

ILLINOIS POLLUTION CONTROL BOARD
February 19, 1998

IN THE MATTER OF:)
)
SAFE DRINKING WATER ACT) R98-2
UPDATE, USEPA Amendments to) (Identical-in-Substance
Part 611 (January 1, 1997 through) Rulemaking - Public Water Supply)
June 30, 1997))

Adopted Rule. Final Order.

OPINION AND ORDER OF THE BOARD (by R.C. Flemal):

The Board today updates its regulations that are identical in substance to the United States Environmental Protection Agency's (USEPA) regulations implementing the Safe Drinking Water Act (SDWA) (42 U.S.C § 300f *et seq.* (1996)). 415 ILCS 5/17.5 (1996). The Board rules are contained in 35 Ill. Adm. Code 611. The text of the proposed rules appears in the order segment of this document.

Section 17.5 of the Environmental Protection Act (Act) provides for quick adoption of regulations that are identical in substance to federal regulations. Section 17.5 provides that Title VII of the Act and Section 5 of the Administrative Procedure Act (APA) (5 ILCS 100/5-35, 5-45 (1996)) does not apply. Because this rulemaking is not subject to Section 5 of the APA, it is not subject to first notice requirements or second notice review by the Joint Committee on Administrative Rules (JCAR). On December 4, 1997, the Board adopted a first notice proposal for publication in the *Illinois Register* whereupon a 45-day comment period commenced. 21 Ill. Reg. 16956 (December 26, 1997).

As discussed more fully below, this rulemaking involves revisions to Part 611 regarding radiological monitoring and analytical requirements. It includes corrections to the federal rules, as adopted by the USEPA on March 5, 1997, (62 Fed. Reg. 10168 (March 5, 1997)) that affect the implementation of those rules.

PUBLIC COMMENTS

The public comment period closed on February 9, 1998. One public comment (PC 1) was filed by Connie L. Tonsor, on behalf of the Illinois Environmental Protection Agency. The Agency requests that the Board make several nonsubstantive grammatical corrections to Sections 611.102 and 611.720 for clarification purposes. PC 1 at 2-4. In addition, the Agency asks that the Board delete all references to the HASL Procedure Manual in Sections 611.102 and 611.720. PC 1 at 1-4.

The Board agrees with the Agency that its suggested nonsubstantive grammatical changes are necessary to clarify the incorporations by reference and the analytical methods set

forth in Sections 611.102 and 611.720, respectively. Accordingly, the Board makes those changes suggested by the Agency.

As for the Agency's request that the Board delete all references to the HASL Procedure Manual, the Board declines such request. The Board notes that Section 611.102 is derived from 40 CFR, Appendix B and C (1995). Further, Section 611.720 is derived from 40 CFR 141.25(a) (1995). In addition, other sections in the federal regulations, namely 40 CFR 141.25(b), still reference the HASL Procedure Manual. Section 17.5 of the Act requires the Board to adopt regulations that are identical in substance to federal regulations. If the Board were to delete the references to the HASL Procedure Manual in the aforementioned sections, it would create a situation where Illinois' regulations are no longer identical in substance to the corresponding federal regulations. The Board therefore declines to make these changes until it receives further interpretation from the federal government regarding the applicability of the HASL Procedure Manual.

Accordingly, apart from the nonsubstantive grammatical changes suggested by the Agency, the Board proceeds to adoption of the amendments as proposed on December 4, 1997. See Safe Drinking Water Act Update, USEPA Amendments to Part 611 (January 1, 1997 through June 30, 1997) December 4, 1997, R98-2.

SUMMARY OF THE PROPOSED AMENDMENTS

The adopted amendments approve the use of 66 additional analytical methods for compliance with current radionuclide drinking water standards and monitoring requirements. The methods are applicable to gross alpha, gross beta, tritium, uranium, radium-226, radium-228, gamma emitters, and radioactive cesium, iodine, and strontium. Entities potentially regulated by this action are public water systems that have at least 15 service connections or regularly serve an average of at least 25 individuals daily at least 60 days out of the year.

The SDWA, as amended in 1996, requires USEPA to promulgate national primary drinking water regulations (NPDWRs) that specify maximum contaminant levels (MCLs) or treatment techniques for drinking water contaminants. 42 U.S.C. 300g-1 (1996). NPDWRs apply to public water systems. 42 U.S.C. 300f(1)(A) (1996).

USEPA has promulgated analytical methods for all currently regulated drinking water contaminants for which MCLs or monitoring requirements have been promulgated. In most cases, USEPA has promulgated regulations approving use of more than one analytical method for measurement of a contaminant, and laboratories may use any approved method for determining compliance with an MCL or monitoring requirement.

