



WISCONSIN LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

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CLEARINGHOUSE REPORT TO AGENCY

[THIS REPORT HAS BEEN PREPARED PURSUANT TO S. 227.15, STATS. THIS IS A REPORT ON A RULE AS ORIGINALLY PROPOSED BY THE AGENCY; THE REPORT MAY NOT REFLECT THE FINAL CONTENT OF THE RULE IN FINAL DRAFT FORM AS IT WILL BE SUBMITTED TO THE LEGISLATURE. THIS REPORT CONSTITUTES A REVIEW OF, BUT NOT APPROVAL OR DISAPPROVAL OF, THE SUBSTANTIVE CONTENT AND TECHNICAL ACCURACY OF THE RULE.]

CLEARINGHOUSE RULE 01-067

AN ORDER to repeal and recreate NR 809.50 and 809.53; and to create NR 809.515, 809.52 (2) to (5) and 809.905, relating to safe drinking water standards for radionuclides.

Submitted by **DEPARTMENT OF NATURAL RESOURCES**

06-08-01 RECEIVED BY LEGISLATIVE COUNCIL.

07-05-01 REPORT SENT TO AGENCY.

RS:DLL;jal;tlu

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE REPORT

This rule has been reviewed by the Rules Clearinghouse. Based on that review, comments are reported as noted below:

1. STATUTORY AUTHORITY [s. 227.15 (2) (a)]

Comment Attached YES NO

2. FORM, STYLE AND PLACEMENT IN ADMINISTRATIVE CODE [s. 227.15 (2) (c)]

Comment Attached YES NO

3. CONFLICT WITH OR DUPLICATION OF EXISTING RULES [s. 227.15 (2) (d)]

Comment Attached YES NO

4. ADEQUACY OF REFERENCES TO RELATED STATUTES, RULES AND FORMS [s. 227.15 (2) (e)]

Comment Attached YES NO

5. CLARITY, GRAMMAR, PUNCTUATION AND USE OF PLAIN LANGUAGE [s. 227.15 (2) (f)]

Comment Attached YES NO

6. POTENTIAL CONFLICTS WITH, AND COMPARABILITY TO, RELATED FEDERAL REGULATIONS [s. 227.15 (2) (g)]

Comment Attached YES NO

7. COMPLIANCE WITH PERMIT ACTION DEADLINE REQUIREMENTS [s. 227.15 (2) (h)]

Comment Attached YES NO



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Comments

[NOTE: All citations to "Manual" in the comments below are to the Administrative Rules Procedures Manual, prepared by the Revisor of Statutes Bureau and the Legislative Council Staff, dated September 1998.]

2. Form, Style and Placement in Administrative Code

a. Section NR 809.50 (4) to (6) do not relate to the title of that section or follow from the introductory language. There are two possible solutions: (1) renumber s. NR 809.50 (title) and (intro.) to be s. NR 809.50 (1) (title) and (intro.), renumber s. NR 809.50 (1) to (3) to be s. NR 809.50 (1) (a) to (c), renumber s. NR 809.50 (4) to (6) to be s. NR 809.50 (2) to (4), and provide a broader title to the entire section that relates to all of these provisions; or (2) place s. NR 809.50 (4) to (6) in a separate section.

b. What is the significance of the identification in s. NR 809.50 (5) and Table B of best available technologies (BATs)? Are community water systems required to implement these BATs? If so, which ones and under what circumstances? The requirements need to be explicitly stated and clearly laid out with language such as, "A community water system that exceeds the MCL specified in sub. (1) shall . . ."

c. There is no text whatsoever in s. NR 809.50 (6) to accompany or explain Tables C and D. It appears that Table D identifies the technologies that are acceptable for addressing specified contaminants in water systems. The significance of Table C is more mysterious. Are the limitations binding? What is meant by basic, intermediate and advanced skill levels and how are they determined? Again, are these skill level requirements binding? None of this is explained, although it should be, as Table D should be. If the information in Table C is only advisory in nature, it should not be included in the rule, although a note in the rule could identify sources of such advisory information.

