WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

STATE OF WISCONSIN)
) ss
DEPARTMENT OF NATURAL RESOURCES)

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, George E. Meyer, Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. DG-6-97 was duly approved and adopted by this Department on May 28, 1997. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 7th day of August, 1997.

George E. Meyer
George E. Meyer, Secretary

(SEAL)

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ORDER OF THE STATE OF WISCONSIN
NATURAL RESOURCES BOARD
AMENDING, REPEALING AND
RECREATING, AND CREATING RULES

……………………………………………………………………………

The Wisconsin Natural Resources Board
proposes an order to amend NR 809.12 (1) (a) and (b),
NR809.12 (3)(a), NR809.12 (3)(b), NR809.12(9) (b),
NR 809.20 (2)(b), NR 809.21(9)(b), NR 809.24(2)(a),
NR 809.25(2), NR 809.25(12) (c), NR 809.25(16) & (17), DG-6-97
NR 809.26, NR 809.541(7), NR 809.541(12), NR809.542(3),
NR 809.547(2)(c), NR 809.548, NR 809.549(1)(a), NR 809.55(7),
Subchapter IV, NR 809.725 Tables A, B, C, D, E, F and G, NR 809.81(5)(ee),
NR 809.81(5)(hq) of Wisconsin Administrative Code,
pertaining to safe drinking water standards.

……………………………………………………………………………

Analysis Prepared by the Department of Natural Resources

Statutory authority: 280.11, Stats. [formerly s. 162.01, Stats.] and 281.17 (8), Stats. [formerly s. 144.025(2)(t), Stats.]

Statutes interpreted: 280.11, Stats. [formerly s. 162.01, Stats.] and 281.17 (8), Stats. [formerly s. 144.025(2)(t), Stats.]

USEPA published amendments to 40 CFR 141, 142 and 143. Our primacy agreement with EPA requires us to adopt rules no less stringent than federal regulations. The proposed changes to Chapter NR 809 update it to reflect changes in 40 CFR, and are necessary to assure that our administrative rules are consistent with federal regulations.

These Safe Drinking Water Act amendments do not develop new rules, but clarify language and interpretation of existing rules.

Section 1. NR 809.12 (1) (a) and (b) is amended to read:

NR 809.12(1)(a) Groundwater sources shall be sampled at every entry point to the distribution system which is representative of each well after treatment beginning in the initial compliance period. Each sample shall be taken at the same entry point unless conditions make another sampling location more representative of each source after treatment.

(b) Surface water sources or combined surface water and groundwater sources shall be sampled at every point of entry to the distribution system after any application of treatment, or in the distribution system at a point which is representative of each source after treatment beginning in the initial compliance period. Each sample shall be taken at the same entry point unless conditions make another sampling location more representative of each source after treatment.

Section 2. NR 809.12(3)(a) is amended to read:

NR 809.12(3)(a) Groundwater sources shall be sampled at each entry point ~~once every 3 years beginning in the initial~~ during each compliance period. Suppliers of water having surface water sources or combined surface water and groundwater sources shall take one sample annually at each entry point beginning January 1, 1993.

~~**Note: For the contaminants in s. NR 809.11(2)(b), the initial compliance period is**~~ ~~January 1993 - December 1995 for systems with 150 or more service connections and January 1996 - December 1998 for systems having fewer than 150 service connections.~~

Section 3. NR 809.12(3)(b) is amended to read:

NR 809.12 (3)(b) The system owner or operator may apply to the department for a waiver from the monitoring frequencies specified in par. (a). The department may grant a waiver for monitoring of cyanide, provided that the system is not vulnerable to contamination because there is no industrial source of cyanide.

Section 4. NR 809.12(9)(b) is amended to read:

NR 809.12(9)(b) For systems which are conducting monitoring more frequently than ~~annual~~ annually, compliance with the MCLs for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium ~~and~~ or thallium is determined by a running annual average at each entry point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one or more samples would cause the annual average to exceed ~~a~~ an MCL, then the system is out of compliance immediately. Any sample below the reported method detection limit shall be calculated at zero for the purpose of determining the annual average.

Section 5. NR 809.20 (2)(b) is amended to read:

NR 809.20 (2)(b) Packed tower aeration for dibromochloropropane, di(2-ethylhexyl)adipate, ethylene dibromide, and hexachlorocyclopentadiene ~~and toxaphene~~ and,

Section 6. NR 809.21(9)(b) is amended to read:

NR 809.21(9)(b) If the concentration in the composite sample detects one or more contaminants listed in s. NR 809.20, then a follow-up sample shall be taken and analyzed for each contaminant detected within 14 days from each entry point included in the composite.

Section 7. NR 809.24(2)(a) is amended to read:

NR 809.24(2)(a) Central treatment using packed tower aeration, ~~except for toluene~~, and

Section 8. NR 809.25(2) is amended to read:

NR 809.25(2) Each community and non-transient non-community water system owner or operator shall take 4 consecutive quarterly samples for each VOC contaminant specified in s. NR 809.24 during each compliance period, beginning ~~in the compliance period starting January 1, 1993~~ with the initial compliance period.

Section 9. NR 809.25(12)(c) is amended to read:

NR 809.25(12)(c) If the concentration in the composite sample is greater than 0.0003 mg/L for vinyl chloride or 0.0005 mg/L for any other contaminant listed under s. NR 809.24, then a follow-up sample shall be taken and analyzed for each contaminant detected within 14 days from each entry point included in the composite.

Section 10. NR 809.25(16) and (17) is amended to read:

NR 809.25(16) Analyses under this section shall only be conducted by laboratories that have received ~~approval~~ certification by EPA or certified under ch. NR 149.

(17) Each ~~approved~~ certified laboratory shall determine the method detection limit (MDL) at which it is capable of detecting VOCs as defined under 40 Code of Federal Regulations, Part 136, Appendix B. The maximum acceptable MDL is 0.0005 mg/L for all VOCs except vinyl chloride, which is 0.0003 mg/L. These are the detection concentrations for purposes of this section.

Section 11. NR 809.26 (title) is amended to read:

NR 809.26 (title) Special monitoring, reporting, and public notification for selected organic contaminants and sulfate.

Section 12. NR 809.541(7) is amended to read:

NR 809.541(7) PUBLIC EDUCTION REQUIREMENTS. Any system exceeding the lead action level shall implement the public eduction requirements contained in s. NR 809.545. Any system exceeding the copper action level shall annually provide public education on the health effects of copper using language in s. NR 809.81(5)(eu), and information on reducing exposure to copper in drinking water similar to s. NR 809.546.

Section 13. NR 809.541(12) is amended to read:

NR 809.541(12) PREMISE OWNER NOTIFICATION OF LEAD AND COPPER RESULTS. System owners or operators shall provide owners or occupants of all premises used in the lead and copper monitoring program the analytical results of all samples collected at that site. If sample results at a sample location exceed ~~action levels~~ 15 μg/L for lead and 1300 μg/L for copper, system owners or operators must inform premise owners or occupants of health effects and measures necessary to lower lead or copper levels.

Section 14. NR 809.542(3) is amended to read:

NR 809.542(3) CRITERIA FOR CLASSIFYING CORROSION CONTROL TREATMENT STUDIES FOR SMALL AND MEDIUM-SIZE SYSTEMS. Any small or medium-size water system owner or operator that is required to complete the corrosion control steps due to the exceedance of the lead or copper action level may cease completing the treatment steps whenever the system meets both action levels during each of 2 consecutive monitoring periods conducted pursuant to s. NR 809.547 and the results are submitted to the department. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system owner or operator shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The department may require a system owner or operator to repeat treatment steps previously completed by the system owner or operator where the department determines that this is necessary to implement properly the treatment requirements. The department shall notify the system owner or operator in writing of such a determination and explain the basis for its decision. A small or medium-size water system shall implement corrosion control treatment steps in accordance with sub. (5), including a system deemed to have optimized corrosion control under sub. (2)(a), whenever it exceeds the lead or copper action level.

