 7 and 9, Bac2

* * * * *

[Pa.B. Doc. No. 09-916. Filed for public inspection May 15, 2009, 9:00 a.m.]

STATEMENTS OF POLICY

Title 25—ENVIRONMENTAL PROTECTION

DEPARTMENT OF ENVIRONMENTAL PROTECTION
[25 PA. CODE CH. 16]

Water Quality Toxics Management Strategy— Statement of Policy

The Department of Environmental Protection (Department) is amending Chapter 16 (relating to water quality toxics management—statement of policy). These amendments complement the triennial review and revision of Chapter 93 (relating to water quality standards). See 39 Pa.B. 2523 (May 16, 2009) for the text of the final-form rulemaking.

A. *Effective Date*

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

B. *Contact Persons*

For further information contact Richard H. Shertz, Chief, Division of Water Quality Standards, Bureau of Water Standards and Facility Regulation, 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 Pennsylvania AT&T Relay Service by calling (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This proposal is available electronically through the Department's web site (<http://www.depweb.state.pa.us>).

C. *Statutory Authority*

These amendments are made under the authority of 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 in 40 CFR 131.32 (relating to Pennsylvania) set forth certain requirements for portions of the Commonwealth's antidegradation program and the Federal regulation in 40 CFR 131.41 (relating to bacteriological criteria for those states not complying with Clean Water Act section 303(i)(1)(A)) sets forth bacteria criteria for coastal recreation waters in the Commonwealth.

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 in § 93.8a (relating to water quality criteria for toxic substances).

The revisions to Chapter 16 will consolidate the location of water quality criteria by incorporating the updated criteria into Chapter 93 water quality standards, streamline and clarify requirements, update the policy to be consistent with Federal requirements and preserve Pennsylvania-specific requirements to serve the citizens of this Commonwealth. 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) was briefed on the proposed amendments at its May 10, 2006, October 13, 2006, and May 9, 2007, meetings. In addition, the Department presented the proposed amendments to the Agricultural Advisory Board on August 22, 2007.

The proposed amendments were shared with the Environmental Quality Board (EQB) as a companion to the triennial review of water quality standards rulemaking at its October 16, 2007, meeting, although the EQB is not required to act on the revisions to the Department's Statement of Policy for toxic substances. The proposed amendments were published at 38 Pa.B. 258 (January 12, 2008) with provision for a 45-day public comment period, which closed on February 26, 2008. Comments were received from two commentators as a result of the public comment period and the public meetings. The Department considered all the public comments received on its proposal in preparing for the final amendments to the statement of policy. The draft final amendment was discussed with and approved by WRAC on July 22, 2008. The comments received on the proposed amendments are summarized in Section E.

E. *Summary of Responses to Comments and Changes to the Proposed Amendment*

A total of three comments were received concerning the proposed amendments. Changes were made to §§ 16.11, 16.32, 16.33 and 16.51(a) based on the comments received.

In §§ 16.11, 16.32 and 16.33 (relating to toxic substances; threshold level toxic effects; and nonthreshold effects (cancer)), the Department is adding citations to clarify that the Environmental Protection Agency (EPA) has added new methodologies for the development of human health criteria. This section mentions the *National Recommended Water Quality Criteria: 2002*. The EPA suggested that the structure of the sentence could imply that this document is guidance for developing criteria, whereas it actually housed the EPA's specific criteria recommendations. The EPA recommended the sentence be modified to read: "The EPA has updated the criteria or issued new criteria since 1980 based on new data, and more recently, new methodologies for developing human health criteria as summarized in the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (EPA-822-B-00-004, October 2000). The EPA's current criteria recommendations can be found in the National Recommended Water Quality Criteria (EPA-822-H-04-001, 2004), as amended and updated."

The Department has modified the sentences pertaining to the referenced documents as suggested by the EPA.

In § 16.32(b), it was noted that the EPA now recommends the use of bioaccumulation factors (BAFs) in the 2000 *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, although until BAFs can be developed, the EPA continues to accept the use of bioconcentration factors (BCFs). The Department intends to follow these recommendations regarding BAFs and BCFs.

It was requested that the Department clarify what will be included in Appendix A, Table 1A. In § 16.51(a) (relating to human health and aquatic life criteria) it is stated that this Appendix will list site-specific human health and aquatic life criteria that have been developed or reviewed and approved by the Department. The Summary of Amendments for Chapter 16 indicates that "site-specific criteria that are developed or approved by the Department will be housed in Appendix A, Table 1A until a time that there is an opportunity for a final rulemaking by the Board that incorporates the criteria into Chapter 93, Table 5." Since the contents of Table 1 have been relocated to § 93.8c, the former Table 1 is now reserved, and a new Table 1A is being created to house Site-Specific criteria for toxic substances. The Department has provided additional clarification in Chapter 16, as well as Chapter 93, that the site-specific criteria in Appendix A, Table 1A will be incorporated into the appropriate portion of §§ 93.9a—93.3z that relates to "Exceptions to Specific Criteria" unless, during rulemaking, it is determined that the same criterion has general Statewide applicability, whereas at that time it will be included into Table 5 in Chapter 93.