d. Defined terms should be used consistently throughout the rule. The title of Table C should use the defined term, "small water systems" instead of the term "small systems." Section NR 809.53 should consistently use the defined term "community water system" instead of its occasional use of the term "system." Footnote 2 to Table C should not repeat the definition contained in s. NR 809.04 (55).

e. Maximum contaminant levels (MCLs) are established using full text, in s. NR 809.50 (1) to (3), while maximum contaminant level goals (MCLGs) are established using a table, in s. NR 809.515. They could be established using a consistent format. Either the MCLs could be presented in a table, even the same table as the MCLGs, or a single sentence could be written stating that the MCLG for each of the four contaminants is zero.

f. In s. NR 809.53 (1), the material in par. (a) is not an introduction to the following two subdivisions. Consequently, this material should be numbered subd. 1. and the remaining subdivisions and cross-references should be renumbered accordingly. Also, the paragraphs in sub. (1) should be consistent in their use of titles. [With respect to the correct use of introductory material, see also subs. (2) (a) and (b) and (3) (c).]

g. At the end of s. NR 809.53 (1) (a) 1., the internal cross-reference should be to "par. (b) 2. c."

h. The first two subdivisions of s. NR 809.53 (1) (b) should be rewritten. Subdivision 1. should read: "Except as provided in subd. 2., a community water system shall collect" Subdivision 2. (intro.) should read: "As an alternative to the requirement of subd. 1., a community water system may comply with one of the following:." In each of the following subdivision paragraphs, the phrase: "To satisfy initial monitoring requirements" should be omitted. Also, there should be no title to subd. 2., unless titles are provided for the other subdivisions.

i. The phrase "hereafter called a sampling point," in s. NR 809.53 (2) (a) (intro.), is not a proper way to define a term. If needed, a definition should be added to s. NR 809.04. However, there seems to be no reason to do so, since this is simply replacing a defined term (entry point) with a different term--why is the previously defined term not adequate? This duplication of terms for the same meaning muddies the rule.

j. In s. NR 809.53 (2) (b) 1. and 3., the indication of the preferred method should be placed in a note, since it is only a suggestion and is not a requirement.

k. In s. NR 809.53 (2) (c), the word "cannot" should be replaced by "may not." Alternatively, the provision could be written more forcefully as a prohibition on the department granting the described waiver. In par. (d), the phrase "are allowed to" should be replaced by "may."

l. In s. 809.53 (3) (d), the phrase "has the discretion to" should be replaced by the word "may."

m. Section NR 809.905 uses a meaning of "small water system" that differs from the meaning given in the definition in s. NR 809.04. The rule should amend the definition to indicate how the term is used with regard to monitoring requirements for radionuclides. Alternatively, the rule could simply refer to "community water systems that serve 10,000 persons or fewer."

n. The term, "NPDWR," used in s. NR 809.905 (7), should be either defined or replaced by a more descriptive term.

5. Clarity, Grammar, Punctuation and Use of Plain Language

a. The rule is inconsistent in the way that units are abbreviated. In particular, "picocuries per liter" should be represented as "pCi/l," not as "pCi/L," "pCi/L" or "pCi/1," as occurs throughout the rule. Similarly, "grams per liter" should be represented as "g/l," not "g/L."

b. Section NR 809.50 (4) (title) refers to "gross beta particle and photon radioactivity" and that subsection refers to related provisions in s. NR 809.51 (1). In this latter section, the word "gross" is not used to refer to this type of radiation; should it be omitted from s. NR 809.50 (4) (title)? Also, in s. NR 809.50 (4), the word "with" should be inserted before the reference to s. NR 809.51 (1).

c. In s. NR 809.50 (6), the final note to Table C should conclude with a period. Also, in the note to Table D, what is the meaning of the reference to "141.66 (h)"? If this is a reference to a provision in the code of federal regulations, this should be indicated clearly.

d. In s. NR 809.515, "deare" should be replaced by "are."