Section 15. NR 809.547(2)(c) is amended to read:

NR 809.547(2)(c) If the sample is not acidified immediately after collection, then the sample shall stand in the original container for at least ~~28~~ 16 hours after acidification.

Section 16. NR 809.548 (intro) is amended to read:

NR 809.548 (intro) Owners or operators of all large systems, and of all small and medium-size systems that exceed the lead or copper action level, shall monitor water quality parameters in addition to lead and copper in accordance with this section. The requirements of this section are summarized in the table at the end of this section.

Section 17. NR 809.549(1)(a) is amended to read:

NR 809.549(1)(a) The owner or operator of a water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with s. NR 809.547 shall collect lead and copper source water samples in accordance with the requirements regarding sample location, number of samples and collection methods specified in s. NR 809.12 (1) (a) to ~~(d)~~(c). The timing of sampling for lead and copper shall be in accordance with subs. (2) and (3), and not dates specified in s. NR 809.12 (1) (a) and (b).

Section 18. NR 809.55(7) is amended to read:

NR 809.55(7) REPORTING OF ADDITIONAL MONITORING DATA. Any system owner or operator who collects sampling data in addition to that required by this subchapter shall report the results to the department ~~by~~ within the first 10 days following the end of the applicable monitoring period under ss. NR 809.547, 809.548 and 809.549 during which the samples are collected.

Section 19. Subchapter IV (title) is amended to read:

Subchapter IV(title) — Miscellaneous Chemical Monitoring Requirements, Raw Surface Water Standards, ~~Approved~~ Certified Laboratories and Approved Methods for Safe Drinking Water Analysis.

Section 20. NR 809.725 Table A is amended to read:

TABLE A
Approved Methodology for Primary Inorganic Contaminants

	Reference (Method Number)			
Parameter and Methodology	EPA[1]	ASTM[2]	SM[4]	Other[4]
Antimony				
Atomic absorption; furnace technique[5]	~~204.2~~	-	3113B	-
Atomic absorption; platform furnace[6]	200.9[2]	-	-	-
Inductively Coupled Plasma; Mass Spectrometry (ICP/MS)[6]	200.8[2]	-	-	-
Atomic absorption; gaseous hydride[9]	-	~~D3697-87~~ D3697-92	-	-
Asbestos				
Transmission Electron Microscopy	~~(12)~~ 100.1[9]	-	-	-
Transmission Electron Microscopy	100.2[10]	-	-	-

	Reference (Method Number)			
Parameter and Methodology	EPA[1]	ASTM[3] [2]	SM[4] [3]	Other[4]
Arsenic				
Atomic absorption; platform furnace	200.9 [2]	-	-	-
Atomic absorption; furnace technique [6]	~~206.2~~	D2972-93C	3113B	-
Atomic absorption; gaseous hydride[9,16]	~~206.3~~	~~D2972-88B~~ D2972-93B	3114B	~~I-1062-85[7]~~-
~~Spectrophotometric; silver diethyldithiocarbamate~~	~~206.4~~	~~D2972-88A~~	~~3500-As C[5]~~	-
Inductively Coupled Plasma (ICP) [6]	200.7 ~~A[5,16]~~ [2]	-	3120B	-
ICP/MS	200.8 [2]	-	-	-
Barium				
Atomic absorption; direct aspiration [6]	~~208.1~~	-	~~3113 B~~ 3111D	-
Atomic absorption; furnace technique [6]	~~208.2~~	-	~~3111 D~~ 3113B	-
ICP [6]	200.7 ~~A[5,16]~~ [2]	-	3120B	-
ICP/MS	200.8 [2]	-	-	-
Beryllium				
Atomic absorption; furnace technique [6]	~~210.2~~	~~D3645-84B~~ D3645-93B	~~3120~~ 3113B	-
Atomic absorption; platform furnace [6]	200.9 [2]	-	-	-
ICP [6]	200.7[5] [2]	-	~~3120 B~~ 3120B	-
ICP/MS [6]	200.8 [2]	-	-	-
Cadmium				
Atomic absorption; furnace technique [6]	~~213.2~~	-	3113B	-
Atomic absorption; platform furnace	200.9[2]	-	-	-
ICP [6]	200.7 ~~A[5,16]~~ [2]	-	-	-
ICP/MS	200.8[2]	-	-	-
Copper				
Atomic absorption; furnace technique [6]	~~220.2~~	D1688-90C	3113B	-
Atomic absorption; direct aspiration [6]	~~220.1~~	D1688-90A	3111B	-
ICP [6]	200.7[5] [2]	-	~~3120 B~~ 3120B	-
ICP/MS [6]	200.8 [2]	-	-	-
Atomic absorption; platform furnace [6]	200.9 [2]	-	-	-
Chromium				
Atomic absorption; furnace technique [6]	~~218.2~~	-	~~3113 B~~ 3113B	-
Atomic absorption; platform furnace	200.9 [2]	-	-	-
ICP [6]	200.7 ~~A[5,16]~~ [2]	-	~~3120 B~~ 3120B	-
ICP/MS	200.8 [2]	-	-	-
Cyanide				
Manual Distillation~~;~~ followed by ~~spectrophotometric~~	~~335.2~~	~~D2036-89A~~	~~4500-CN D~~ 4500-CN-C	~~I-3300-85~~
~~Distillation, automated spectrophotometric~~	~~335.3~~	-	~~4500-CN E~~	-
~~Distillation, selective electrode~~	-	~~D2036-89A~~	~~4500-CN F~~	-
~~Distillation, amenable, spectrophotometric;~~	~~335.1~~	~~D2036-89B~~	~~4500-CN G~~	-
Spectrophotometric, Amenable		D2036-91B	4500-CN-G	-
Spectrophotometric Manual	-	D2036-91A	4500-CN-E	-
Semi-automated	335.4[6]	-	-	-
Selective Electrode	-	-	4500CN-F	-
Fluoride				
Ion Chromatography	300.0[6]	D4327-91	4110B	-
Manual distillation Colorimetric SPADNS; ~~with distillation~~	~~340.1~~	~~D1179-72A~~	~~4500-F D, B[5]~~ 4500F-B,D	-
Manual ~~Potentiometric ion selective~~ electrode	~~340.2~~	~~D1179-72B~~ D1179-93B	4500-F-C	-
Automated Alizarin fluoride blue; with distillation	~~340.3~~	-	4500-F-E, ~~B[5]~~	129-71W[4] [11]
Automated ion selective electrode	-	-	-	380-75WE[4] [11]
Lead				
Atomic absorption; furnace technique [6]	~~239.2~~	~~D3559-85D~~ D3559-90D	~~3113 B~~ 3113B	-
ICP/MS [6]	200.8 [2]	-	-	-
Atomic absorption; platform furnace [6]	200.9 [2]	-	-	-
Mercury				
Manual cold vapor technique[9]	245.1 [2]	~~D3223-86~~ D3223-91	~~3112 B~~ 3112B	-
Automated cold vapor technique[9]	245.2[1]	-	-	-
ICP/MS	200.8[2]	-	-	-
Nickel				
Atomic absorption; direct aspiration [6]	~~249.1~~	-	~~3111 B~~ 3111B	-
Atomic absorption; furnace technique [6]	~~249.2~~	-	~~3113 B~~ 3113B	-
Atomic absorption; platform furnace [6]	200.9[2]	-	-	-
ICP [6]	200.7[2]	-	~~3120 B~~ 3120B	-
ICP/MS [6]	200.8[2]	-	-	-