Changes to proposed amendments for Chapter 16

A detailed description of the comments and revisions to the Chapter 16 proposal follows:

§§ 16.11, 16.32 and 16.33.

In §§ 16.11, 16.32 and 16.33 (relating to toxic substances; threshold level toxic effects; and nonthreshold effects (cancer)), the Department has modified the sentences pertaining to the referenced documents as suggested by the EPA, which will read as follows:

"The EPA has updated the criteria or issued new criteria since 1980 based upon new data, and more recently, new methodologies for developing human health criteria as summarized in the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (EPA-822-B-00-004, October 2000). The EPA's current criteria recommendations can be found in the National Recommended Water Quality Criteria (EPA-822-H-04-001, 2004), as amended and updated."

§ 16.51(b).

The reference to Appendix A, Table 1A in § 16.51(b) will not be added as originally proposed because it is not applicable to a natural quality determination.

§ 16.102 General, Appendix A, Table 1A.

It was requested that the Department clarify what will be included in Appendix A, Table 1A. The Summary of Amendments for Chapter 16 indicates that, "site-specific criteria that are developed or approved by the Department will be housed in Appendix A, Table 1A until a time that there is an opportunity for a final rulemaking by the Board that incorporates the criteria into Chapter 93, Table 5."

The Department has added the following language to the introduction to the table, "A criterion placed in this table will remain a site-specific criterion as originally developed and be incorporated into the appropriate portion of §§ 93.9a—93.3z that relates to 'Exceptions to Specific Criteria' unless, during rulemaking, it is determined that the same criterion has general statewide applicability."

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

JOHN HANGER,
Secretary

(Editor's Note: Title 25 of the Pennsylvania Code is amended by amending a statement of policy in §§ 16.1, 16.11, 16.22, 16.24, 16.32, 16.33, 16.41, 16.51, 16.61, 16.101 and by adding Table 1A in Appendix A to read as set forth in Annex A.)

(Editor's Note: For a regulation relating to this statement of policy, see 39 Pa.B. 2523 (May 16, 2009).)

Fiscal Note: 7-512. 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

INTRODUCTION

§ 16.1. General.

Water quality criteria are the numeric concentrations, levels or surface water conditions that need to be maintained or attained to protect existing and designated uses. They are designed to protect the water uses listed in Chapter 93 (relating to water quality standards). The most sensitive of these protected uses are generally water supply, recreation and fish consumption, and aquatic life related. Therefore, criteria designed to protect these uses will normally protect the other uses listed in Chapter 93. This chapter specifies guidelines and procedures for development of criteria for toxic substances and also lists those site-specific criteria which have been developed.

DISCUSSION

§ 16.11. Toxic substances.

(a) These guidelines cover section 307(a) of The Federal Clean Water Act (33 U.S.C.A. § 1317(a)) priority pollutants and other toxic substances which the Department determines to be of concern due to their verified or suspected presence in wastewater discharges. Priority pollutants are the primary focus of concern because the EPA has determined them to be the most commonly used, persistent and toxic substances in wastewater discharges. They include many heavy metals and solvents.

(b) In November 1980, the EPA published criteria for protection of human health and aquatic life for 104 of the 129 priority pollutants. (There are currently 126 priority pollutants since three have subsequently been deleted.) These criteria were developed in accordance with National guidelines summarized at 45 FR 79318 (1980). The EPA has updated the criteria or issued new criteria since 1980 based upon new data, and more recently, new methodologies for developing human health criteria as summarized in the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (EPA-822-B-00-004, October 2000) and the *National Recommended Water Quality Criteria* (EPA-822-H-04-001, 2004), as amended and updated. The Department's procedures for establishing criteria for aquatic life and human health protection for priority pollutants, and other toxics of concern are discussed in this subchapter.

GUIDELINES FOR DEVELOPMENT OF AQUATIC LIFE CRITERIA

§ 16.22. Criteria development.

The Department will establish criteria for toxic substances to provide for protection of aquatic life in accordance with the following guidelines:

(1) For those toxics for which the EPA has developed criteria in accordance with the National guidelines as set forth in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (1985), as amended and updated, the Department will review and evaluate the criteria. If the Department determines that the criteria are adequate to protect indigenous aquatic communities in the State's waters, these criteria will serve as the basis for establishing total maximum daily loads (TMDLs) under Chapter 96 (relating to water quality standards implementation) or NPDES effluent limitations under Chapter 92 (relating to National Pollutant Discharge Elimination System permitting, monitoring and compliance). If the Department determines that the EPA National criteria are inappropriate, the Department will adjust these criteria in accordance with National guidelines to reflect the levels required for protection of aquatic life in this Commonwealth's waters.