e. In s. NR 809.52 (4), the relationship of the last clause of the second sentence (following "95% confidence level") to the rest of that sentence is unclear. Is this a definition of the 95% confidence level? If so, it is unnecessary. In any case, it needs fuller explanation. The same comment applies to the parenthetical material in s. NR 809.53 (1) (e), except that the symbol for sigma is missing from that material.

f. Section NR 809.53 (1) (a) 1. refers to community water systems that use groundwater, surface water or both. What other sources of water could a system use? Is this everything? If so, the rule should simply refer to community water systems. The same comment applies to the phrase, "both surface and ground water" in s. NR 809.53 (2) (a) (intro.) and in subsequent provisions.

g. In s. NR 809.53 (1) (b) 2., a time period is indicated with a precise end date but an imprecise starting date. Should the starting date be June 1, 2000? Should it be June 30, 2000?

h. In s. 809.53 (1) (c) 4., the notation ", e.g.," should be replaced with the phrase ". For example,".

i. The word "composite," an adjective or noun, is used as a verb in s. NR 809.53 (1) (d). A proper verb for treating sample results in a composite manner should be used; alternatively, a longer and more descriptive phrase could be used. See sub. (2) (b) 1., 2. and 3. for better use of the word. Even in these examples, though, some explanation of how a composite is created would help--is this a simple average, or is it something else?

j. In s. NR 809.53 (2) (a) (intro.), should "designed" be "designated"?

k. What is the meaning of the phrase, "screening level," in s. NR 809.53 (2) (a) 1.? It appears superfluous. The term appears again in s. NR 809.53 (2) (d) and (e), without definition or explanation.

l. In s. NR 809.53 (2) (a) 2. and subsequent provisions, what is a nuclear facility? Does this refer to a nuclear powered electric generation facility? If so, it should say so; if not, it should further explain what is meant or, alternatively, provide a definition of the term. Similarly, the term "release from a nuclear facility" is vague.

m. In s. 809.53 (2) (b), the word "removed" in the last sentence should be replaced by the word "removes."

n. In s. NR 809.53 (2) (f), both occurrences of the word "which" should be replaced by "that."

o. In s. NR 809.53 (3) (c) 2., what samples are included in the running average? From the preceding subdivision, it would appear to be those samples taken in the same calendar year--is this correct? If so, it should state as much.

p. Section NR 809.905 (1) (intro.) does not constitute a complete sentence, either on its own or in combination with either par. (a) or (b). Furthermore, the wording of pars. (a) and (b) is very awkward and confusing.

q. In s. NR 809.905 (6), it appears that the final cross-reference should be replaced by the cross-reference "s. NR 809.90 (4) (a) or s. NR 809.90 (4) (b) and (c)."

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

The State of Wisconsin Natural Resources Board proposes an order to repeal and recreate NR 809.50 and 809.53; and to create NR 809.515, 809.52(2) to (5) and 809.905 relating to safe drinking water standards for radionuclides

DG-26-01

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

The U.S. Environmental Protection Agency published amendments to 40 CFR Parts 141 and 142 on December 7, 2000. Section 281.17(8), Stats., and our primacy agreement with U.S. EPA require us to adopt rules at least as stringent as federal regulations. These proposed amendments are necessary to assure that our administrative rules are consistent with federal regulations.

how avoid quarterly monitoring

The final radionuclide rule published by U.S. EPA on December 7, 2000 established a new maximum contaminant level (MCL) for uranium and amends monitoring requirements for radionuclides while keeping the current MCL for combined radium 226 plus radium 228 at 5 pCi/l.

SECTION 1. NR 809.50 is repealed and recreated to read:

lower case L

~~NR 809.50~~ *Radionuclides* **Maximum contaminant levels for radionuclides.** The following are the maximum contaminant levels for radium-226, radium-228 and gross alpha particle radioactivity:

(1) MCL FOR COMBINED RADIUM-226 AND RADIUM-228. The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/L. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.

(2) MCL FOR GROSS ALPHA PARTICLE ACTIVITY, EXCLUDING RADON AND URANIUM. The maximum contaminant level for gross alpha particle activity, including radium-226 but excluding radon and uranium, is 15 pCi/L.

