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

The Natural Resources Board proposes an order to renumber NR 809.26(3)(L) to 809.26(3)(k); to amend NR 809.04(21), 809.04(34), 809.22, 809.26(1)(e), 809.543(3)(c)8., 809.543(7)(d), 809.548(3)(a)4., 809.55(5)(c)2., 809.562(3)(a), (b), (c) and (d), 809.563(3), 809.565(2)(a)2., 809.566(4), 809.567(4)(b)8., 809.569(1)(b), 809.569(1)(d)2., 809.569(2)(b)3., 809.569(2)(c)1. and 2., 809.569(3)(a)1., 809.60(2), 809.75(4), 809.76, 809.76(5), 809.833(3)(c)5.b. and c.; repeal and recreate NR 809.51(2) and Table A, 809.52(2), 809.52(5) relating to Safe Drinking Water requirements for public water systems.

DG-13-03

Analysis Prepared by Department of Natural Resources

Statutory authority: ss. 280.11 and 281.17(8), Stats.
Statutes interpreted: ss. 280.11 and 281.17(8), Stats.

EPA published amendments to 40 CFR 141, 142 and 143. The department of natural resources' ("the department") primacy agreement with the environmental protection agency (EPA) requires the department 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 the department's administrative rules are consistent with federal regulations.

The revisions are to items contained in the Interim Enhanced Surface Water Treatment Rule (IESWTR) and Disinfectants/Disinfection By-products Rule (D/DBPR) provisions included in NR 809. These revisions are being sought to respond to EPA's review of the WDNR's primacy application for state implementation of the IESWTR and the D/DBPR. The revisions are to clarify language and correct minor errors. For the department to obtain primacy, for these two rules, EPA has requested these revisions be incorporated into Chapter NR 809.

Additionally, several minor revisions are included in this document that address corrections to previously adopted regulations. These corrections are included to rectify omissions or typographical errors in earlier editions of this chapter. Chapter NR 809 code citations are updated and errors corrected to increase the clarity of the administrative code.

SECTION 1. NR 809.04(21) is amended to read:

NR 809.04(21) "Dose equivalent" means the product of the absorbed dose for ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the international commission on radiological units and measurements ~~(ICRU)~~ (ICRUM).

SECTION 2. NR 809.04(34)(a) is amended to read:

NR 809.04(34) (a) Occurrence of insects or other macroorganisms, algae or large diameter pathogens such as *Giardia lamblia* or *Cryptosporidium,* in greater than or equal to 10% of representative source water samples collected over a period of 6 months, immediately prior to the first or only point of disinfectant application, or

SECTION 3. NR 809.22 is amended to read:

NR 809.22 Total trihalomethane maximum contaminant level. The maximum contaminant level of 0.10 mg/L for total trihalomethanes, the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform), applies to subpart H community water systems which serve a population of 10,000 people or more until ~~December 16, 2001~~ December 31, 2001. This level applies to community water systems that use only ground water not under the direct influence of surface water and serve a

population of 10,000 people or more until December 31, 2003. Compliance with the maximum contaminant level for total trihalomethanes is calculated pursuant to s. NR 809.23. After December 31, 2003, this section is no longer applicable.

SECTION 4. NR 809.26(1)(e) is amended to read:

NR 809.26(1)(e) Suppliers of water having community water systems or non–transient, non–community water systems shall monitor for the following contaminants at the discretion of the department:

Chloroform [1]
Bromoform [1]
Chlorodibromomethane [1]
Bromodichloromethane [1]
Bromobenzene
Bromomethane
Chloromethane
Chloroethane
o–Chlorotoluene
p–Chlorotoluene
Dibromomethane
m–Dichlorobenzene
1,1–Dichloropropene
1,1–Dichloroethane
1,3–Dichloropropane
2,2–Dichloropropane
1,3–Dichloropropene
1,1,1,2–Tetrachloroethane
1,1,2,2–Tetrachloroethane
1,2,3–Trichloropropane
1,2,4–Trimethylbenzene
1,2,3–Trichlorobenzene
n–Propylbenzene
n–Butylbenzene
~~Napthalene~~ Naphthalene
Hexachlorobutadiene
1,3,5–Trimethylbenzene
p–Isopropyltoluene
Isopropylbenzene
Tert–butylbenzene
Sec–butylbenzene
Fluorotrichloromethane
Dichlorodifluoromethane
Bromochloromethane

[1] A trihalomethane (THM). Monitoring results for total THMs required under s. NR 809.23 do not comply with this section because the samples are collected in the distribution system.