(2) For those toxics identified or expected in a discharge for which the EPA has not developed criteria, the Department will develop criteria using EPA approved National guidelines.

§ 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) 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 located in § 93.8b (relating to metals criteria)) that was used to determine the dissolved criterion.

(c) NPDES dischargers may request alternate effluent limitations by using site-specific water quality character-

istics. 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.

(d) 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.

(e) 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.

(f) 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.

GUIDELINES FOR DEVELOPMENT OF HUMAN HEALTH-BASED CRITERIA

§ 16.32. Threshold level toxic effects.

(a) A threshold effect is defined as an adverse impact that occurs in the exposed individual only after a physiological reserve is depleted. For these effects there exists a dose below which no adverse response will occur. Threshold toxic effects include most systemic effects and developmental toxicity, including teratogenicity. Developmental toxicity includes all adverse effects in developing offspring resulting from prenatal exposure to a causative agent.

(b) Control of threshold toxics is based upon animal testing or epidemiological studies that report no- or lowest-observed adverse effect levels of the substance (NOAEL or LOAEL). In evaluating a particular toxic, toxicologists weigh the merits of all the tests, and choose, in their best professional judgment, the safe level. By applying standard margins of safety to the NOAEL, extrapolations from the laboratory animals to humans (factor of 10), for sensitive subpopulations (10), and from short-term to chronic studies (10) can be taken into account. An additional factor of 10 is used if only a LOAEL is available. Modifying factors (1-10), which account for deficiencies in the toxicity studies, are also considered in determining an acceptable exposure level. The current term for this acceptable level is reference dose (RfD); it was previously called the acceptable daily intake (ADI). The RfD is adjusted for protection of an average (70 Kg) person. It is then divided by expected exposure condition to result in an applicable criterion. Except as provided in § 16.61(b)(2) (relating to special provisions for the Great Lakes System), exposure conditions by means of water include 2 liters per day of drinking water and consumption of 17.5 grams of fish per day. Bioconcentration of toxics in edible portions of fish is accounted for by use of bioconcentration factors (BCF). BCF is the ratio in liters per kilogram of a substance's concentration in tissues of an aquatic organism to its concentration in the ambient water.

(c) The Department will establish criteria for threshold toxics in accordance with the following guidelines:

(1) If the EPA has developed criteria, the Department will evaluate and accept the criteria when it is determined that they are adequate to protect the designated water uses.

(2) If the EPA criteria have been evaluated, and have been determined to be inadequate to protect designated uses, or when no criteria have been developed for a substance identified or expected in a discharge, the Department will develop criteria following EPA's standard toxicological procedures outlined in the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (EPA-822-B-00-004, October 2000) and the *National Recommended Water Quality Criteria* (EPA-822-H-04-001, 2004), as amended and updated or Exhibit 3-1 of the Water Quality Standards Handbook, Second Edition, EPA 823-0-94-005A, August, 1994, as amended and updated.

(3) If no data are available to characterize the human health hazard of a chemical, no criterion will be developed. A criterion to protect the next most sensitive use will be used. A threshold criterion will be developed at a future date if information becomes available.

(d) The sources the Department uses to obtain relevant risk assessment values for protection for threshold level toxic effects to human health are as follows:

(1) Verified reference doses, listed in the EPA agency-wide supported data system known as IRIS (Integrated Risk Information System) and other EPA approved data sources referred through IRIS.

(2) Maximum Contaminant Level Goals.

(3) The EPA's CWA § 304(a) health criteria listed under the National Toxics Rule in 40 CFR 131.36 (57 FR 80848, December 22, 1992) (relating to toxics criteria for those States not complying with Clean Water Act section 303(c)(2)(B)), as amended and updated and other final criteria published by the EPA and the Great Lakes Initiative Clearinghouse.

(4) Teratology and other data that have been peer-reviewed may provide information for criteria development.

§ 16.33. Nonthreshold effects (cancer).

(a) A nonthreshold effect is defined as an adverse impact, including cancer, for which no exposure greater than zero assures protection to the exposed individual. Thus, in contrast to the threshold concept discussed in § 16.32 (relating to threshold level toxic effects), the nonthreshold approach to toxics control is based upon the premise that there is no safe concentration of the toxic.

(b) The Department has determined that the regulation of carcinogens from a water quality perspective in accordance with the procedure specified in the following subsections will adequately and reasonably protect human health.