(3) MCL FOR URANIUM. The maximum contaminant level for uranium is 30 g/L.

(4) COMPLIANCE DATES FOR COMBINED RADIUM-226 AND RADIUM-228, GROSS ALPHA PARTICLE ACTIVITY, GROSS BETA PARTICLE AND PHOTON RADIOACTIVITY AND URANIUM. Community water systems shall comply with the MCLs listed in subs. (1) to (3) and s. NR 809.51(1) beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of ss. NR 809.50 and 809.51. Compliance with reporting requirements for the radionuclides under appendix A to subch. VII is required on December 8, 2003.

(5) BEST AVAILABLE TECHNOLOGIES (BATs) FOR RADIONUCLIDES. The department identifies, as indicated in the following table, the best technology available for achieving compliance with the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity and beta particle and photo radioactivity.

2
don't do it

2
SO what?
write as a req't

Table B.--BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity

Contaminant	BAT
1. Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
2. Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/ filtration
3. Gross alpha particle activity (excluding Radon and Uranium).	Reverse osmosis.
4. Beta particle and photon ion exchange	Reverse osmosis. radioactivity

(6) SMALL SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES.

no text - what is significance of Tables C + D?

(2)

TABLE C.—LIST OF SMALL SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES AND LIMITATIONS TO USE

Unit technologies	Limitations(see foot-notes)	Operator skill level required	Raw water quality range and consideration ¹
1. Ion exchange (IE).	(^a)	Intermediate	All ground waters.
2. Point of use (POU) IE	(^b)	Basic	All ground waters
3. Reverse osmosis (RO)	(^c)	Advanced	Surface waters usually require pre-filtration
4. POU RO	(^b)	Basic	Surface waters usually require pre-filtration.
5. Lime softening	(^d)	Advanced	All waters.
6. Green sand filtration	(^e)	Basic	
7. Co-precipitation with Barium sulfate	(^f)	Intermediate to Advanced	Ground waters with suitable water quality
8. Electrodialysis/electrodialysis reversal		Basic to Intermediate	All ground waters.
9. Pre-formed hydrous Manganese oxide filtration.	(^g)	Intermediate	All ground waters
10. Activated alumina	(^a), (^h)	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency.
11. Enhanced coagulation/filtration	(ⁱ)	Advanced	Can treat a wide range of water qualities

¹National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press, Washington, D.C. 1997.

^aA POU, or "point-of-use" technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

- The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.
- When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.
- Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.
- The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.
- Removal efficiencies can vary depending on water quality.
- This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.
- This technology is most applicable to small systems that already have filtration in place.
- Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.
- Assumes modification to a coagulation/filtration process already in place.

what does this mean!
defined in 1980s, 04/15/94
not clear in the table

X

Contaminant	Compliance technologies for system size categories (population served)		
	25-500	501-3,300	3,300-10,000
1. Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2. Gross alpha particle activity	3, 4	3, 4	3, 4
3. Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4. Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

Note: Numbers correspond to those technologies found listed in the table C of 141.66(h).

SECTION 2. NR 809.515 is created to read:

why are MCLs done as text and MCLGs as a table?

(2)

NR 809.515 Maximum contaminant level goals for radionuclides. MCLGs for radionuclides are as indicated in the following table:

Contaminant	MCLG
1. Combined radium-226 and radium-228	Zero
2. Gross alpha particle activity (excluding radon and uranium).	Zero
3. Beta particle and photon radioactivity	Zero
4. Uranium	Zero

SECTION 3. NR 809.52(2) to (5) are created to read:

NR 809.52(2) To determine compliance with s. NR 809.50(1) to (3), the detection limit may not exceed the concentrations in Table B.

remember

Table B.—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

upper case I

(3) To judge compliance with the maximum contaminant levels listed in s. NR 809.50, averages of data shall be used and shall be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

(4) 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 shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level, (1.96 σ where σ is the standard deviation of the net counting rate of the sample.)

how precise is this?

what is this, how related to rest of sentence?

(2)

(5) To determine compliance with s. NR 809.50(1), the detection limit may not exceed 1 pCi/L. To determine compliance with s. NR 809.50(2), 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 C.