On July 18, 1991 (56 Fed. Reg. 33050 (July 18, 1991)), USEPA proposed to increase the number of methods approved for radionuclide monitoring by proposing the use of several new methods. As previously stated, USEPA finalized these rules on March 5, 1997, (62 Fed. Reg. 10168 (March 5, 1997)).

The Board notes that, in Section 611.102(b) (Incorporations by Reference), USEPA refers to “Standard Methods for the Examination of Water and Wastewater,” (Standard Methods), 17th edition; however, USEPA does not specifically identify which methods are found in that particular edition. In the December 4, 1997, proposal, the Board included a reference to the Standard Methods, 17th edition, in Section 611.102, but invited public comment regarding which methods specifically are found in the 17th edition. As no such comments were received, the Board will proceed to final adoption with the reference as included in the December 4, 1997, proposal. The Board further notes that it has made two additional nonsubstantive changes in Section 611.102(b) to correct citations to the Code of Federal Regulations.

SDWA REGULATORY HISTORICAL SUMMARY

The Board adopted the initial round of USEPA drinking water regulations, including the “Phase I” rules, adopted by USEPA prior to June 30, 1989, as follows:

R88-26 114 PCB 149, August 9, 1990, (14 Ill. Reg. 16517, effective September 20, 1990).

Subsequent dockets updated the regulations to include federal amendments since that time:

R90-4 112 PCB 317, dismissed June 21, 1990, (no USEPA amendments July 1, 1989, through December 31, 1989).

R90-13 117 PCB 687, December 20, 1990, (15 Ill. Reg. 1562, effective January 22, 1991) (January 1, 1990, through June 30, 1990).

R90-21 116 PCB 365, November 29, 1990, (14 Ill. Reg. 20448, effective December 11, 1990) (Corrections to R88-26).

R91-3 137 PCB 253, November 19, 1992, (16 Ill. Reg. 19010, December 11, 1992, effective December 1, 1992) (USEPA Phase II and Coliforms – consolidated with R92-9; July 1, 1990, through January 31, 1991).

R91-15 137 PCB 627, dismissed December 3, 1992, (no USEPA amendments February 1, 1991, through May 31, 1991).

R92-3 May 6, 1993, (17 Ill. Reg. 7796, May 28, 1993, effective May 18, 1993) (USEPA Phase IIB and Lead and Copper rules; June 1, 1991, through December 31, 1991).

R92-9 137 PCB 253, November 19, 1992, (16 Ill. Reg. 19010, December 11, 1992, effective December 1, 1992) (Corrections to Phase I rules, R88-26 – consolidated with R91-3).

- R92-12 137 PCB 725, dismissed December 3, 1992, (no USEPA amendments July 1, 1991, through June 30, 1991).
- R93-1 July 14, 1993, (17 Ill. Reg. 12648, August 6, 1993, effective July 23, 1993) (USEPA Phase V rules; July 1, 1992, through December 31, 1992).
- R93-19 Dismissed September 23, 1993, (no USEPA amendments January 1, 1992, through June 30, 1992).
- R94-4 July 21, 1994, (18 Ill. Reg. 12291, August 5, 1994, effective July 28, 1995) (TTHM analytical methods; July 1, 1993, through December 31, 1993).
- R94-23 June 15, 1995, (19 Ill. Reg. 8613, effective June 20, 1995) (Lead and Copper Corrections; January 1, 1994, through June 30, 1994) (Consolidated with R95-3).
- R95-3 June 15, 1995, (19 Ill. Reg. 8613, effective June 20, 1995) (Phase II, IIB & V Corrections & Analytical Methods Amendments; July 1, 1994, through December 31, 1994) (Consolidated with R94-23).
- 95-17 September 5, 1996, (20 Ill. Reg. 14493, effective October 22, 1996) (Corrections to analytical methods and deletion of obsolete, redundant, and outdated provisions; January 1, 1995, through June 30, 1995).
- R96-17 Dismissed March 7, 1996, (no USEPA amendments July 1, 1995, through December 31, 1995).
- R 97-2 Dismissed October 17, 1996, (no USEPA amendments January 1, 1996, through June 30, 1996).
- R97-18 Dismissed May 1, 1997, (no USEPA amendments July 1, 1996, through December 31, 1996)
- R98-2 This docket.

ORDER

The Board submits these adopted amendments to the Secretary of State for publication in the *Illinois Register*.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

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AUTHORITY: Implementing Sections 17 and 17.5 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/17, 17.5 and 27].

SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg. 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, December 1, 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at ____ Ill. Reg. _____, effective _____.

Note: Capitalization denotes statutory language.

SUBPART A: GENERAL

Section 611.102 Incorporations by Reference

- a) Abbreviations and short-name listing of references. The following names and abbreviated names, presented in alphabetical order, are used in this Part to refer to materials incorporated by reference:

“Amco-AEPA-1 Polymer” is available from Advanced Polymer Systems.

“ASTM Method” means a method published by and available from the American Society for Testing and Materials (ASTM).

“Colisure Test” means “Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water”, available from Millipore Corporation, Technical Services Department.

“Dioxin and Furan Method 1613” means “Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS”, available from NTIS.

“GLI Method 2” means GLI Method 2, “Turbidity”, Nov. 2, 1992, available from Great Lakes Instruments, Inc.

“Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources”, available from USEPA Science and Technology Branch.

“HASL Procedure Manual” means HASL Procedure Manual, HASL 300, available from ERDA Health and Safety Laboratory.

“Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure”, NCRP Report Number 22, available from NCRP.

“NCRP” means “National Council on Radiation Protection”.

“NTIS” means “National Technical Information Service”.

“New Jersey Radium Method” means “Determination of Radium 228 in Drinking Water”, available from the New Jersey Department of Environmental Protection.

“New York Radium Method” means “Determination of Ra-226 and Ra-228 (Ra-02)”, available from the New York Department of Public Health.

“ONGP-MUG Test” (meaning “minimal medium ortho-nitrophenyl-beta-d-galactopyranoside-4-methyl-umbelliferyl-beta-d-glucuronide test”), also called the “Autoanalysis Colilert System”, is Method 9223, available in “Standard Methods for the Examination of Water and Wastewater”, 18th ed., from American Public Health Association.

“Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions”, available from NTIS.

“Radiochemical Methods” means “Interim Radiochemical Methodology for Drinking Water”, available from NTIS.

“Standard Methods”, means “Standard Methods for the Examination of Water and Wastewater”, available from the American Public Health Association or the American Waterworks Association.

“Technical Bulletin 601” means “Technical Bulletin 601, Standard Method of Testing for Nitrate in Drinking Water”, July, 1994, available from Analytical Technology, Inc.

“Technicon Methods” means “Fluoride in Water and Wastewater”, available from Technicon.

“USDOE Manual” means “EML Procedures Manual”, available from the United State Department of Energy.

“USEPA Asbestos Methods-100.1” means Method 100.1, “Analytical Method for Determination of Asbestos Fibers in Water”, available from NTIS.

“USEPA Asbestos Methods-100.2” means Method 100.2, “Determination of Asbestos Structures over 10-mm in Length in Drinking Water”, available from NTIS.

“USEPA Environmental Inorganics Methods” means “Methods for the Determination of Inorganic Substances in Environmental Samples”, available from NTIS.

“USEPA Environmental Metals Methods” means “Methods for the Determination of Metals in Environmental Samples”, available from NTIS.

“USEPA Organic Methods” means “Methods for the Determination of Organic Compounds in Drinking Water”, July, 1991, for Methods 502.2, 505, 507, 508, 508A, 515.1, and 531.1; “Methods for the Determination of Organic Compounds in Drinking Water--Supplement I”, July, 1990, for Methods 506, 547, 550, 550.1, and 551; and “Methods for the Determination of Organic Compounds in Drinking Water--Supplement II”, August, 1992, for Methods 515.2, 524.2, 548.1, 549.1, 552.1, and 555, available from NTIS. Methods 504.1, 508.1, and 525.2 are available from EPA EMSL.

“USGS Methods” means “Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments”, available from NTIS and USGS.

“USEPA Interim Radiochemical Methods” means “Interim Radiochemical Methodology for Drinking Water”, EPA 600/4-75-008 (revised), March 1976. Available from NTIS.

“USEPA Radioactivity Methods” means “Prescribed Procedures for Measurement of Radioactivity in Drinking Water”, EPA 600/4-80-032, August 1980. Available from NTIS.

“USEPA Radiochemical Analyses” means “Radiochemical Analytical Procedures for Analysis of Environmental Samples”, March 1979. Available from NTIS.

“USEPA Radiochemistry Methods” means “Radiochemistry Procedures Manual”, EPA 520/5-84-006, December 1987. Available from NTIS.

“USEPA Technical Notes” means “Technical Notes on Drinking Water Methods”, available from NTIS.

“Waters Method B-1011” means “Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography”, available from Millipore Corporation, Waters Chromatography Division.