(c) The Department accepts the evaluation and extrapolation modeling used by the EPA to quantitate the carcinogenic risk of particular chemicals. Cancer risk level criteria are, therefore, adaptations of the EPA's cancer potency (slope) factors. Criteria based on cancer risk levels are average lifetime exposure values.

(d) The Department's water quality toxics management program controls carcinogens to an overall risk management level of one excess case of cancer in a population of one million (1×10^{-6}). Expressing this another way, the probability of an individual getting cancer from an ambient water exposure to a carcinogen is increased by a

factor of one in one million. This level appears to be protective of human health to a significant degree when compared to other risks encountered in life.

(e) The Department uses a 1×10^{-6} cancer risk level as specified in § 93.8a(d) (relating to water quality criteria for toxic substances). Attainment of this risk level is predicated on exposure that includes drinking 2 liters of water and ingesting 17.5 grams of fish per day over a 70-year lifetime, except as provided in § 16.61(b)(2) (relating to special criteria for the Great Lakes Systems). Bioaccumulation of carcinogenic toxics in edible portions of fish are accounted for by use of bioaccumulation factors (BAFs).

(f) The Department will use the following guidelines in establishing criteria for nonthreshold toxics:

(1) The determination as to whether a substance is a carcinogen will be its identification by the EPA.

(2) For toxics for which (cancer potency) slope factors have been developed as evidenced by listing on IRIS the Department will either use the EPA developed criteria or will develop criteria based upon these potency factors using the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (EPA-822-B-00-004, October 2000) and the *National Recommended Water Quality Criteria* (EPA-822-H-04-001, 2004), as amended and updated or EPA's Standard Toxicological Procedures outlined in Exhibit 3-2 of the *Water Quality Standards Handbook*, Second Edition, EPA 823-0-94-005A, August, 1994, as amended and updated.

(3) For carcinogens or suspected carcinogens for which cancer potency (slope) factors have not been developed, the Department will use an additional margin of safety (factor of 10) with threshold toxicity data to develop a protective health criterion.

CRITERIA MODIFICATION

§ 16.41. Changes and additions.

The criteria in Chapter 93, Table 5 and site-specific criteria in Appendix A, Table 1A for toxic substances are based on the best scientific information currently available. These criteria may, however, be added to or modified if the Department determines upon evaluation of new scientific findings and information that a change is warranted. Submittal of data and information will be considered by the Department for this purpose. Site-specific criteria development will be performed in accordance with § 93.8d (relating to development of site-specific water quality criteria). Changes and additions to the tables will be published in the *Pennsylvania Bulletin*.

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

§ 16.51. Human health and aquatic life criteria.

(a) Appendix A, Table 1A and Chapter 93, Table 5 list the human health and aquatic life criteria for toxic substances which the Department uses in development of effluent limitations in NPDES Permits and for other purposes. Appendix A, Table 1A lists site-specific human health and aquatic life criteria that have been developed or reviewed and approved by the Department. The human health criteria, which include exposures from drinking water and fish consumption, are further defined as to the specific effect (that is, cancer or threshold health effects). For those aquatic life criteria which are hardness related and specified as a formula, such as several of the heavy metals, the Department will use the specific hardness of the receiving stream after mixing with the waste discharge in calculating criteria on a case-by-case basis. The priority pollutant numbers (PP NO) used by the EPA to

identify priority pollutants are included in Table 1A for reference purposes. Some of these criteria may be superseded for the Delaware Estuary, Ohio River Basin, Lake Erie Basin, and Genesee River Basin under interstate and international compact agreements with the Delaware River Basin Commission, Ohio River Valley Sanitation Commission and International Joint Commission respectively. The toxics substances in Chapter 93, Table 5 without a PP NO are state-derived criteria. The criteria in Appendix A, Table 1A and Chapter 93, Table 5 do not apply to the Great Lakes System. Water quality criteria for the Great Lakes System are contained in § 93.8e, Tables 6 and 7 (relating to special criteria for the Great Lakes System). Criteria may be developed for the Great Lakes System for substances other than those listed in Table 6 under the methodologies in § 16.61 (relating to special provisions for the Great Lake System).

(b) If the Department determines that the natural quality of a surface water segment is of lower quality than the applicable criteria listed in Chapter 93, Table 5, the natural quality shall constitute the aquatic life criterion for that segment. All draft natural quality determinations shall be published in the *Pennsylvania Bulletin* and be subject to a minimum 30 day comment period. The Department will maintain a publicly available list of surface waters and parameters where this subsection applies, and will, from time to time, submit appropriate amendments to these chapters.

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) *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).

(c) *Minimum protections.* The Department will follow guidance that is as protective as the final water quality guidance for the Great Lakes System at 40 FR 15366 (March 23, 1995), as updated and amended.

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 to at least the microgram per liter ($\mu\text{g/l}$) or part per billion (ppb) range, or lower as required by the analytical method. The use of clean techniques reduces the incidence of overstatement of environmental concentrations of trace substances.