1 instead of 2

Table C--Detection Limits for Man-made Beta Particle and Photon Emitters	
Radionuclide Detection limit	
Tritium.	1,000 pCi/l.
Strontium-89	10 pCi/l.
Strontium-90	2 pCi/l.
Iodine-131	1 pCi/l.
Cesium-134	10 pCi/l.
Gross beta	4 pCi/l.
Other radionuclides	1/10 of the applicable limit

SECTION 4. NR 809.53 is repealed and recreated to read:

NR 809.53 Radioactivity monitoring frequency and compliance requirements for community water systems. (1) MONITORING REQUIREMENTS FOR GROSS ALPHA PARTICLE ACTIVITY, RADIUM-226, RADIUM-228 AND URANIUM. (a) Community water systems shall conduct initial monitoring to determine compliance with ss. NR 809.50(1) to (3) and 809.51(1) by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium and beta particle and photon radioactivity in drinking water "detection limit", is defined in s. NR 809.52(4).

title?

1. Applicability and sampling location for existing community water systems or sources. All existing community water systems using ground water, surface water or systems using both ground and surface water, for the purpose of this section hereafter referred to as systems, shall sample at every entry point to the distribution system that is representative of all sources being used, hereafter called a sampling point, under normal operating conditions. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or the department has designated a distribution system location, in accordance with par. (1)(b)2.c.

5
what does is there?

2. Applicability and sampling location for new community water systems or sources. All new community water systems or community water systems that use a new source of water shall begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. Community water systems shall conduct more frequent monitoring when ordered by the department in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radioactivity in finished water.

(b) Initial monitoring. *A community water* Systems shall conduct initial monitoring for gross alpha particle activity, radium-226, radium-228 and uranium as follows:

1. *Except as provided* ~~Systems without acceptable historical data, as defined in subd. 2., shall collect 4 consecutive quarterly samples at all sampling point before December 31, 2007.~~

a community water system

2. *Historical monitoring* ~~Grandfathering of data. The department may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point for the following situations:~~ *As an alternative to the requirement of subd. 1.*

5

a. To satisfy initial monitoring requirements, a community water system having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

b. To satisfy initial monitoring requirements, a community water system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.

c. To satisfy initial monitoring requirements, a community water system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003, provided that the department finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The department shall make a written finding indicating how the data conforms to these requirements.

3. For gross alpha particle activity, uranium, radium-226 and radium-228 monitoring, the department may waive the final 2 quarters of initial monitoring for a sampling point if the results of the samples from the previous 2 quarters are below the detection limit.

4. If the average of the initial monitoring results for a sampling point is above the MCL, the system shall collect and analyze quarterly samples at that sampling point until the system has results from 4 consecutive quarters that are at or below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the department.

(c) Reduced monitoring. The department may allow community water systems to reduce the future frequency of monitoring from once every 3 years to once every 6 or 9 years at each sampling point, based on the following criteria:

1. If the average of the initial monitoring results for each contaminant, i.e., gross alpha particle activity, uranium, radium-226 or radium-228, is below the detection limit specified in s. NR 809.50(5) Table B, the system shall collect and analyze for that contaminant using at least one sample at that sampling point every 9 years.

2. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below 1/2 the MCL, the system shall collect and analyze for that contaminant using at least one sample at that sampling point every 6 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below 1/2 the MCL, the system shall collect and analyze for that contaminant using at least one sample at that sampling point every 6 years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above 1/2 the MCL but at or below the MCL, the systems shall collect and analyze at least one sample at that sampling point every 3 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above 1/2 the MCL, but at or below the MCL, the system shall collect and analyze at least one sample at that sampling point every 3 years.

at 1/2?

4. Systems shall use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a system's sampling

point is on a 9-year monitoring period, and the sample result is above $\frac{1}{2}$ MCL, then the next monitoring period for the sampling point is 3 years.