- b) The Board incorporates the following publications by reference:

Access Analytical Systems, Inc., See Environetics, Inc.

Advanced Polymer Systems, 3696 Haven Avenue, Redwood City, CA 94063 415-366-2626:

Amco-AEPA-1 Polymer. See 40 CFR 141.22(a) (1995). Also, as referenced in ASTM D1889.

American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005 800-645-5476:

“Standard Methods for the Examination of Water and Wastewater”, 17th Edition 1989 (referred to as “Standard Methods, 17th ed.”).

“Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, including “Supplement to the 18th Edition of Standard Methods for the Examination of Water and Wastewater”, 1994 (collectively referred to as “Standard

Methods, 18th ed."). See the methods listed separately for the same references under American Water Works Association.

"Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995 (referred to as "Standard Methods, 19th ed.").

American Waterworks Association et al., 6666 West Quincy Ave., Denver, CO 80235 303-794-7711:

Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971 (referred to as "Standard Methods, 13th ed.").

Method 302, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended and Dissolved).

Method 303, Total Radioactive Strontium and Strontium 90 in Water.

Method 304, Radium in Water by Precipitation.

Method 305, Radium 226 by Radon in Water (Soluble, Suspended and Total).

Method 306, Tritium in Water.

Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992 (referred to as "Standard Methods, 18th ed."):

Method 2130 B, Turbidity, Nephelometric Method.

Method 2320 B, Alkalinity, Titration Method.

Method 2510 B, Conductivity, Laboratory Method.

Method 2550, Temperature, Laboratory and Field Methods.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity.

Method 4500-CN⁻ C, Cyanide, Total Cyanide after Distillation.

Method 4500-CN⁻ E, Cyanide, Colorimetric Method.

Method 4500-CN⁻ F, Cyanide, Cyanide-Selective Electrode Method.

Method 4500-CN⁻ G, Cyanide, Cyanides Amenable to Chlorination after Distillation.

Method 4500-Cl D, Chlorine (Residual), Amperometric Titration Method.

Method 4500-Cl E, Chlorine (Residual), Low-Level Amperometric Titration Method.

Method 4500-Cl F, Chlorine (Residual), DPD Ferrous Titrimetric Method.

Method 4500-Cl G, Chlorine (Residual), DPD Colorimetric Method.

Method 4500-Cl H, Chlorine (Residual), Syringaldazine (FACTS) Method.

Method 4500-Cl I, Chlorine (Residual), Iodometric Electrode Technique.

Method 4500-ClO₂ C, Chlorine Dioxide, Amperometric Method I.

Method 4500-ClO₂ D, Chlorine Dioxide, DPD Method.

Method 4500-ClO₂ E, Chlorine Dioxide, Amperometric Method II (Proposed).

Method 4500-F⁻ B, Fluoride, Preliminary Distillation Step.

Method 4500-F⁻ C, Fluoride, Ion-Selective Electrode Method.

Method 4500-F⁻ D, Fluoride, SPADNS Method.

Method 4500-F⁻ E, Fluoride, Complexone Method.

Method 4500-H⁺ B, pH Value, Electrometric Method.

Method 4500-NO₂⁻ B, Nitrogen (Nitrite), Colorimetric Method.

Method 4500-NO₃⁻ D, Nitrogen (Nitrate), Nitrate Electrode Method.

Method 4500-NO₃⁻ E, Nitrogen (Nitrate), Cadmium Reduction Method.

Method 4500-NO₃⁻ F, Nitrogen (Nitrate), Automated Cadmium Reduction Method.

Method 4500-O₃ B, Ozone (Residual) (Proposed), Indigo Colorimetric Method.

Method 4500-P E, Phosphorus, Ascorbic Acid Method.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method.

Method 4500-Si D, Silica, Molybdosilicate Method.

Method 4500-Si E, Silica, Heteropoly Blue Method.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica.

Method 4500-SO₄²⁻ C, Sulfate, Gravimetric Method with Ignition of Residue.

Method 4500-SO₄²⁻ D, Sulfate, Gravimetric Method with Drying of Residue.

Method 4500-SO₄²⁻ F, Sulfate, Automated Methylthymol Blue Method.

Method 6610, Carbamate Pesticide Method.

Method 6651, Glyphosate Herbicide (Proposed).

Method 7110 B, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Evaporation Method for Gross Alpha-Beta.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed).

Method 7500-Cs B, Radioactive Cesium, Precipitation Method.

Method 7500-3H, B, Tritium, Liquid Scintillation Spectrometric Method.

Method 7500-I B, Radioactive Iodine, Precipitation Method.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method.

Method 7500-I D, Radioactive Iodine, Distillation Method.