APPENDIX A

TABLE 1 [Reserved]

TABLE 1A

SITE-SPECIFIC WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

The following table contains water quality criteria that were developed based on a need for a site-specific water quality criterion, and according to the guidelines for criteria development, as contained in this chapter. The sources the Department of Environmental Protection (Department) uses to obtain relevant risk assessment values for these criteria include, but is not limited to, United States Environmental Protection Agency agency-wide supported data systems such as Integrated Risk Information System (IRIS) and ECOTOX; the Great Lakes' Tier II aquatic life criteria guidelines; and other nationally developed criteria as reviewed and approved by the Department for Statewide use. A criterion placed in this table will remain a site-specific criterion as originally developed and be incorporated into the appropriate portion of §§ 93.9a–93.9z that relates to “exceptions to specific criteria” unless, during rulemaking, it is determined that the same criteria has general Statewide applicability.

<i>Fish and Aquatic Life Criteria</i>									
<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>	<i>Health Effect</i>	<i>Drainage List</i>	<i>Water Body/County</i>	
-	1,4 Dioxane	123911	103000	515000	3.0	CRL	F	West Branch Perkiomen Creek, Berks County	
-	Acrylamide	79061	N/A	N/A	.008	CRL	S	Stump Creek, Henderson Township, Jefferson County	

Acronyms and Footnotes to Table 1A

CAS—Chemical Abstract Service number

CRL—Cancer risk level at 1×10^{-6}

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

$\ln [H]$ —Natural Logarithm of the Hardness of stream as mg/l CaCO_3

ug/L—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

TABLE 2A
APPROVED EPA ANALYTICAL METHODS AND
DETECTION LIMITS: INORGANICS

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (μ/l)</i>	<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (μ/l)</i>
— ALUMINUM (07429905)	3111 D (AA, flame)	NA	5M CHROMIUM VI (07440473)	3111 C (AA extraction)	NA
	3113 B (AA, furnace)	3		3120* ¹ (ICP)	7
	200.7 (ICP/AES)	20		218.6 (Ion Chromatography)	NA
	200.8 (ICP/MS)	1	— COBALT (07440484)	3111 B (AA, flame)	30
	200.9 (STGFAA)	7.8		3113 B (AA, furnace)	1
3500 Al B* ¹	6	200.7 (ICP/AES)		2	
(Colorimetric)		200.8 (ICP/MS)		.09	
D4190-94* ⁴ (DCP)	NA	200.9 (STGFAA)		0.7	
1M ANTIMONY (07440360)	3111 B (AA, flame)	70	6M COPPER (07440508)	D4190-94, 99* ⁴ (DCP)	NA
	3113 B (AA, furnace)	3		3111 B (AA, flame)	10
	200.7 (ICP)	32		3113 B (AA, furnace)	1
	200.8 (ICP/MS)	0.4		200.7 (ICP/AES)	3
	200.9 (STGFAA)	0.8		200.8 (ICP/MS)	0.5
2M ARSENIC (07440382)	3113 B (AA, furnace)	1	— IRON (07439921)	200.9 (STGFAA)	0.7
	3114 B. d (AA, hydride)	NA		3500-Cu B* ¹	3
	3500 B (SDDC)	2		(Colorimetric)	
	200.7 (ICP/AES)	8		3500-Cu C* ¹	20
	200.8 (ICP/MS)	1.4		(Colorimetric)	
— BARIUM (14798084)	200.9 (STGFAA)	0.5	7M LEAD (07439921)	D4190-94, 99* ⁴ (DCP)	NA
	3111 D (AA, flame)	NA		3111 B or C (AA, flame)	20
	3113 B (AA, furnace)	2		3113 B (AA, furnace)	1
	200.7 (ICP/AES)	1		200.7 (ICP/AES)	30
	200.8 ICP/MS	1.4		200.9 (STGFAA)	NA
3M BERYLLIUM	—* ³ (DCP)	NA	— MAGNESIUM (07439954)	3500-Fe B* ¹	10
	3111 D (AA, flame)	NA		(Colorimetric)	
	3113 B (AA, furnace)	0.2		D4190-94, 99* ⁴ (DCP)	NA
	200.7 (ICP/AES)	0.3		3111 B (AA, flame)	0.5
	200.8 (ICP/MS)	0.3		200.7 (ICP/AES)	20
— BORON (07440428)	200.9 (STGFAA)	.02	— MANGANESE (07439965)	3500-Mg D* ¹	NA
	3500-Be D* ¹	5		(Gravimetric)	
	(Colorimetric)			—* ³ (DCP)	NA
	D4190-94, 99* ⁴ (DCP)	NA		3111 B (AA, flame)	10
	4500 B B (Colorimetric)	0.2		3113 B (AA, furnace)	0.2
4M CADMIUM (07440439)	200.7 (ICP/AES)	3	8M MERCURY (07439976)	245.1 (Cold vapor, Man)	0.2
	D4190-94, 99* ⁴ (DCP)	NA		245.2 (Cold vapor, Auto)	0.2
	3111 B OR C (AA, flame)	3		245.7 (CVAFS)	NA
	3113 B (AA, furnace)	0.1		1631 E (Purge and Trap CVAFS)	0.0002
	200.7 (ICP/AES)	1		— MOLYBDENUM (07439987)	3111 D (AA, flame)
200.8 (ICP/MS)	0.5	3113 B (AA, furnace)	1		
200.9 (STGFAA)	.05	200.7 (ICP/AES)	4		
3500-Cd D* ¹	0.5	200.8 (ICP/MS)	0.3		
(Colorimetric)					
5M CHROMIUM TOTAL (07440473)	D3557-95, 02(C)* ⁴	NA			
	(Voltametry)				
	D4190-94, 99* ⁴ (DCP)	NA			
	3111 B (AA, flame)	20			
	3113 B (AA, furnace)	2			