5. If a system has a monitoring result that exceeds the MCL while on reduced monitoring, the system shall collect and analyze quarterly samples at that sampling point until the system has results from 4 consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the department.

not a verb

(d) Compositing. To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228 or uranium, a system may composite up to 4 consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The department will treat analytical results from the composited as the average analytical result to determine compliance with the MCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than $\frac{1}{2}$ MCL, the department may direct the system to take additional quarterly samples before allowing the system to sample under a reduced monitoring schedule.

(e) A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/L. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/L. The gross alpha measurement shall have a confidence interval of 95% (1.65σ where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a system uses a gross alpha particle activity measurement in lieu of a radium-226 or uranium or both measurement, the gross alpha particle activity analytical result shall be used to determine the future monitoring frequency for radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, $\frac{1}{2}$ the detection limit shall be used to determine compliance and the future monitoring frequency.

(2) MONITORING AND COMPLIANCE REQUIREMENTS FOR BETA PARTICLE AND PHOTON RADIOACTIVITY. To determine compliance with the maximum contaminant levels in s. NR 809.51 for beta particle and photon radioactivity, a system shall monitor at a frequency as follows:

not an intro.

(a) Community water systems, both surface and ground water, designed by the department as vulnerable, shall sample for beta particle and photon radioactivity. Systems shall collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system, hereafter called a sampling point, beginning within one quarter after being notified by the department. Systems already designed by the department shall continue to sample until the department reviews and either reaffirms or removes the designation.

21. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average, computed quarterly, less than or equal to 50 pCi/L, screening level, the department may reduce the frequency of monitoring at that sampling point to once every 3 years. Systems shall collect all samples required in this subsection during the reduced monitoring period.

22. For systems in the vicinity of a nuclear facility, the department may allow the community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry points, where the department determines if the data is applicable to a particular water system. In the event there is a release from a nuclear facility, systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this subsection.

3. At the discretion of the department, suppliers of water utilizing only ground waters may be required to monitor for manmade radioactivity.

(b) Community water systems, both surface and ground water, designated by the department as utilizing waters contaminated by effluents from nuclear facilities shall sample for beta particle and photon radioactivity. Systems shall collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, hereafter called a sampling point, beginning within one quarter after being notified by the department. Systems already designated by the department as systems using waters contaminated by effluents from nuclear facilities shall continue to sample until the department reviews and either reaffirms or removed the designation.

1. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of 3 monthly samples. The former is recommended.

2. For iodine-131, a composite of 5 consecutive daily samples shall be analyzed once each quarter. As ordered by the department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

3. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of 4 consecutive quarterly samples or analysis of 4 quarterly samples. The latter procedure is recommended.

4. If the gross beta particle activity beta minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average, computed quarterly, less than or equal to 15 pCi/L, the department may reduce the frequency of monitoring at that sampling point to every 3 years. Systems shall collect all samples required in this paragraph during the reduced monitoring period.

5. For systems in the vicinity of a nuclear facility, the department may allow the community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the system's entry points, where the department determines if the data is applicable to a particular water system. In the event that there is a release from a nuclear facility, systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this paragraph.

(c) Community water systems designated by the department to monitor for beta particle and photon radioactivity cannot apply to the department for a waiver from the monitoring frequencies specified in either par. (a) or (b).

(d) Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity shall be calculated by multiplying elemental potassium concentrations, in mg/L, by a factor of 0.82.

(e) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the screening level, an analysis of the sample shall be performed to identify the major radioactive constituents present in the sample and the appropriate doses shall be

calculated and summed to determine compliance with s. NR 809.51(1) using the formula in s. NR 809.51(2). Doses shall also be calculated and combined for measured levels of tritium and strontium to determine compliance.

(f) Systems shall monitor monthly at the sampling points which exceed the maximum contaminant level in s. NR 809.51 beginning the month after the exceedance occurs. Systems shall continue monthly monitoring until the system has established, by a rolling average of 3 monthly samples, that the MCL is being met. Systems which establish that the MCL is being met shall return to quarterly monitoring until they meet the requirements in par. (a) 2. or (b)1.