	Reference (Method Number)			
Parameter and Methodology	EPA[1]	ASTM[~~2~~3]	SM[~~3~~4]	Other[~~4~~]
Nitrate				
Manual cadmium reduction	~~353.3~~	D3867-90B	4500-NO_3- E	-
~~Automated hydrazine reduction~~	~~353.1~~	-	-	-
Automated cadmium reduction	353.2[6]	D3867-90A	4500-NO_3 - F	-
Ion selective electrode	-	-	4500-NO_3 - D	~~WeWWG/5880~~[~~7~~] 601[7]
Ion Chromatography	300.0~~A~~[1+6]	D4327-91	4110B	~~B-1011~~[~~7~~] B-1011[8]
Nitrite				
Spectrophotometric	~~354.1~~	-	4500-NO_2-B	-
Automated cadmium reduction	353.2[6]	D3867-90A	4500-NO_3- F	-
Manual cadmium reduction	~~353.3~~	D3867-90B	4500-NO_3- E	-
Ion chromatography	300.0~~A~~[1+6]	D4327-91	4110B	B-1011[8]
Selenium				
Atomic absorption; gaseous hydride[9,10]	~~270.3~~	~~D3859-84A~~ D3859-93A	~~3114 B~~ 3114B	
ICP/MS	200.8[2]	-	-	-
Atomic absorption; platform furnace	200.9[2]	-	-	-
Atomic absorption; furnace technique[6]	~~270.2~~	~~D3859-88 B~~ D3859-93B	~~3113 B~~ 3113B	-
~~**Sulfate**~~				
~~Spectrophotometric~~	~~375.1~~	-	-	-
~~Spectrophotometric~~	~~375.2~~[6]	-	-	-
~~Turbidimetric~~	~~375.4~~	-	-	-
~~Ion chromatography~~	~~300.0A~~[1,6]	-	-	-
Thallium				
Atomic absorption; platform furnace[6]	200.9[2]	-	-	-
~~Atomic absorption; furnace technique~~	~~279.2~~	-	~~3113 B~~	-
ICP/MS	200.8[2]	-	-	-
Turbidity				
Nephelometric	180.1[6]	-	~~2130 B~~ 2130B	-
Great Lakes Instruments	-	-	-	Method 2[5]

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[1] Method 245.2 is available from US EPA, EMSL, Cincinnati, OH 45268. The identical methods were formerly in Methods for Chemical Analysis of Water and Wastes", ~~EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268~~ (EPA-600/4-79-020), March 1983, Available ~~from ORD Publications, CERI, EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio, 45268~~ at National Technical Information Services, PB84-128677, 5285 Port Royal Road, Springfield, VA 22161. ~~For approved analytical procedures for metals, the technique applicable to total metals shall be used.~~

[~~1~~2] ~~The method is found in~~ "Methods for the Determination of Metals in Environmental Samples- Supplement I", ORD Publications, ~~EPA/600/4-91/010, June 1991.~~ EPA/600/R-94-111 May 1994 Available from National Technical Information Service, Order ~~#PB91-231498~~ #PB94-184942, 5285 Port Royal Road, Springfield, VA 22161.

[~~2~~3] The procedures shall be done in accordance with the "Annual Book of ASTM Standards", ~~Vol.~~ 1994, Vols 11.01. and 11.02 ~~Available from the~~ American Society for Testing and Materials, This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the American Society for Testing Material. 1916 Race Street, Philadelphia, Pennsylvania, 19103.Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington ,DC.

[~~3~~4] The procedures shall be done in accordance with the "Standard Methods for the Examination of Water and Wastewater", ~~17th~~ 18th Edition, American Public Health Association, American Water Works Association, ~~Water Pollution Control Federation, 1989~~1992. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 20005. .Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington ,DC.

[~~4~~] ~~"Methods for Determination of Inorganic Substances in Water and Fluvial Sediments", Techniques of Water Resources Investigation of the United States Geological Survey, Chapter A-1, Third Edition, 1989. Available from Open-File Services Section, Western Distribution Branch, U.S. Geological Survey, MS 306 Box 24525, Denver Federal Center, Denver, CO 80225.~~

[5] GLI Method 2, "Turbidity", November 2, 1992, Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, Wisconsin, 53223

[~~6~~] ~~Samples that contain less than 1 NTU (nephelometric turbidity unit) and are properly preserved (conc. HNO_3 to pH <2) may be analyzed directly (without digestion) for total metals, otherwise, digestion is required. Turbidity must be measured on preserved samples just prior to the initiation of metal analysis. When digestion is required the total recoverable technique as defined in the method must be used.~~

[6] "Methods for the Determinatin of Inorganic Substances in Inveronmental Samples", EPA-600/R-93-100, August 1993. Available at NTIS, PB94-121811

[~~7~~] ~~"Orion Guide to Water and Wastewater Analysis." From WeWWG/5880, p. 5, 1985. Orion Research, Inc. Cambridge, MA.~~

[7] The procedure shall be done in accordance with the Technical Bulletin 601 "Standard Method of Test for Nitrate in Drinking Water", July 1994, PN 221890-001, Analytical Technology, Inc. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington ,DC.

[8] "Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography", Method B-1011, Millipore Corporation, Waters Chromatography Division, 34 Maple Street, Milford, MA 01757.

~~[9] For the gaseous hydride determinations of antimony, arsenic, and selenium and for the determination of mercury by the cold vapor techniques, the proper digestion technique as defined in the method must be followed to ensure the element is in the proper state for analyses.~~

~~[12]~~ [9] Method 100.1, "Analytical Method For Determination of Asbestos Fibers in Water", EPA-600/4-83-043, ~~EPA~~, September 1983. U.S. EPA, Environmental Reaearch Laboratory, Athens, GA 30613. Available at NTIS, PB83-260471.

~~[10] Add 2 mL of 30% H_2O_2 and an appropriate concentration of matrix modifier $Ni(NO_3)_2 \bullet 6H_2O$ (nickel nitrate) to samples.~~

[10] Method 100.2, "Determination Of Asbestos Structures Over 10-um In Length In Drinking Water", EPA-600/R-94-134, June 1994. Availabel at NTIS, PB94-201902.

~~[11] "Method 300.0 Determination of Inorganic Anions in Water by Ion Chromatography." Inorganic Chemistry Branch, Environmental Monitoring Systems Laboratory. August 1991.~~

[11] The procedures shall be done in accordance with the Industrial Method No. 129-71W, "Fluoride in Water and Wastewater", December 1972, and Method No. 380-75WE, "Fluoride in Water and Wastewater", February 1976, Technicon Industrial Systems. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the Technicon Industrial Systems, Tarrytown, NY 10591. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington ,DC.