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (μ/l)</i>	<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (μ/l)</i>	
9M NICKEL (07440020)	3111 B or C (AA, flame)	20	14M CYANIDE, TOTAL (00057125)	4500-CN D* ¹ (Titrimetric)	1000	
	3113 B (AA, furnace)	1		4500-CN E (Spectrophometric)	20	
	200.7 (ICP/AES)	5		335.4 (Color., Auto)	5	
	200.8 (ICP/MS)	0.5		** CYANIDE, 14M FREE (00057125)	—(DEP Free CN method, Auto)	1
	200.9 (STGFAA)	0.6		Not EPA approved 4500-CN I* ¹	NA	
10M SELENIUM (07782492)	3500-Ni D* ¹ (Colorimetric)	NA	PHENOLS TOTAL	420.1 (4AAP, Manual)	5	
	D4190-94, 99* ⁴ (DCP)	NA		420.4 (4AAP, Auto)	2	
	3113 B (AA, furnace)	2		* Not an EPA developed method, but approved by EPA Source is:		
	200.7 (ICP/AES)	20		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 Meth- ods 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.		
	200.8 (ICP/MS)	7.9		² —Hach Handbook of Wastewater Analysis. 1979.		
11M SILVER (07440224)	200.9 (STGFAA)	0.6	³ —Direct Current Plasma (DCP) Optical Emission Spec- trometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029. Applied Research Labora- tories, Inc., 1986—Revised 1991.			
	—* ³ (DCP)	NA	⁴ —ASTM Annual Book of Standards, Section 11, Water. American Society for Testing and Materials, 1999.			
	3111 B or C (AA, flame)	10	** EPA currently measures "total cyanide" to satisfy cya- nide limits and has not yet approved analytical methods for "free cyanide." Free cyanide is a DEP required analy- sis, and either of the three listed methods are acceptable for its determination.			
	3113 B (AA, furnace)	0.2	NOTE: Metal samples are to be unfiltered and predi- gested for measurement of the total recoverable (not dissolved) fraction. Samples for dissolved measurement are to be field filtered.			
	200.7 (ICP/AES)	2				
12M THALLIUM (07440280)	200.8 (ICP/MS)	0.1				
	200.9 (STGFAA)	0.6				
	—* ³ (DCP)	NA				
	3111 B (AA, flame)	NA				
	279.2 (AA, furnace)	1				
— TIN (07440315)	200.7 (ICP/AES)	1				
	200.8 (ICP/MS)	0.3				
	200.9 (STGFAA)	0.7				
	3111 B (AA, flame)	800				
— TITANIUM (07440326)	3113 B (AA, furnace)	5				
	200.7 (ICP/AES)	7				
	200.9 (STGFAA)	1.7				
	3111 D (AA, flame)	400				
13M ZINC (07440666)	283.2 (AA, furnace)	10				
	—* ³ (DCP)	NA				
	200.7 (ICP/AES)	2				
	3500-Zn E* ¹ (Colorimetric)	1				
	3500-Zn B* ¹ (Colorimetric)	20				
	289.2 (AA furnace)	.05				
200.8 (ICP/MS)	1.8					
	D4190-94, 99* ⁴ (DCP)	NA				

TABLE 2B

APPROVED EPA ANALYTICAL METHODS AND DETECTION LIMITS: ORGANICS

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>	
1A	2-CHLOROPHENOL (00095578)	604—GC/FID	0.31
		604—GC/ECD	0.58
		625—GC/MS	3.3
		1625B—GC/MS(isotope)	10
2A	2,4-DICHLOROPHENOL (00120832)	604—GC/FID	0.39
		604—GC/ECD	0.68
		625—GC/MS	2.7
		1625B—GC/MS(isotope)	10