SECTION 5. NR 809.26(3)(L) is renumbered 809.26(3)(k).

SECTION 6. NR 809.51(2) and Table A is repealed and recreated to read:

NR 809.51(2) Except for the radionuclides listed in Table A, the concentration of man–made radionuclides causing 4 mrem total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure", NBS Handbook 69 as amended August, 1963, U.S. Department of Commerce. Copies of this document are available for inspection at the office of

the department of natural resources, the secretary of state's office and the office of the revisor of statutes, and may be obtained for personal use from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. If 2 or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ may not exceed 4 millirem/year.

Table A
Average annual concentrations assumed to produce
a total body or organ dose of 4 mrem/yr.

Radionuclide	**Critical Organ**	**pCi per liter**
Tritium	Total body	20,000
Strontium–90	Bone marrow	8

Note: Sections NR 809.50 through 809.52 are identical to the radioactivity standards of the department of health and family services in ch. HFS 157, Wis. Adm. Code, and to the National Interim Primary Drinking Water Regulations, 40 CFR 141. These sections are adopted pursuant to s. 254.34, Stats.

SECTION 7. NR 809.52(2) is repealed and recreated to read:

NR 809.52(2) To determine compliance with s. NR 809.50 (1), the detection limit may not exceed the concentrations in Table A in this section.

Table A
Detection Limits for Gross Alpha Particle Activity, Radium
226, Radium 228, and Uranium

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/l
Radium 226	1 pCi/l
Radium 228	1 pCi/l
Uranium	Reserve

SECTION 8. NR 809.52(5) is repealed and recreated to read:

NR 809.52(5) To determine compliance with s. NR 809.50 (1) (a), the detection limit may not exceed one pCi/l. To determine compliance with s. NR 809.50 (1) (b), the detection limit may not exceed 3 pCi/l. To determine compliance with s. NR 809.51, the detection limits may not exceed the concentrations listed in Table B in this section.

Table B
Detection Limits for Man–made Beta Particle and Photon Emitters

Radionuclide	Detection limit
Tritium	1,000 pCi/1
Strontium–89	10 pCi/1
Strontium–90	2 pCi/1
Iodine–131	1 pCi/1
Cesium–134	10 pCi/1
Gross beta	4 pCi/1
Other radionuclides	1/10 of the applicable limit

Note: Sections NR 809.50 to 809.52 are identical to the radioactivity standards of the department of health and family services in ch. HFS 157, Wis. Adm. Code, and to the National Interim Primary Drinking Water Regulations, 40 CFR 141. These sections are adopted pursuant to s. 254.34, Stats.

SECTION 9. NR 809.543(3)(c)8. is amended to read:

NR 809.543(3)(c)8. Silicate (when an inhibitor containing a silicate compound is used); and

SECTION 10. NR 809.543(7)(d) is amended to read:

NR 809.543(7)(d) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples; and

SECTION 11. NR 809.548(3)(a)4. is amended to read:

NR 809.548(3)(a)4. Silica, when an inhibitor containing a silicate compound is used; and

SECTION 12. NR 809.55(5)(c)2. is amended to read:

NR 809.55(5)(c)2. The number and location of each lead service line replaced during the previous year of the system's replacement schedule; and

SECTION 13. NR 809.562(3)(intro.), (a), (b), (c) and (d) are amended to read:

NR 809.562(3)(intro.) Unless otherwise noted, all public drinking water systems shall comply with the requirements of this subchapter as follows:

(a) All systems serving 10,000 or more persons that are CWSs or NTNCWSs and that are supplied by a surface water source or by a ground water source under the direct influence of surface water shall comply with this subchapter beginning ~~December 16, 2001~~ January 1, 2002.

(b) Systems serving fewer than 10,000 persons that are CWSs or NTNCWSs and that are supplied by a surface water source or by a ground water source under the direct influence of surface water and all systems using only ground water not under the direct influence of surface water shall comply with this subchapter beginning ~~December 31, 2003~~ January 1, 2004.

(c) Systems serving 10,000 or more persons that are transient NCWSs and use chlorine dioxide as a disinfectant or oxidant and are supplied by a surface water source or by a ground water source under the direct influence of surface water shall comply with any requirements for chlorine dioxide and chlorite in this subchapter beginning ~~December 16, 2001~~ January 1, 2002.