Method 7500-Ra B, Radium, Precipitation Method.

Method 7500-Ra C, Radium, Emanation Method.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed).

Method 7500-U B, Uranium, Radiochemical Method (Proposed).

Method 7500-U C, Uranium, Isotopic Method (Proposed).

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure.

Method 9223, Chromogenic Substrate Coliform Test
(Proposed).

Standard Methods for the Examination of Water and Wastewater,
18th Edition Supplement, 1994 (Referred to as "Standard
Methods, 18th ed."):

Standard Methods for the Examination of Water and Wastewater,
19th Edition, 1995 (referred to as "Standard Methods, 19th
ed."):

Method 7120-B, Gamma Spectrometric Method.

Method 7500-U C, Uranium, Isotopic Method.

Analytical Technology, Inc. ATI Orion, 529 Main Street,
Boston, MA 02129:

Technical Bulletin 601, "Standard Method of Testing for Nitrate
in Drinking Water", July, 1994, PN 221890-001 (referred to as
"Technical Bulletin 601").

ASTM. American Society for Testing and Materials, 1976 Race Street,
Philadelphia, PA 19103 215-299-5585:

ASTM Method D511-93 A and B, "Standard Test Methods for
Calcium and Magnesium in Water", "Test Method A--
complexometric Titration" & "Test Method B--Atomic
Absorption Spectrophotometric", approved 1993.

ASTM Method D515-88 A, "Standard Test Methods for
Phosphorus in Water", "Test Method A--Colorimetric Ascorbic
Acid Reduction", approved August 19, 1988.

ASTM Method D859-88, "Standard Test Method for Silica in
Water", approved August 19, 1988.

ASTM Method D1067-92 B, "Standard Test Methods for Acidity
or Alkalinity in Water", "Test Method B--Electrometric or
Color-Change Titration", approved May 15, 1992.

ASTM Method D1125-91 A, "Standard Test Methods for
Electrical Conductivity and Resistivity of Water", "Test Method
A--Field and Routine Laboratory Measurement of Static (Non-
Flowing) Samples", approved June 15, 1991.

ASTM Method D1179-93 B “Standard Test Methods for Fluoride in Water”, “Test Method B--Ion Selective Electrode”, approved 1993.

ASTM Method D1293-84 “Standard Test Methods for pH of Water”, “Test Method A--Precise Laboratory Measurement” & “Test Method B--Routine or Continuous Measurement”, approved October 26, 1984.

ASTM Method D1688-90 A or C, “Standard Test Methods for Copper in Water”, “Test Method A--Atomic Absorption, Direct” & “Test Method C--Atomic Absorption, Graphite Furnace”, approved March 15, 1990.

ASTM Method D2036-91 A or B, “Standard Test Methods for Cyanide in Water”, “Test Method A--Total Cyanides after Distillation” & “Test Method B--Cyanides Amenable to Chlorination by Difference”, approved September 15, 1991.

ASTM Method D2459-72, “Standard Test Method for Gamma Spectrometry in Water,” approved July 28, 1972, discontinued 1988.

ASTM Method D2460-90, “Standard Test Method for Radionuclides of Radium in Water”, approved 1990.

ASTM Method D2907-91, “Standard Test Methods for Microquantities of Uranium in Water by Fluorometry”, “Test Method A--Direct Fluorometric” & “Test Method B—Extraction”, approved June 15, 1991.

ASTM Method D2972-93 B or C, “Standard Test Methods for Arsenic in Water”, “Test Method B--Atomic Absorption, Hydride Generation” & “Test Method C--Atomic Absorption, Graphite Furnace”, approved 1993.

ASTM Method D3223-91, “Standard Test Method for Total Mercury in Water”, approved September 23, 1991.

ASTM Method D3454-91, “Standard Test Method for Radium-226 in Water”, approved 1991.

ASTM Method D3559-90 D, "Standard Test Methods for Lead in Water", "Test Method D--Atomic Absorption, Graphite Furnace", approved August 6, 1990.

ASTM Method D3645-93 B, "Standard Test Methods for Beryllium in Water", "Method B--Atomic Absorption, Graphite Furnace", approved 1993.

ASTM Method D3649-91, "Standard Test Method for High-Resolution Gamma-Ray Spectrometry of Water", approved 1991.

ASTM Method D3697-92, "Standard Test Method for Antimony in Water", approved June 15, 1992.

ASTM Method D3859-93 A, "Standard Test Methods for Selenium in Water", "Method A--Atomic Absorption, Hydride Method", approved 1993.