~~[13] "Standard Methods for the Examination of Water and Wastewater", 16th Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1985. American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C. 20005. (16th Edition is available on inter-library loan.)~~

~~[14] "Fluoride in Water and Wastewater Industrial Method #129-71W". December 1972. Available from Technicon Industrial Systems, Benedict Avenue, Tarrytown, New York, 10591.~~

~~[15] "Fluoride in Water and Wastewater", February 1976. Available from Technicon Industrial Systems, Benedict Avenue, Tarrytown, New York, 10591.~~

~~[16] a 4x preconcentration step may be required for ICP metals analyzed by method 200.7.~~

Section 21. NR 809.725 Table B is amended to read:

TABLE B
SDWA Approved Methodology for Organic Contaminants

Contaminant	Reference (Method Number) EPA^{1,7}
Regulated Parameters:	
Synthetic Organic Compounds (SOCs)	
Alachlor	505^{6}, 507, ~~525.1~~, 525.2, 508.1
~~Aldicarb~~	~~531.1~~
~~Aldicarb sulfone~~	~~531.1~~
~~Aldicarb Sulfoxide~~	~~531.1~~
Atrazine	505^{6}, 507, ~~525.1~~, 525.2, 508.1
Benzo[a]pyrene	550, 550.1, ~~525.1~~, 525.2
Carbofuran	531.1, 6610^{5}
Chlordane	505, 508, ~~525.1~~, 525.2, 508.1
Dalapon	515.1, 552.1
~~Dibromochloropropane~~	~~504~~
Di(2-ethylhexyl)adipate	506, ~~525.1~~, 525.2
Di(2-ethylhexyl)phthalate	506, ~~525.1~~, 525.2
Dinoseb	515.1, 515.2, 555
Diquat	~~549~~ 549.1
2,4-D	515.1, 515.2, 555
Endothall	~~548~~ 548.1
Endrin	505, 508, ~~525.1~~, 525.2, 508.1
Ethylene Dibromide (EDB)	~~504~~, 504.1, 551
Glyphosate	547, 6651^{4}
Heptachlor	505, 508, ~~525.1~~, 525.2, 508.1
Heptachlor Epoxide	505, 508, ~~525.1~~, 525.2, 508.1
Hexachlorobenzene	505, 508, ~~525.1~~, 525.2, 508.1
Hexachlorocyclopentadiene	505, ~~525.1~~, 525.2, 508 508.1
Lindane	505, 508, ~~525.1~~, 525.2, 508.1
Methoxychlor	505, 508, ~~525.1~~, 525.2, 508.1
Oxamyl (Vydate)	531.1, 6610^{5}
Picloram	515.1, 515.2, 555

Polychlorinated Biphenyls (PCBs)	~~505, 508,~~ 508A[2]
Pentachlorophenol	515.1, ~~525.1~~, 515.2, 525.2, 555
Total Trihalomethanes (TTHM)	~~502.1~~, 502.2, ~~524.1~~, 524.2, 551
Simazine	505[6], 507, ~~525.1~~, 525.2, 508.1
Toxaphene	505, 508, ~~525.1~~, 525.2
2,3,7,8-TCDD (Dioxin)	1613[3]
2,4,5-TP (Silvex)	515.1, 515.2, 555
~~Volatile Organic Chemical (VOCs)~~	~~502.1, 502.2, 503.1, 524.1, 524.2~~
Volatile Organic Chemical (VOCs)	
Benzene	502.2, 524.2
Carbon Tetrachloride	502.2, 524.2, 551,
Chlorobenzene	502.2, 524.2
Dibromochloropropane (DBCP)	504.1, 551
1,2-Dichlorobenzene	502.2, 524.2
1,4-Dichlorobenzene	502.2, 524.2
1,2-Dichloroethane	502.2, 524.2
cis-Dichloroethylene	502.2, 524.2
trans-Dichlorethylene	502.2, 524.2
Dichloromethane	502.2, 524.2
1,2-Dichloropropane	502.2, 524.2
Ethylbenzene	502.2, 524.2
Styrene	502.2, 524.2
Tetrachloroethylene	502.2, 524.2, 551
1,1,1-Trichloroethane	502.2, 524.2, 551
Trichloroethylene	502.2, 524.2, 551
Toluene	502.2, 524.2
1,2,4-Trichlorobenzene	502.2, 524.2
1,1-Dichloroethylene	502.2, 524.2
1,1,2-Trichlorothane	502.2, 524.2
Vinyl Chloride	502.2, 524.2
Xylenes (total)	502.2, 524.2

Unregulated Parameters

Aldicarb	531.1, 6610[5]
Aldicarb sulfone	531.1, 6610[5]
Aldicarb Sulfoxide	531.1, 6610[5]
Aldrin	505, 508, ~~525.1~~, 525.2, 508.1
Butachlor	507, ~~525.1~~ 525.2
Carbaryl	531.1, 6610
Dicamba	515.1, 555, 515.2
Dieldrin	505, 508, ~~525.1~~, 525.2, 508.1
3-Hydroxycarbofuran	531.1, 6610[5]
Methomyl	531.1, 6610[5]
Metolachlor	507, ~~525.1~~, 525.2, 508.1
Metribuzin	507, ~~508~~, ~~525.1~~, 525.2, 508.1
Propachlor	508 ~~507, 525.1~~, 525.2, 508.1

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[1] Procedures for Methods 502.2, 505, 507, 508, 508A, 515.1 and 531.1 are in "Methods for the Determination of Organic Compounds in Drinking Water", ~~ORD Publications, CERI, EPA/600/4-88/039~~ EPA-600/4-88/039, December 1988, Revised, July 1991. Methods 506, 547, 550, 550.1 are in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement I", ~~ORD Publications, CERI~~, EPA-600/4-90/020, July 1990. Methods 515.2, 524.2, 548.1, 549.1, 552.1 and 555 are in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement II", EPA-600/R-92-129, August 1992. These documents are available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161 as publications NTIS PB91-231480, PB91-146027, and PB92-207703. The toll-free number is 1-800-336-4700.

[2] Method 505 or 508 can be used as a screen for PCBs. Method 508A shall be used to quantitate PCBs as decachlorobiphenyl if detected in Method 505 or 508. PCBs are qualitatively identified as Aroclors and measured for compliance purposes as decachlorobiphenyl

[3] Method 1613, "Tetra-through Octa-Chlorinated Dioxins and Furons by Isotope Dilution. HRGC/HRMS", EPA-821/B-94/005, October 1994. Method 1613 can be used to measure 2,3,7,8-TCDD (dioxin). This method is available from ~~VSEPA-OST, Sample Control Center, P.O. Box 1407, Alexandria, VA 22313.~~ National Technical Information Service, NTIS PB95-104774.

[4] Method 6651 shall be followed in accordance with the "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992. American Public Health Association This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 20005. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington ,DC.

[5] Method 6610 shall be followed in accordance with the "Suppliment to the 18th edition of Standard Methods for the Examination of Water and Wastewater", 1994, American Public Health Association This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 20005. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700.

Washington ,DC.

[6] A nitrogen-phosphorus detector should be substituted for the electron capture detector in Method 505 (or other approved method should be used) to determine alachlor, atrazine and simizine, if lower detection limits are required.

[7] EPA Methods 504.1,508.1, and 525.2 are available from US EPA EMSL, Cincinnati, OH 45268. The phone number is (513) 569-7586.