(3) GENERAL MONITORING AND COMPLIANCE REQUIREMENTS FOR RADIONUCLIDES. (a) The department may require more frequent monitoring than specified in subs. (1) and (2), or may require confirmation samples at its discretion. The results of the initial and confirmation samples shall be averaged for use in compliance determinations.

(b) Each public water system shall monitor at the time designated by the department during each compliance period.

(c) Compliance with ss. NR 809.50(1) to (3) and 809.51(1) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

1.
4. For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, the system is out of compliance with the MCL.

2. For systems monitoring more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

3. Systems shall include all samples taken and analyzed under this section in determining compliance, even if that number is greater than the minimum required.

4. If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance shall be based on the running average of the samples collected.

5. If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 or uranium or both. If the gross alpha particle activity result is less than detection, 1/2 the detection limit shall be used to calculate the annual average.

(d) The department has the discretion to delete results of obvious sampling or analytic errors.

SECTION 5. NR 809.905 is created to read:

NR 809.905 Conditional waivers from the maximum contaminant levels for radionuclides.

(1) Conditional waivers from the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity, excluding radon and uranium, and beta particle and photon radioactivity.

verb?

(a) The department has identified the following as the best available technology, treatment techniques or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in s. NR 809.50(1) to (3) and 809.51 for the purposes of issuing variances and exemptions, as shown in s. NR 809.50(5), Table B.

?

(b) In addition, the department identifies the following as the best available technology, treatment techniques or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in ss. NR 809.50(1) to (3) and 809.51 for the purposes of issuing conditional waivers to small drinking water systems, defined as those serving 10,000 persons or fewer, as shown in s. NR 809.50(6), Table D.

(2) The department shall require community water systems to install or use or both any treatment technology identified in s. NR 809.50(5), Table B, or in the case of small water systems, those serving 10,000 persons or fewer, s. NR 809.50(5), Table C, and (6), Table D, as a condition for granting a variance except as provided in sub. (3). If, after the system's installation of the treatment technology, the system cannot meet the MCL, the system shall be eligible for a variance under s. NR 809.90.

def. term
3,500

(3) If a community water system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment technologies identified in this section would only achieve a de minimus reduction in the contaminant level, the department may issue a schedule for compliance that requires the system being granted the variance to examine other treatment technologies as a condition of obtaining the variance.

(4) If the department determines that a treatment technology identified under sub. (3) is technically feasible, the department may require the system to install or use or both that treatment technology in connection with a compliance schedule issued under s. NR 809.90. The department's determination shall be based upon studies by the system and other relevant information.

(5) The department may require a community water system to use bottled water, point-of-use devices, point-of-entry devices or other means as a condition of granting a variance or an exemption from the requirements of s. NR 809.50 or 809.51 to avoid an unreasonable risk to health.

(6) Community water systems that use bottled water as a condition for receiving a variance or an exemption from s. NR 809.50 or 809.51 shall meet the requirements in either s. NR 809.90 (4)(a) or (b) and (c).

rewrite

(7) Community water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or an exemption from the radionuclides NPDWRs shall meet the conditions in s. NR 809.90(3).

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on

The rules 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

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By Darrell Bazzell, Secretary

(SEAL)

NOV 07 2001

State of Wisconsin
Department of Natural Resources

**NOTICE TO PRESIDING OFFICERS
OF PROPOSED RULEMAKING**

Pursuant to s. 227.19, Stats., notice is hereby given that final draft rules are being submitted to the presiding officer of each house of the legislature. The rules being submitted are:

Natural Resources Board Order No. DL-26-01

Legislative Council Rules Clearinghouse Number 01-067

Subject of Rules Safe drinking water standards
for radionuclides

Date of Transmittal to Presiding Officers November 6, 2001

Send a copy of any correspondence or notices pertaining to this rule to:

Carol Turner, Rules Coordinator
DNR Bureau of Legal Services
LS/5, 101 South Webster