ASTM Method D3867-90 A and B, "Standard Test Methods for Nitrite-Nitrate in Water", "Test Method A--Automated Cadmium Reduction" & "Test Method B--Manual Cadmium Reduction", approved January 10, 1990.

ASTM Method D3972-90, "Standard Test Method for Isotopic Uranium in Water by Radiochemistry", approved 1990.

ASTM Method D4107-91, "Standard Test Method for Tritium in Drinking Water", approved 1991.

ASTM Method D4327-91, "Standard Test Method for Anions in Water by Ion Chromatography", approved October 15, 1991.

~~Method 6610, Carbamate Pesticides.~~

ASTM Method D4785-88, "Standard Test Method for Low-Level Iodine-131 in Water", approved 1988.

ASTM Method D5174-91, "Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry", approved 1991.

ERDA Health and Safety Laboratory, New York, NY:

HASL Procedure Manual, HASL 300, 1973. See 40 CFR 141.25(b)(2) (1995).

Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, WI 53223:

GLI Method 2, "Turbidity", Nov. 2, 1992.

Millipore Corporation, Technical Services Department, 80 Ashby Road, Milford, MA 01730 800-654-5476:

Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water, February 28, 1994 (referred to as "Colisure Test").

Millipore Corporation, Waters Chromatography Division, 34 Maple St., Milford, MA 01757 800-252-4752:

Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography, Method B-1011 (referred to as "Waters Method B-1011").

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD 301-657-2652:

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, June 5, 1959.

NTIS. National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4600 or 800-553-6847:

"Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), March 1976 (referred to as "USEPA Interim Radiochemical Methods"). (Pages 1, 4, 6, 9, 13, 16, 24, 29, 34)

Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", EPA-600/4-83-043, September, 1983, Doc. No. PB83-260471 (referred to as "USEPA Asbestos Methods-100.1").

Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", EPA-600/4-83-043, June,

1994, Doc. No. PB94-201902 (Referred to as “USEPA Asbestos Methods-100.2”).

“Methods for Chemical Analysis of Water and Wastes”, March, 1983, Doc. No. PB84-128677 (referred to as “USEPA Inorganic Methods”). (Methods 150.1, 150.2, and 245.2, which formerly appeared in this reference, are available from USEPA EMSL.)

“Methods for the Determination of Metals in Environmental Samples”, June, 1991, Doc. No. PB91-231498 (referred to as “USEPA Environmental Metals Methods”).

“Methods for the Determination of Organic Compounds in Drinking Water”, December, 1988, revised July, 1991, EPA-600/4-88/039 (referred to as “USEPA Organic Methods”). (For methods 502.2, 505, 507, 508, 508A, 515.1 and 531.1.)

“Methods for the Determination of Organic Compounds in Drinking Water--Supplement I”, July, 1990, EPA-600-4-90-020 (referred to as “USEPA Organic Methods”). (For methods 506, 547, 550, 550.1, and 551.)

“Methods for the Determination of Organic Compounds in Drinking Water--Supplement II”, August, 1992, EPA-600/R-92-129 (referred to as “USEPA Organic Methods”). (For methods 515.2, 524.2, 548.1, 549.1, 552.1 and 555.)

“Prescribed Procedures for Measurement of Radioactivity in Drinking Water”, EPA 600/4-80-032, August 1980 (referred to as “USEPA Radioactivity Methods”). (Methods 900, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1)

“Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions”, H.L. Krieger and S. Gold, EPA-R4-73-014, May, 1973, Doc. No. PB222-154/7BA.

“Radiochemical Analytical Procedures for Analysis of Environmental Samples”, March, 1979, Doc. No. EMSL LV 053917 (referred to as “USEPA Radiochemical Analyses”). (Pages 1, 19, 33, 65, 87, 92)

“Radiochemistry Procedures Manual”, EPA-520/5-84-006, December, 1987, Doc. No. PB-84-215581 (referred to as “USEPA Radiochemistry Methods”). (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04)

“Technical Notes on Drinking Water Methods”, EPA-600/R-94-173, October, 1994, Doc. No. PB-104766 (referred to as “USEPA Technical Notes”).

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (1995): This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996.

“Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS”, October, 1994, EPA-821-B-94-005 (referred to as “Dioxin and Furan Method 1613”).

New Jersey Department of Environment, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625:

“Determination of Radium 228 in Drinking Water”, August 1990.

New York Department of Health, Radiological Sciences Institute, Center for Laboratories and Research, Empire State Plaza, Albany, NY 12201:

“Determination of Ra-226 and Ra-228 (Ra-02)”, January 1980, Revised June 1982.