Section 22. NR 809.725 Table C is amended to read:

TABLE C
SDWA Approved Methodology for Microbiological Measurements

	Methodology	~~EPA~~[†]	Standard Methods (18th ~~16th~~ Edition[1])
Total Coliform Bacteria[8]	Multiple tube fermentation[3][4,5] ~~(preferred for turbid or high noncoliform populations)~~	~~Part III, Section B, 4.1 thru 4.6.4(c) (pp. 114-118)~~	~~908, 908A, and 908B (pp. 870-878)~~ 9221A,B,C
	Membrane ~~filter[4] (preferred because large volumes of samples analyzed in much shorter time)~~	~~Part III, Section B, 2.1 thru 2.6 (pp. 108-112)~~	~~909, 909A, and 909B (pp. 886-896)~~ 9222A,B,C
	Minimal Media ONPG-MUG ~~(MMO-MUG)~~ Test[6,7]		9223
	Chromogenic/Fluorogenic[10]		see footnote 10
	Presence - Absence (P-A) Coliform Test[5,6]		~~908E (pp. 882-886)~~ 9221D
~~Total~~ Fecal Coliform~~;~~ ~~Concentration~~	~~Standard Total~~ Fecal Coliform Multiple Tube (MPN)[2] Tests		~~908A, 908B, and 908D~~ 9221E
	~~Standard Total~~ Fecal Coliform Membrane Filter (MF) Procedure		~~909A or 909B~~ 9222D
	~~Minimal Medium ONPG-MUG Test[7]~~		
~~Fecal Coliform, follow up for positive total coliform test[6]~~	~~EC Medium~~		~~908C (pp. 879, par. 1a)~~
Escherichia coli	EC Medium + MUG[7]		908C (pp. 879)
	Nutrient Agar + MUG[7]		908B (pp. 874)
	Minimal Medium + MUG (MMO-MUG)[5,7]		908C or 908D, (pp. 878-882)
~~Fecal Coliform Concentration~~	~~Fecal Coliform MPN Procedures~~		~~908C or 908D, (pp. 878-882)~~
	~~Fecal Coliform MF Procedures~~		~~909C (pp. 896-898)~~
Heterotrophic Plate Count[2]	Pour Plate Method		~~907A (pp. 864-866)~~ 9215B

~~[†] "Microbiological Methods for Monitoring the Environment, Water and Wastes", EPA-600/8-78-017, December 1978. Available from the U.S. EPA, Environmental Monitoring and Support Laboratory, 26 W. Martin Luther King Drive, Cincinnati, Ohio, 54268.~~

~~[*]~~[1] Except where noted, all methods refer to the "Standard Methods for the Examination of Water and Wastewater", ~~16th~~ 18 Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, ~~1985.~~ 1992

~~[3] The standard sample size for MPN procedure shall be 10 times the standard portion of 10 ml.~~

~~[4] A standard sample size of 100 ml shall be used for the membrane filter.~~

~~[5] Analyses shall be conducted in accordance with the analytical recommendations set forth in "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with Presence - Absence Techniques", (Edberg et al.), Applied and Environmental Microbiology, 55, pp. 1003-1008, April 1989. Available from the American Water Works Association Research Foundation, 6666 West Quincy Ave., Denver, CO 80235.~~

~~[6] Analyses shall be conducted in accordance with the analytical recommendations set forth in "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method", (Edberg et al.), pp. 1595-1601, June 1988 (as amended under Erratum, Volume 54, p. 3197, December, 1988). Available from the American Water Works Association Research Foundation, 6666 West Quincy Ave., Denver, CO 80235.~~

~~[7] Analyses shall be conducted in accordance with the analytical procedure described in Federal Register, Vol 56, No. 5, Tuesday, January 8, 1991, Rules and Regulations, pp. 642-643, 40 CFR Part 141.21(f)(5&6) and Federal Register, Vol 57, No. 112, Wednesday, June 10, 1992, Rules and Regulations, p. 24747, 40 CFR Part 141.21(f)(3, 6, & 7).~~

[2] The time from sample collection to initiation of analysis may not exceed 8 hours. Sample must be iced

[3] Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate for total coliforms, using lactose broth, is less than 10 percent.

[4] If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half to two-thirds after the sample is added.

[5] No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes

[6] Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved

[7] The ONPG-MUG Test is also known as the Autoanalysis Colilert System.

[8] The time from sample collection to initation of analysis should not exceed 30 hours. If the laboratory analyzes the sample between 30 and 48 hours after collection, results are indicated as possibly invalid

[9] A-1 broth may be held up to three months in a tightly closed screwcap tube at 4°C.

[10] This is also known as the Colisure Test. The Colisure Test must be incubated for 28 hours befor examining the results. If an examination if the results at 28 nours is not convenient, the results may be examined at any time between 28 and 48 hours. A description of the Colisure Test may be obtained from the Millipore Corp., Technical Services Department, 80 Ashby Road, Bedford, MA 01730

Section 23. NR 809.725 Table D is amended to read:

TABLE D
SDWA Approved Methodology for Radiological Measurements

		Reference (method or page number)								
Parameter	Method	EPA[1]	EPA[2]	EPA[3]	EPA[4]	~~Standard Methods[2]~~ SM[5]	ASTM~~[3]~~ [6] ~~(1975)~~	USGS[7]	DOE[8]	Others
Naturally Occurring:										
~~Gross alpha~~ Gross alpha[11] & beta	~~Total suspended and dissolved~~ Evaporation	900	p1	00-01	p1	302, 7110 B	-----	R-1120-76	----	
Gross alpha[11]	co-precipitatation	----		00-02		7110 C	----	----	----	
~~Total radium~~	~~Precipitation~~	~~903~~				~~304~~				
Radium 226	~~Soluble, suspended and total~~ Radon emanation, Radiochemical	903.1 903.0	P 16 p13	Ra-04 Ra-03	p 19	7500-Ra C 304, 305, 7500-Ra B	D 3454-91 D 2460-90	R-1141-76 R-1140-76	Ra-05	N.Y.[9]
Radium 228	Radiochemical	904.0	P 24	Ra-05	p 19	304,7500-Ra D	----	R-1142-76	----	N.Y.[9] N.J.[10]

		Reference (method or page number)								
Parameter	Method	EPA[1]	EPA[2]	EPA[3]	EPA[4]	~~Standard Methods[2]~~ SM[5]	ASTM~~[3]~~ [6] ~~(1975)~~	USGS[7]	DOE[8]	Others
Uranium[12]	Radiochemical, Fluorometric	908.0 908.1				7500-U B 7500-U C (17th Ed)	D2907-91	R-1180-76 R-1181-76 R-1182-76	U-04 U-2	
	Alpha spectrometry	----		00-07	p 33	7500-U C (18th or 19th Ed	D 3972-90	----	----	
	Laser Phosphorimetry	----				----	D 5174-91			
Man-Made:										
Radioactive Strontium - 89, 90	~~Total~~ Radiochemnical	~~905~~ 905.0	p 29	Sr-04	p 65	303, 7500-Sr B	----	R-1160-76	Sr-01 Sr-02	
Tritium	Liquid Scintillation	~~906~~ 906.0	p 34	H-02	p 87	306 , 7500-3H B	D 4107-91	R-1171-76	----	
Radioactive Cesium - ~~134~~	~~Precipitation & beta counting[4]~~	~~901~~					~~D3459~~			
	Radiochemical, Gamma ray spectrophotometry	901.0 901.1	p 4		p 92	7500-Cs B 7120 (19th Ed.)	D 2459-72 D 3649-91	---- R-1110-76	4.5.2.3	
~~Uranium~~	~~Fluorometry~~	~~908.1~~					~~D2907~~			~~(5)(6)~~
~~Others~~										
Radioactive Iodine	Radiochemical, Gamma ray spectrophotometry	902.0 901.1	P 6 p9		p 92	7500-I B 7500-I C 7500-I D 7120 (19th Ed)	D 3649-91 D 4785-88	----	4.5.2.3	
Gamma Emitters	Gamma Ray Spectrometry	901.1 902.0 901.0			p 92	7120 (19th Ed.) 7500-Cs B 7500-I B	D 3649-91 D 4785-88	----	----	4.5.2.3

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[1] "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA-600/4-80-032. August, 1980. Available from the EMSL, Office of Research and Development, U.S. EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio, 45268.