STATEMENTS OF POLICY

2551

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>	
3A	2,4-DIMETHYLPHENOL (00105679)	604—GC/FID	0.32
		604—GC/ECD	0.63
		625—GC/MS	2.7
		1625B—GC/MS(isotope)	10
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

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>
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
11V	CHLOROFORM (00067663)	601—GC/Hal. 0.05 624—GC/MS 1.6 1624B—GC/MS(isotope) 10
12V	DICHLOROBROMOMETHANE (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) (cis—10061-01-5) (trans—10061-02-6)	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

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>
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
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)	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
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

STATEMENTS OF POLICY

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>	
15B	BUTYLBENZYL PHTHALATE (00085687)	606—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.34 2.5 10
16B	2-CHLORONAPHTHALENE (00091587)	612—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.94 1.9 10
17B	4-CHLOROPHENYL PHENYL ETHER (07005723)	611—GC/Hal. 625—GC/MS 1625B—GC/MS(isotope)	3.9 4.2 10
18B	CHRYSENE (00218019)	610—GC/FID 610—HPLC 625—GC/MS 1625B—GC/MS(isotope)	NA 0.15 2.5 10
19B	DIBENZO(a,h) ANTHRACENE (00053703)	610—GC/FID 610—HPLC 625—GC/MS 1625B—GC/MS(isotope)	NA 0.030 2.5 20
20B	1,2-DICHLOROBENZENE (00095501)	601—GC/Hal. 602—GC/PID 624—GC/MS 1625B—GC/MS(isotope)	0.15 0.40 NA 10
21B	1,3-DICHLOROBENZENE (00541731)	601—GC/Hal. 602—GC/PID 624—GC/MS 1625B—GC/MS(isotope)	0.32 0.40 NA 10
22B	1,4-DICHLOROBENZENE (00106467)	601—GC/Hal. 602—GC/PID 624—GC/MS 1625B—GC/MS(isotope)	0.24 0.30 NA 10
23B	3,3'-DICHLOROBENZIDINE ⁽²⁾ (00091941)	605—HPLC 625—GC/MS 1625B—GC/MS(isotope)	0.13 16.5 50
24B	DIETHYL PHTHALATE (00084662)	606—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.49 1.9 10
25B	DIMETHYL PHTHALATE (00131113)	606—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.29 1.6 10
26B	DI-N-BUTYL PHTHALATE (00084742)	606—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.36 2.5 10
27B	2,4-DINITROTOLUENE (00121142)	609—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.02 5.7 10
28B	2,6-DINITROTOLUENE (00606202)	609—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	0.01 1.9 10
29B	DI-N-OCTYL PHTHALATE (00117840)	606—GC/ECD 625—GC/MS 1625B—GC/MS(isotope)	3.0 2.5 10
30B	1,2-DIPHENYLHYDRAZINE (00122667)	625—GC/MS 1625B—GC/MS(isotope)	10 20
31B	FLUORANTHENE (00206440)	610—GC/FID 610—HPLC 625—GC/MS 1625B—GC/MS(isotope)	NA 0.21 2.2 10

STATEMENTS OF POLICY

2555

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>
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
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 INDENO(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
1P ALDRIN (00309002)	608 - GC/ECD	0.004
	625 - GC/MS	1.9
2P alpha-BHC ⁽⁵⁾ (00319846)	608 - GC/ECD	0.003
	625 - GC/MS	NA

STATEMENTS OF POLICY

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>
3P	beta-BHC (00319857)	608 - GC/ECD 4.2 625 - GC/MS
4P	gamma-BHC ⁽⁵⁾ (LINDANE) (00058899)	608 - GC/ECD 0.004 625 - GC/MS NA
5P	delta-BHC (00319868)	608 - GC/ECD 0.009 625 - GC/MS 3.1
6P	CHLORDANE (00057749)	608 - GC/ECD 0.014 625 - GC/MS NA
7P	4,4'-DDT (00050293)	608 - GC/ECD 0.012 625 - GC/MS 4.7
8P	4,4'-DDE (00072559)	608 - GC/ECD 0.004 625 - GC/MS 5.6
9P	4,4'-DDD (00072548)	608 - GC/ECD 0.011 625 - GC/MS 2.8
10P	DIELDRIN (00060571)	608 - GC/ECD 0.002 625 - GC/MS 2.5
11P	alpha-ENDOSULFAN ⁽⁵⁾ (00095988)	608 - GC/ECD 0.014 625 - GC/MS NA
12P	beta-ENDOSULFAN ⁽⁵⁾ (33212659)	608 - GC/ECD 0.004 625 - GC/MS NA
13P	ENDOSULFAN SULFATE (01031078)	608 - GC/ECD 0.066 625 - GC/MS 5.6
14P	ENDRIN ⁽⁵⁾ (00072208)	608 - GC/ECD 0.006 625 - GC/MS NA
15P	ENDRIN ALDEHYDE (07421934)	608 - GC/ECD 0.023 625 - GC/MS NA
16P	HEPTACHLOR (00076448)	608 - GC/ECD 0.003 625 - GC/MS 1.9
17P	HEPTACHLOR EPOXIDE (01024573)	608 - GC/ECD 0.083 625 - GC/MS 2.2
18P	PCB-1242 (53469219)	608 - GC/ECD 0.065 625 - GC/MS NA
19P	PCB-1254 (11097691)	608 - GC/ECD NA 625 - GC/MS 36