Technicon Industrial Systems, Tarrytown, NY 10591:

“Fluoride in Water and Wastewater”, Industrial Method #129-71W, December, 1972 (referred to as “Technicon Methods: Method #129-71W”). See 40 CFR 141.23(~~f~~)(10), ~~footnotes 6 and 7~~(k)(1), footnote 11 (1995).

“Fluoride in Water and Wastewater”, #380-75WE, February, 1976 (referred to as “Technicon Methods: Method #380-75WE”). See 40 CFR 141.23(~~f~~)(10), ~~footnotes 6 and 7~~ (k)(1), footnote 11 (1995).

United States Department of Energy, available at the Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson Street, New York, NY 10014-3621:

“EML Procedures Manual”, 27th Edition, Volume 1, 1990.

United States Environmental Protection Agency, EMSL, Cincinnati, OH 45268 513-569-7586:

“Interim Radiochemical Methodology for Drinking Water”, EPA-600/4-75-008 (referred to as “Radiochemical Methods”). (Revised) March, 1976.

“Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water” (referred to as “USEPA Organic Methods”). (For methods 504.1, 508.1, and 525.2 only). See NTIS.

“Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions”. See NTIS.

~~U.S.~~EPA, Science and Technology Branch, Criteria and Standards Division, Office of Drinking Water, Washington D.C. 20460:

“Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources”, October, 1989.

USGS. Books and Open-File Reports Section, United States Geological Survey, Federal Center, Box 25425, Denver, CO 80225-0425:

Methods available upon request by method number from “Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments”, Open File Report 93-125 or Book 5, Chapter A-1, “Methods for Determination of Inorganic Substances in Water and Fluvial Sediments”, 3d ed., Open-File Report 85-495, 1989, as appropriate (referred to as “USGS Methods”).

I-1030-85

I-1062-85

I-1601-85

I-1700-85

I-2598-85

I-2601-90

I-2700-85

I-3300-85

Methods available upon request by method number
from "Methods for Determination of Radioactive Substances in
Water and Fluvial Sediments", Chapter A5 in Book 5 of
"Techniques of Water-Resources Investigations of the United
States Geological Survey", 1997.

R-1110-76

R-1111-76

R-1120-76

R-1140-76

R-1141-76

R-1142-76

R-1160-76

R-1171-76

R-1180-76

R-1181-76

R-1182-76

- c) The Board incorporates the following federal regulations by reference:

40 CFR 136, Appendix B and C (1995).

- d) This Part incorporates no later amendments or editions.

(Source: Amended at 22 Ill. Reg. _____, effective _____)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL
REQUIREMENTS

Section 611.720 Analytical Methods

- a) The methods specified below, incorporated by reference in Section 611.102, are to be used to determine compliance with Sections 611.330 and 611.331, except in cases where alternative methods have been approved in accordance with Section 611.480.

1) ~~Radiochemical Methods;~~

2) ~~Standard Methods, 13th Edition:~~

A) ~~Gross Alpha and Beta: Method 302;~~

B) ~~Total Radium: Method 304;~~

C) ~~Radium 226: Method 305;~~

D) ~~Strontium 89,90: Method 303;~~

E) ~~Tritium: Method 306.~~

3) ~~ASTM Methods:~~

A) ~~Cesium 134: ASTM D 2459;~~

B) ~~Uranium: ASTM D 2907.~~

1) Gross Alpha and Beta:

A) ASTM Method 302;

B) Standard Methods:

i) Method 302; or

ii) Method 7110 B;

C) USEPA Interim Radiochemical Methods: page 1;

D) USEPA Radioactivity Methods: Method 900;

E) USEPA Radiochemical Analyses: page 1;

F) USEPA Radiochemistry Methods: Method 00-01; or

- G) USGS Methods: Method R-1120-76.
- 2) Gross Alpha:
 - A) Standard Methods: Method 7110 C; or
 - B) USEPA Radiochemistry Methods: Method 00-02.
- 3) Radium-226:
 - A) ASTM Methods:
 - i) Method D 2460-90; or
 - ii) Method D 3454-91;
 - B) New York Radium Method:
 - C) Standard Methods:
 - i) Method 304;
 - ii) Method 305;
 - iii) Method 7500-Ra B; or
 - iv) Method 7500-Ra C;
 - D) USDOE Methods: Method Ra-05;
 - E) USEPA Interim Radiochemical Methods: pages 13 and 16, page 14;
 - F) USEPA Radioactivity Methods: Methods 903, 903.1;
 - G) USEPA Radiochemical Analyses: page 19;
 - H) USEPA Radiochemistry Methods: Methods Ra-03, Ra-04; or
 - I) USGS Methods:
 - i) Method R-1140-76; or
 - ii) Method R-1141-76.