(d) Systems that are transient ~~NCWS~~ NCWSs and use chlorine dioxide as a disinfectant or oxidant and that serve fewer than 10,000 persons and are supplied by a surface water source or by a ground water source under the direct influence of surface water or that are systems using only ground water not under the direct influence of surface water shall comply with any requirements for chlorine dioxide ~~and chlorite~~ in this subchapter beginning ~~December 31, 2003~~ January 1, 2004.

SECTION 14. NR 809.563(3) is amended to read:

NR 809.563(3) Systems shall measure disinfection byproducts by the methods, as modified by the footnotes, prescribed in Table 1. Samples for TTHM shall be dechlorinated upon collection to prevent further production of trihalomethanes, according to the procedures described in the methods, except acidification is not required if only THMs or TTHMs are to be determined. Samples for maximum TTHM potential may not be dechlorinated or acidified, and shall be held for 7 days at 25° C or above prior to analysis. Samples shall be collected using the containers, preservative and holding times specified in s. NR 809.725 (1), Table G.

Table 1–Approved Methods for Disinfectant Byproduct Compliance Monitoring

Methodology[2]	**EPA Method**	**Standard Method**	**Byproduct measured[1]**			
			TTHM	HAA5	Chlorite[4]	Bromate
P&T/GC/EICD& PID	502.2		X			
P&T/GC/MS	~~524.25~~ 524.2		X			

LLE/GC/ECD	551.1		X			
LLE/GC/ECD		6251B		X		
SPE/GC/ECD	~~552.2~~ 552.1			X		
LLE/GC/ECD	552.2			X		
Amperometric Titration[3]		4500-ClO_2 E			X	
IC	300.0				X	
IC	300.0				X	X

1 X indicates method is approved for measuring specified disinfection byproduct.
2 P&T = purge and trap; GC = gas chromatography; ElCD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer; LLE = liquid/ liquid extraction; ECD = electron capture detector; SPE = solid phase extractor; IC = ion chromatography.
3 If TTHMs are the only analytes being measured in the sample, then a PID is not required.
4 Amperometric titration may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in s. NR 809.565 (4) (a) 1. Ion chromatography shall be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in s. NR 809.565(4) (a) 2. and 3.

SECTION 15. NR 809.565(2)(a)2. is amended to read:

NR 809.565(2)(a)2. The remaining samples shall be taken in the distribution system at locations representing at least average residence time in the system and representative of the entire distribution system, taking into account the number of people served, different sources of water and different treatment methods.

SECTION 16. NR 809.566(4) is amended to read:

NR 809.566(4) DISINFECTION BYPRODUCT PRECURSORS (DBPP). Compliance with disinfection byproduct precursors shall be determined as specified in s. NR 809.569 (1). Systems may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first 12 months after the compliance date that it is not able to meet the Step 1 requirements in s. NR 809.569 (1) (b) and therefore applies for alternate minimum TOC removal (Step 2) requirements, is not eligible for retro-active approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to s. NR 809.569 (1) (c) and is in violation. Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For systems required to meet Step 1 TOC removals, if the value calculated under ~~s. NR 809.569(3)(a)4.~~ s. NR 809.569(3)(a) or (b) is less than 1.00, the system is in violation of the treatment technique requirements and shall notify the public pursuant to subch. X in addition to reporting to the department pursuant to s. NR 809.567.

SECTION 17. NR 809.567(4)(b)8. is amended to read:

NR 809.567(4)(b)8. The running annual average of the amount of magnesium hardness removal (as ~~CaCO~~ $CaCO_3$ mg/L) for systems meeting the criterion in s. NR 809.567 (2)(c) 2.