<i>Parameter (CAS)</i>	<i>Method Number (Description) *Source</i>	<i>Detection Limit (MDL) (μ/l)</i>	
20P	PCB-1221 (11104282)	608 - GC/ECD 625 - GC/MS	NA 30
21P	PCB-1232 (11141165)	608 - GC/ECD 625 - GC/MS	NA NA
22P	PCB-1248 (12672296)	608 - GC/ECD 625 - GC/MS	NA NA
23P	PCB-1260 (11096825)	608 - GC/ECD 625 - GC/MS	NA NA
24P	PCB-1016 (12674112)	608 - GC/ECD 625 - GC/MS	NA NA
25P	TOXAPHENE (08001352)	608 - GC/ECD 625 - GC/MS	0.24 NA
PP	2,3,7,8-TCDD (01746016)	613 - GC/MS	0.002

NA = Not available.

(1)—If acrolein and/or acrylonitrile is expected, use method 603 as screening method.

(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.

(3)—When Hexachlorocyclopentadiene is known to be present, screen with EPA 612.

(4)—When N-Nitrosodimethylamine and/or N-Nitrosodiphenylamine are known to be present, screen with EPA 607.

(5)—When alpha-BHC, gamma-BHC (Lindane) alpha-Endosulfan (I), beta-Endosulfan (II) and/or Endrin are known to be present, screen with EPA 608.

**TABLE 3
DESCRIPTION OF EPA METHODS FOR THE ANALYSIS OF PRIORITY POLLUTANT ORGANICS**

<i>EPA Method Number</i>	<i>Description of Method</i>	<i>Types of Compounds Analyzed</i>
601	Gas chromatography (GC) using purge and trap system with halide specific detector (HAL).	29 Purgeable Halocarbons (Volatile fraction)
602	Gas chromatography using purge and trap system photorization detector (PED).	Purgeable aromatics (4 Volatiles 3 base/neutrals)
603	Gas chromatography using purge and trap system with flame ionization detector (FID).	Acrolein Acrylonitrile
604	Gas chromatography preceded by extraction, using a flame ionization detector.	Acid extractable fraction (10 phenols)
605	High performance liquid chromatography (HPLC) preceded by acid-back extraction with electrochemical detector.	Benzidine 3,3'-Dichlorobenzidine
606	Gas chromatography preceded by extraction using a flame ionizer or electron capture detector (ECD).	6 Phthalate esters
607	Gas chromatography preceded by extraction using a nitrogenphosphorous detector.	N-Nitrosodimethylamine N-Nitrosodi-n-propylamine N-Nitrosodiphenylamine

STATEMENTS OF POLICY

<i>EPA Method Number</i>	<i>Description of Method</i>	<i>Types of Compounds Analyzed</i>
608	Gas chromatography preceded by extraction and measured with a electron capture detector.	Pesticide fraction, including PCBs (25 cmpds)
609	Gas chromatography preceded by extraction using a flame ionization or electron capture detector.	2,4-Dinitrotoluene 2,6-Dinitrotoluene Isophorone Nitrobenzene
610	Extraction followed by separation by a) gas chromatography with flame ionization detector, or b) high performance liquid chromatography with ultraviolet (UV) or fluorescence detector.	16 Polynuclear aromatic hydrocarbons
611	Gas chromatography preceded by extraction using a halide specific detector.	5 Haloethers
612	Gas chromatography preceded by extraction using an electron capture detector.	9 chlorinated hydrocarbons
613	Gas chromatography preceded by extraction and measured with a mass spectrometer (MS)	2,3,7,8-TCDD
624	Gas chromatography, using purge and trap system, detected with a mass spectrometer.	Purgeable (volatile) fraction
625	Gas chromatography, preceded by separation via acid and basic extraction, detected with a mass spectrometer.	Acid and base/neutral fractions
1624	Volatile organic compounds by isotope dilution GC/MS.	Purgeable (volatile) fraction
1625B	Semivolatile organic compounds by isotope dilution GC/MS.	Acid and base/neutral fractions

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