4) Radium-228:

A) Standard Methods:

i) Method 304; or

ii) Method 7500-Ra D;

B) New York Radium Method;

C) USEPA Interim Radiochemical Methods: page 24;

D) USEPA Radioactivity Methods: Method 904;

E) USEPA Radiochemical Analyses: page 19;

F) USEPA Radiochemistry Methods: Method Ra-05; or

G) USGS Methods: Method R-1142-76.

H) New Jersey Radium Method.

5) Uranium:

A) ASTM Methods:

i) Method D-2907;

ii) Method D-2907-91;

iii) Method D 3972-90; or

iv) Method D 5174-91;

B) USEPA Radioactivity Methods: Methods 908, 908.1;

C) USEPA Radiochemical Analyses: page 33;

D) USEPA Radiochemistry Methods: Method 00-07; or

E) USGS Methods:

i) Method R-1180-76;

ii) Method R-1181-76; or

iii) Method R-1182-76.

6) Cesium:

A) ASTM Methods:

i) Method D 2459-72; or

ii) Method D 3649-91;

B) Standard Methods:

i) Method 7120 (19th ed.); or

ii) Method 7500-Cs B;

C) USDOE Methods: Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods: page 4;

E) USEPA Radioactivity Methods: Methods 901, 901.1;

F) USEPA Radiochemical Analyses: page 92; or

G) USGS Methods:

i) Method R-1110-76; or

ii) Method R-1111-76.

7) Iodine:

A) ASTM Methods:

i) D 3649-91; or

ii) D 4785-88;

B) Standard Methods:

i) Method 7120 (19th ed.);

ii) Method 7500-I B;

- iii) Method 7500-I C; or
 - iv) Method 7500-I D;
 - C) USDOE Methods: Method 4.5.2.3;
 - D) USEPA Interim Radiochemical Methods: pages 6, 9;
 - E) USEPA Radiochemical Analyses: page 92; or
 - F) USEPA Radioactivity Methods: Methods 901.1, 902.
- 8) Strontium-89 & 90:
- A) Standard Methods:
 - i) Method 303; or
 - ii) Method 7500-Sr B;
 - B) USDOE Methods:
 - i) Method Sr-01; or
 - ii) Method Sr-02;
 - C) USEPA Interim Radiochemical Methods: page 29;
 - D) USEPA Radioactivity Methods: Method 905;
 - E) USEPA Radiochemical Analyses: page 65;
 - F) USEPA Radiochemistry Methods: Method Sr-04; or
 - G) USGS Methods: Method R-1160-76.
- 9) Tritium:
- A) ASTM Methods: Method D 4107-91;
 - B) Standard Methods:
 - i) Method 306; or

ii) Method 7500-3H B;

C) USEPA Interim Radiochemical Methods: page 34;

D) USEPA Radioactivity Methods: Method 906;

E) USEPA Radiochemical Analyses: page 87;

F) USEPA Radiochemistry Methods: Method H-02; or

G) USGS Methods: Method R-1171-76.

10) Gamma Emitters:

A) ASTM Methods:

i) Method D 3649-91; or

ii) Method D 4785-88;

B) Standard Methods:

i) Method 7120 (19th ed.);

ii) Method 7500-Cs B; or

iii) Method 7500-I B;

C) USDOE Method: Method 4.5.2.3;

D) USEPA Radioactivity Methods: Methods 901, 901.1, 902;

E) USEPA Radiochemical Analyses: page 92; or

G) USGS Methods: Method R-1110-76.

b) When the identification and measurement of radionuclides other than those listed in subsection (a) are required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available from NTIS.

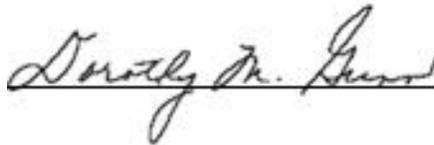
- 2) HASL Procedure Manual, HASL 300.
- c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96 sigma where sigma is the standard deviation of the net counting rate of the sample).
- 1) To determine compliance with Section 611.330(a) the detection limit must not exceed 1 pCi/L. To determine compliance with Section 611.330(b) the detection limit must not exceed 3 pCi/L.
 - 2) To determine compliance with Section 611.331 the detection limits must not exceed the concentrations listed in that Section.
- d) To judge compliance with the MCLs listed in Sections 611.330 and 611.331, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 (1995).

(Source: Amended at 22 Ill. Reg. _____, effective _____)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 19th day of February 1998, by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board