~~[2] "Standard Methods for the Examination of Water and Wastewater", 13th Edition, (1971), APHA, 1015 Fifteenth Street, N.W., Washington, D.C. 20005 (13th Edition no longer available).~~

~~[3] "1975 Annual Book of ASTM Standards, Water and Atmospheric Analysis", Part 31, (1975). Available from the ASTM, 1916 Race Street, Philadelphia, PA, 19103.~~

~~[4] Use gamma spectrometry if total radiocesium determined by beta counting exceeds 30 pCi/L.~~

~~[5] "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", May 1973, H. L. Krieger and S. Gold, EPA-R4-73-014. Available from U.S. EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio, 45268.~~

~~[6] "HASL Procedures Manual", Edited by John H. Hasley (1972), U.S., DOE, HASL-300. Available from the Environmental Measurements Laboratory, 376 Hudston Street, New York, NY, 10014.~~

[2] "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008(revised), March 1976. Available at NTIS, ibid PB 253258.

[3] "Radiochemistry Procedures Manual", EPA 520/5-84-006, December 1987. Available at NTIS, ibid. PB 84-215581

[4] "Radiochemical Analytical Procedures fir Analysis of Environmental Samples", March 1979. Available at NTIS, ibid. EMSL LV 053917

[5] "Standard Methods for the Examination of Water and Wastewater", 13th Edition, 17th, 18th, 19th Editions, 1971, 1989, 1992, 1995. Available at APHA, 1015 Fifteenth Street, N.W., Washington, D.C. 20005. All methods are in the 17th, 18th and 19th editions except 7500-U C Fluorometric Uranium was discontinued after the 17th Edition. 7120 Gamma Emitters is only in the 19th Edition, and 302, 303, 304, 305 and 306 are only in the 13th Edition.

[6] Annual Book of ASTM Standards, Vol. 11.02, 1994. Available at American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[7] "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. Available at U.S. Geologial Survey (USGS) Information Services, Box 25286 Federal Center, Denver, CO 80225-0425.

[8] "EML Procedures Manual", 27th Edition, Volume 1, 1990 Available at the Environmental Measurements Laboratory, U.S. Department of Energy (DOE), 376 Hudson Street, New York, NY 10014-3621.

[9] "Determination of Ra-226 and Ra-228 (Ra-02)", January 1980. Revised June 1982. Available at Radiological Sciences Institute Center for Laboratories and Research, New York State Department of Health, Empire State Plaza, Albany, NY 12201.

[10] "Determination of Radium 228 in Drinking Water", August 1980. Available at State of New Jersey, Department of Environmental Protection, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, N.J. 08625

[11] Natural uranium and thorium-230 ar approved as gross alpha calibration standards for gross alpha with co-precipitation and evaporation methods, americium-241 is approved with co-precipitation methods.

[12] If uranium (U) is determined by mass, a 0.67 pCi/g of uranium conversion factor must be used. This conservative factor is based on the 1:1 activity ratio of U-234 to U-238 that is characteristic of naturally occurring uranium.

Section 24. NR 809.725 Table E is amended to read:

TABLE E

SDWA Approved Methodology for Physical Parameters, Residual Chlorine, Sodium, Corrosivity, and Secondary Contaminants

Parameter and Method	EPA[12]	Standard Methods[23]	ASTM[34]	USGS[45]	Other
Alkalinity - Titimetric	~~310.1~~	2320B	~~D1067-88(B)~~ D1067-92(B)	I-1030-85	-
Aluminum - Total[6][5], Digestion, followed by:					
Atomic absorption (AA); direct aspiration	~~202.1~~	~~3111-D~~ 3111D	-	~~I-3051-85~~	-
Atomic absorption (AA); graphite furnace	~~202.2~~	~~3113-B~~ 3113B		-	-
Inductively-coupled plasma (ICP)	200.7[13]	~~3120-B~~ 3120B	-	-	-
Inductively-coupled plasma; mass spectrometry (ICP/MS)	200.8[13]	-	-	-	-
Atomic absorption (AA); platform furnace	200.9[13]	-	-	-	-
Calcium					
EDTA titrimetric[10]	~~215.2~~	3500-Ca D	~~D511-88(A)~~D511-93(A)	-	-
AA; direct aspiration	~~215.1~~	~~3111-B~~ 3111B	~~D511-88(B)~~D511-93(B)	-	-
ICP	200.7[13]	~~3120-B~~ 3120B	-	-	-
Chloride					
Potentiometric[10]	-	~~4500-Cl⁻-D~~ 4500-Cl-D	-	-	-
~~Colorimetric (ferricyanide) manual or~~	-	-	~~D512-89(C)~~	~~I-1187-85~~	-
~~Automated~~	~~325.1; 325.2~~	~~4500-Cl⁻-E~~	-	~~I-2187-85~~	-
~~Titrimetric, Mercuric Nitrate~~	~~325.3~~	~~4500-Cl⁻-C~~	~~D512-89(A)~~	~~I-1184-85~~	~~973.51~~[6]
Ion Chromatography	300.0A[91]	4110	D4327-91	-	-

Parameter and Method	EPA[~~1~~2]	Standard Methods[~~2~~3]	ASTM[~~3~~4]	USGS[~~4~~5]	Other
Chlorine dioxide residual					
Amperometric	-	$4500\text{-}ClO_2$ C	-	-	-
DPD	-	$4500\text{-}ClO_2$ D	-	-	-
Color					
Colorimetric, Pt-Co	~~110.2~~	~~2120 B~~ 2120B	-	~~I-1250-85~~	-
~~Spectrophotometric~~	~~110.3~~	~~2120 C~~	-	-	-
Conductivity	~~120.1~~	2510B	~~D1125-82(B)~~D1125-91(A)	-	-
Corrosivity					
Langelier Index[10]	-	2330	-	-	-
Aggressive Index	-	-	-	-	C400-77[7]
Foaming Agents (MBAS)					
Colorimetric	~~425.1~~	~~5540 C~~ 5540C	-	-	-
Free chlorine residual[11]					
Colorimetric or ferrous titrimetric DPD	-	4500-Cl G or F	-	-	-
Amperometric	~~330.1~~	4500-Cl D	~~D1253-76(A)~~	-	-
Syringaldazine	-	4500-Cl H	-	-	-
Total Chlorine					
Amperometric titration	-	4500-Cl D	-	-	-
Amperometric titration(low level)	-	4500-Cl E	-	-	-
DPD Ferrous titrimetric	-	4500-Cl F	-	-	-
DPD Colorimetric	-	4500-Cl G	-	-	-
Iodometric Electrode	-	4500-Cl I	-	-	-
Iron - Total[~~5~~6], Digestion, followed by:					
AA; direct aspiration	~~236.1~~	~~3111 B or C~~ 3111B	~~D1068-84 (C or D)~~	~~I-3381-84(C or D)~~	~~973.27~~[6]
AA; graphite furnace	~~236.2~~200.9	~~3113 B~~ 3111B	-	-	-
ICP	200.7[13]	~~3120 B~~ 3120B	-	-	-
Manganese - Total[~~5~~6], Digestion, followed by:					
AA; direct aspiration	~~243.1~~	~~3111 B or C~~ 3111B	~~D858-90(A)~~	~~I-3454-85~~	~~974.27~~[6]
AA; graphite furnace	~~243.2~~200.9	~~3113 B~~ 3113B	-	-	-
ICP	200.7[13]	~~3120 B~~ 3113B	-	-	-
~~Colorimetric (Persulfate)~~	-	~~3500-Mn D~~	-	-	-
Inductively-coupled plasma; mass spectrometry (ICP/MS)	200.8	-	-	-	-
Odor - Threshold Odor	~~140.1~~	2150B	-	-	-
Orthophosphate, Unfiltered, no digestion or hydrolysis					
Colorimetric, automated, ascorbic acid	365.1[1]	4500-P F	-	-	-
~~Colorimetric, ascorbic acid, two reagent~~	~~365.3~~	~~4500-P F~~	-	-	-
Colorimetric, ascorbic acid, ~~single reagent~~	~~365.2~~	4500-P E	D515-88(A)	-	-
Colorimetric, phosphomolybdate;	-	-	-	I-1601-85	-
automated segment flow		-	-	~~I-2601-85~~ I-2601-90	-
automated discrete		-	-	I-2598-85	-
Ion chromatography	300.0~~A~~[~~9~~1]	4110	~~D4327-88~~ D4327-91	-	-
Ozone					
Indigo Method	-	$4500\text{-}O_3B$	-	-	~~pp. 169-176~~[12]
pH					
Electrometric	~~150.1~~ ~~150.2~~	4500-H^+-B -	D1293-84~~(B)~~ -	- -	- -
Silica					
Colorimetric, molybdate blue	-	-	-	I-1700-85	-