SECTION 18. NR 809.569(1)(b) is amended to read:

NR 809.569(1)(b) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with s. NR 809.563 (7). Systems practicing softening are required to meet the Step 1 TOC reductions in the far–right column, source water alkalinity >120 mg/L, for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Surface Water Systems Using Conventional Treatment [1,2]

Source water	**Source water alkalinity, mg/L as ~~CaO_3~~ $CaCO_3$**		
TOC, mg/l	0 - 60 %	≦ ≥ 60 - 120 %	> 120% [3]
>2.0 - 4.0	35.0	25.0	15.0
>4.0 - 8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

SECTION 19. NR 809.569(1)(d)2. is amended to read:

NR 809.569(1)(d)2. Bench– or pilot–scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum, or equivalent amounts of ferric salt, until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH

Alkalinity (mg/L as ~~CaCO~~ $CaCO_3$)	Target pH
0–60	5.5
>60–120	6.3
>120–240	7.0
>240	7.5

SECTION 20. NR 809.569(2)(b)3. is amended to read:

NR 809.569(2)(b)3. The system's source water TOC level, measured as required by s. NR 809.563 (7)(c), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to s. NR 809.563 (7) (a), is greater than 60 mg/L (as ~~CaCO~~ $CaCO_3$, calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior the effective date for compliance in s. NR 809.562 (3), the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in s. NR 809.562 (3) to use ~~of~~ technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively.

SECTION 21. NR 809.569(2)(c)1. and 2. are amended to read:

NR 809.569(2)(c)1. Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as ~~CaCO~~ $CaCO_3$), measured monthly according to s. NR 809.563 (7) (a) and calculated quarterly as a running annual average.

2. Softening that results in removing at least 10 mg/L of magnesium hardness (as ~~CaCO~~ $CaCO_3$), measured monthly and calculated quarterly as an annual running average.

SECTION 22. NR 809.569(3)(a)1. is amended to read:

NR 809.569(3)(a)1. Determine actual monthly TOC percent removal, by using the following equation: (1-(treated water TOC/source water TOC)) x 100 = percent TOC removal.

SECTION 23. NR 809.60(2) is amended to read:

NR 809.60(2) The following are the secondary standards for inorganic chemicals:

Standard	**Milligrams per liter**

Aluminum	0.05 to 0.2
Chloride	250
Color	15 units
Copper	1.0
Corrosivity	Noncorrosive
Fluoride*	2.0
Foaming agents MBAS (Methylene–Blue Active Substances)	0.5
Hydrogen Sulfide	not detectable
Iron	0.3
Manganese	0.05
Odor	3 (Threshold No.)
Silver	0.1
Sulfate	250
Total Residue	500
Zinc	5

~~**Note:**~~ ~~*~~The primary maximum contaminant level for fluoride is contained in s. NR 809.11.

SECTION 24. NR 809.75(4)(intro) is amended to read:

NR 809.75(4) (intro) After ~~December 17, 2001~~ December 31, 2001, systems serving at least 10,000 people shall install and operate water treatment processes that will reliably achieve all of the following:

SECTION 25. NR 809.76(intro) is amended to read:

NR 809.76 Filtration requirements. (intro) Public water systems that use a surface water source shall provide filtration, which complies with the requirements of sub. (1), (2), (3), (4) or (5) and meets the disinfection criteria for filtered systems specified in s. NR 809.77 (2). Public water systems that use a ground water source under the direct influence of surface water shall provide filtration, which complies with the specifications of sub. (1), (2), (3), (4) or (5) and meets the disinfection criteria for filtered systems specified in s. NR 809.77 within 18 months of the date that a source is determined, by the department, to be under the direct influence of surface water~~, whichever is later~~. Failure to meet any requirement of this section is a treatment technique violation.

SECTION 26. NR 809.76(5) is amended to read:

NR 809.76(5) OTHER FILTRATION TECHNOLOGIES. A public water system may use a filtration technology not listed in subs. (1) to (4) if the ~~supplier~~ system demonstrates to the department, using pilot studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of s. NR 809.78, consistently achieves 99.9% removal or inactivation of *Giardia lamblia* cysts and 99.99% removal or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts, and the department approves the use of the filtration technology. For each approval, the department will set turbidity performance requirements that the system shall meet at least 95% of the time at a level that consistently achieves 99.9% removal or inactivation of *Giardia lamblia* cysts, 99.99% removal or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts. The department may set other performance requirements to assure the integrity of the technology.

SECTION 27. NR 809.833(3)(c)5. b. and c. are amended to read:

NR 809.833(3)(c)5.b. When it is reported pursuant to ~~s. NR 809.755~~ s. NR 809.76, the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.

c. When it is reported pursuant to ~~s. NR 809.755~~ s. NR 809.76, the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in s. NR 809.76 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity.

SECTION 28. EFFECTIVE DATE. This rule takes effect the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 29. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on May 28, 2003.

Dated at Madison, Wisconsin_____

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By_____
Scott Hassett, Secretary

(SEAL)