Parameter and Method	EPA~~[1]~~[2]	Standard Methods~~[2]~~[3]	ASTM~~[9]~~[4]	USGS~~[4]~~[5]	Other
Automated-segmented flow:	-	-	-	I-2700-85	-
Colorimetric	~~370.1~~	-	D859-88	-	-
Molybdosilicate	-	4500-Si D	-	-	-
Heteropoly blue	-	4500-Si E	-	-	-
Automated method for molybdate-reactive silica	-	4500-Si F	-	-	-
ICP	200.7[13]	~~3120 B~~ 3120B	-	-	-
Sodium - Total~~[5]~~[6], Digestion, followed by:					
AA; direct aspiration	~~273.1~~	~~3111 B~~ 3111B	-	-	-
~~AA; graphite furnace~~	~~273.2~~	-	-	-	-
~~Flame photometric~~	-	~~3500-Na D~~	~~D1428-82~~	-	-
ICP	200.7[13]	~~3120 B~~	-	-	-
Silver - Total ~~[5]~~[6], Digestion, followed by:					
AA; direct aspiration	~~272.1~~	~~3111 B or C~~ 3111B	-	I-3720-85	-
AA; graphite furnace	~~272.2~~	~~3113 B~~ 3113B	-	-	-
AA; platform furnace	200.9[13]	-	-	-	-
ICP	200.7[13]	~~3120 B~~ 3120B	-	-	-
ICP/MS	200.8[13]	-	-	-	-
Sulfate					
Spectrophotometric	375.2[1]	-	4500-SO_4 - F	-	-
Gravimetric	-	-	4500-SO_4 - C,D	-	-
Ion chromatography	300.0[1]	D4327-91	4110	-	-
Temperature, Thermometric	-	2550B	-	-	-
Total Filterable Residue (TDS), gravimetric	~~160.1~~	~~2540 C~~ 2540C	-	-	-
~~**Turbidity, nephelometric method**~~	~~180.1~~	~~2130 B~~	-	-	~~Method 2[6]~~
Zinc - Total~~[5]~~[6], Digestion followed by:					
AA; direct aspiration	~~289.1~~	~~3111 B or C~~ 3111B	~~D1691-90~~	~~I-3900-85~~	~~974.27[6]~~
~~AA; graphite furnace~~	~~289.2~~	-	-	-	-
~~AA; platform furnace~~	~~200.9[13]~~	-	-	-	-
ICP	200.7[13]	~~3120 B~~ 3120B	-	-	-
ICP/MS	200.8[13]	-	-	-	-
~~Colorimetric (Dithizone)~~	~~-~~	~~3500-Zn E~~	-	-	-
~~Zincon~~	-	-	-	-	~~8009[6]~~

~~[1] "Methods for Chemical Analysis of Water and Wastes", (EPA-600/4-79-020), March 1983, EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268. Available from ORD Publications, CERI, EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. For approved analytical procedures for metals, the technique applicable to total metals shall be used.~~

[1] "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA-600/R-93-100, August 1993. Available at NTIS, Order #PB94-121811, 5285 Port Royal Road, Springfield, VA 22161

~~[13]~~ [2] Unless otherwise noted, methods are in "Methods for the Determination of Metals in Environmental Samples - Suppliment I", ~~ORD Publications, EPA/600/4-91/010, June 1991~~ EPA-600/R-94/111, May 1994. Available from the National Technical Information ~~Service, Order #PB91-231498, 5285~~ Port Royal Road, Springfield, VA 22161. PB94-184942

~~[2]~~ [3] "Standard Methods for the Examination of Water and Wastewater", American Public Health Association, American Water Works Association, Water Pollution Control Federation, ~~17th~~ 18th edition, ~~1989~~ 1992, 1015 Fifteenth Street, N.W., Washington, D.C. 20005.

~~[4] "Methods for Analysis of Inorganic Substances in Water and Fluvial Sediments", U.S. Department of the Interior, U.S. Geological Survey, Open-File Report 85-495, N.W. Skongstad, et al; U.S. Geological Survey, 1989. Available from U.S. Geological Survey, 604 S. Pickett Street, Alexandria, VA 22304.~~

~~[9]~~ [4] "Annual Book of ASTM Standards, ~~Vol.~~ Vols 11.01 and 11.02, ~~1991~~ 1994. Available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103. The same method in the current edition may be used if the date of method revision is the same as the 1991 edition.

[5] Available from Books and Open-File reports Section., U.S. Geological Survey, Federal Center, Box 25425, Denver, CO. 80225-0425

~~[6] "Official Methods of Analysis of the AOAC" methods manual, 13th ed. (1980). Current edition available from the Association of Official Analytical Chemists, 1111 N. 19th Street, Suite 210, Arlington, VA 22209. (The method in the current edition may be used if the date of method revision is the same as the 13th edition.)~~

[5 6] Samples that contain less than 1 NTU (nephelometric turbidity unit) and are properly preserved (conc. HNO_3 to pH <2) may be analyzed directly (without digestion) for total metals, otherwise, digestion is required. Turbidity must be measured on the preserved samples just prior to the initiation of metal analysis. When digestion is required the total recoverable technique as defined in the method must be used.

[7] "AWWA Standards for Asbestos - Cement Pipe, 4 in. through 16 in. for Water and Other Liquids", AWWA C400-77, Revision of C400-75. Available from the AWWA, 6666 West Quincy Avenue, Denver Colorado, 80235.

~~[8] Zinc, Zincon Method, Method 8009, Hach Handbook of Water Analysis, 1979, pages 2-231 and 2-333. Available from the Hach Chemical Company, P.O. Box 389, Loveland, Colorado 80537.~~

~~[9] "Determination of Inorganic Ions in Water by Ion Chromatography", December 1989, US EPA-EMSL, available from the EMSL-Cincinnati, Cincinnati, Ohio 45268.~~

~~[10] This is the method to use for corrosivity determination.~~

[11] Residual disinfectant concentrations for free chlorine and combined chlorine may also be measured by using DPD colorimetric test kits if approved by the department.

~~[12] "Determination of Ozone in Water by the Indigo Method; A Submitted Standard Method", Ozone Science and Engineering, Vol. 4, pp. 169-176, Pergamon Press Ltd., 1982, or automated methods which are calibrated in reference to the results obtained by the Indigo Method on a regular basis, if approved by the department.~~

Section 25. NR 809.725 Table F is amended to read:

TABLE F
Sample Preservation Requirements and Holding Times for Inorganic Parameters

Parameter	Preservation[1]	Container[2]	Holding Time[3]
Asbestos	Cool, 4°C[4]	P or G	
METALS			
Aluminum	HNO_3	P or G	6 months
Antimony	HNO_3	P or G	6 months
Arsenic	HNO_3	P or G	6 months
Barium	HNO_3	P or G	6 months
Beryllium	HNO_3	P or G	6 months
Cadmium	HNO_3	P or G	6 months
Copper	HNO_3	P or G	6 months
Chromium	HNO_3	P or G	6 months
Iron	HNO_3	P or G	6 months
Lead	HNO_3	P or G	6 months
Manganese	HNO_3	P or G	6 months
Mercury	HNO_3	P or G	28 days
Nickel	HNO_3	P or G	6 months
Selenium	HNO_3	P or G	6 months
Silver	HNO_3	P or G	6 months
Thallium	HNO_3	P or G	6 months
Zinc	HNO_3	P or G	6 months
GENERAL CHEMISTRY PARAMETERS			
Chloride	None ~~Required~~	P or G	28 days
Color	Cool, 4°C	P or G	48 hours
Cyanide	Cool, 4°C,+ NaOH to pH >12 NaOH to pH>12 0.6 g Ascorbic acid[5]	P or G	14 days
Fluoride	None	P or G	28 days
Foaming Agents	Cool, 4°C	P or G	48 hours
Nitrate (as N)			~~28 days~~
Chlorinated	Cool, 4°C	P or G	~~48 hrs~~ 14 days
Non-Chlorinated	Cool ~~+Conc. H2SO4 to pH <2~~, 4°C	P or G	14 days
Nitrite (as N)	Cool, 4°C OR Conc. H_2SO_4 to pH <2	P or G	48 hours
Nitrate+Nitrite	Cool, 4°C OR Conc. H_2SO_4 to pH <2	P or G	14 days
Odor	Cool, 4°C	G	48 hours
pH	None ~~Required~~	P or G	Analyze Immediately
Solids (TDS)	Cool, 4°C	P or G	7 days
Sulfate	Cool, 4°C	P or G	28 days
Turbidity	Cool, 4°C	P or G	48 hours

[1] If HNO_3 cannot be used because of shipping restrictions, sample may be initially preserved by icing and immediately shipping it to the laboratory. Upon receipt in the laboratory, the sample must be acidified with conc HNO_3 to pH <2. At time of analysis, sample container should be thoroughly rinsed with 1:1 HNO_3; washings should be added to sample.

[2] P = plastic, hard or soft, G = glass, hard or soft

[3] In all cases, samples should be analyzed as soon after collection as possible.

[4] These samples should never be frozen.

[5] Ascorbic acid should only be used in the presence of residual chlorine

Section 26. NR 809.725 Table G is amended to read:

TABLE G
Sample Preservation Requirements and Holding Times for Organic Parameters

			HOLDING TIME	
Parameter/Method	Preservation	Container	Sample	Extract
502.1,502.3,503.1	Sodium Thiosulfate (3 mg) or Ascorbic Acid (25 mg) 4°C, HCl pH<2	40 mL, G[1]	14 days	-
504	Sodium Thiosulfate (3 mg) Cool, 4°C, HCl pH<2	40 mL, G[1]	28 days	Analyze immediately
505	Sodium Thiosulfate (3 mg) Cool, 4°C	40 mL, G[1]	14 days (Heptachlor=7 days)	Analyze immediately
506	Sodium Thiosulfate (60 mg) Cool, 4°C, dark	1L, Amber G[2]	14 days	4°C, dark, 14 days
507	~~Mercuric Chloride (10 mg/L)~~ Sodium Thiosulfate (80 mg) Cool, 4°C	1L, Amber G[2]	14 days (see method for exceptions)	4°C, dark, 14 days
508	~~Mercuric Chloride (10 mg/L)~~ Sodium Thiosulfate (80 mg) Cool, 4°C	1L, G[2]	7 days (see method for exceptions)	4°C, dark 14 days
508A	Cool, 4°C	1L, G[2]	14 days	30 days
515.1	~~Mercuric Chloride (10 mg/L)~~ Sodium Thiosulfate (80 mg) Cool, 4°C	1L, Amber G[2]	14 days	4°C, dark, 28 days
524.1, 524.2	Ascorbic Acid (25 mg) HCl pH<2, Cool 4°C	40 mL, G[1]	14 days	-
525.1	Sodium Sulfite (40-50 mg) or Sodium Arsenite (40-50 mg) Cool, 4°C, HCl pH<2	1L, G[2]	7 days	30 days
531.1	Monochloroacetic acid pH<3 Sodium Thiosulfate (80 mg) Cool, 4°C	60 mL, G[1]	Freeze -10°C, 28 days	-
547	Sodium Thiosulfate (100 mg/L) Cool, 4°C	60 mL, G[1]	14 days (18 mo. frozen)	-
548	Cool, 4°C	60 mL, G[1]	7 days	1 day
549	Sodium Thiosulfate (100 mg/L) H_2SO_4 pH<2, Cool, 4°C, dark	1L, High Density Amber PVC or Silanized Amber Glass	7 days	21 days
550, 550.1	Sodium Thiosulfate (100 mg/L) Cool, 4°C, HCl pH<2	1L, Amber G[2]	7 days	4°C, dark, 40 days
1613	Sodium Thiosulfate (80 mg) Cool, 4°C, dark	1L, Amber G[2]	-	40 days

[1] Teflon-lined septa.

[2] Teflon-lined cap.

Section 27. NR 809.81(5)(ee) is amended to read:

NR 809.81(5)(ee) Chlordane. The United States environmental protection agency (EPA) sets drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites. Chlordane is not very mobile in soils. It usually gets into drinking water after application near water supply intakes or wells. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for chlordane at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chlordane.

Section 28. NR 809.81(5)(hq) is amended to read:

NR 809.81(5)(hq) Di(2-ethylhexyl)phthalate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice exposed to high levels over their lifetimes. EPA has set the drinking water standard for di(2-ethylhexyl)phthalate at ~~0.004~~ <u>0.006</u> parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)phthalate.

The foregoing rule was approved and adopted by the State of Wisconsin Natural Resources Board on May 28, 1997.

The rule shall take effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22(2) (intro.), Stats.

Dated at Madison, Wisconsin August 7, 1997.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By George E. Meyer
George E. Meyer, Secretary

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

August 7, 1997

Mr. Gary L. Poulson
Assistant Revisor of Statutes
131 West Wilson Street - Suite 800
Madison, WI

Gary

Dear Mr. Poulson:

Enclosed are two copies, including one certified copy, of State of Wisconsin Natural Resources Board Order No. DG-6-97. These rules were reviewed by the Assembly Committee on Environment and the Senate Committee on Agriculture and Environmental Resources pursuant to s. 227.19, Stats. Summaries of the final regulatory flexibility analysis and comments of the legislative review committees are also enclosed.

You will note that this order takes effect following publication. Kindly publish it in the Administrative Code accordingly.

Sincerely,

George

George E. Meyer
Secretary

Enc.