Telephone: 266-1959
e-mail: turnec@dnr.state.wi.us

An electronic copy of the proposed rule may be obtained by contacting Ms. Turner

REPORT TO LEGISLATURE

NR 809, Wis. Adm. Code
Safe drinking water standards for radionuclides

Board Order No. DG-26-01
Clearinghouse Rule No. 01-067

Statement of Need

The final radionuclide rule published by the U.S. Environmental Protection Agency on December 7, 2000 establishes a new maximum contaminant level (MCL) for uranium and amends monitoring requirements for radionuclides while keeping the current MCL for combined radium 226 plus radium 228 at 5 pCi/l. With the new federal rule, the Department must revise the state rules to match the revisions US EPA made to the federal regulations. This rule will affect all community water systems (about 1150 systems) statewide. The Department is interested in having rules in place in time to allow all affected water systems to collect one combined radium sample from each entry point in the next 18 months. The Department can use the results of samples collected prior to December 8, 2003 to determine initial compliance. In most cases, this will eliminate quarterly monitoring required in the federal rule revisions, potentially resulting in over \$1,000,000 in cost savings to drinking water systems across Wisconsin.

Modifications as a Result of Public Hearing

The Department agreed to delay formal enforcement of the radium MCL while US EPA was in the process of revising the radionuclide rule. The Department does not desire to begin enforcement on the radium standard until new entry point monitoring is completed, as required under the new revisions. In addition, the Department has agreed not to initiate formal enforcement against the City of Waukesha until their lawsuit against US EPA is settled or concluded.

Appearances at the Public Hearings and Their Position

July 11, 2001 – Video conference participation at Madison, Eau Claire, Green Bay, La Crosse, Milwaukee and Rhinelander – no appearances

July 12, 2001 – Video conference participation at Madison, Eau Claire, Green Bay, La Crosse and Rhinelander – no appearances

July 12, 2001 – Video conference participation at Milwaukee

In support – none

In opposition:

Robb Pattison, General Manager, Waukesha Water Utility, 115 Delafield Street, Waukesha, WI 53188

As interest may appear – none

Response to Legislative Council Rules Clearinghouse Report

The recommendations were accepted, except:

1. The title "gross" beta particle activity was maintained in s. NR 809.50(2), as this term is included in the ch. NR 809 definitions.

2. The language in s. NR 809.52(4) was not changed, mainly so that our language would be consistent with language in the federal rule. This language refers to analytical procedures for radioactivity, and would be understood by those concerned with analytical methods. Approved analytical methods for radionuclides are also listed in s. NR 809.725, Table D.

3. The term "compositing" was maintained in s. NR 809.53(1)(e) as it is used and explained throughout the chapter.

4. The term "nuclear facility" as used in s. NR 809.53(2)(a)2. generally refers to nuclear powered electric generating facilities. However, there are other types of facilities that may produce beta particles. The term is not specifically defined in ch. NR 809 so as not to exclude any potential sources of beta particle emissions. In s. NR 809.53(2)(a), the Department may designate those community water systems deemed vulnerable to contamination by beta particles.

Final Regulatory Flexibility Analysis

Typically, the Department has little flexibility with drinking water regulations since Wisconsin rules can be no less stringent than the federal regulations. We will use the flexibility in the rule to reduce monitoring costs and complexity wherever possible.

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

The State of Wisconsin Natural Resources Board proposes an order to repeal and recreate NR 809.50 and 809.53; and to create NR 809.515, 809.52(2) to (5) and 809.905 relating to safe drinking water standards for radionuclides

DG-26-01

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

The U.S. Environmental Protection Agency published amendments to 40 CFR Parts 141 and 142 on December 7, 2000. Section 281.17(8), Stats., and our primacy agreement with U.S. EPA require us to adopt rules at least as stringent as federal regulations. These proposed amendments are necessary to assure that our administrative rules are consistent with federal regulations.

The final radionuclide rule published by U.S. EPA on December 7, 2000 established a new maximum contaminant level (MCL) for uranium and amends monitoring requirements for radionuclides while keeping the current MCL for combined radium 226 plus radium 228 at 5 pCi/l.

SECTION 1. NR 809.50 is repealed and recreated to read:

NR 809.50 Maximum contaminant levels, compliance dates and best available technologies for radionuclides. The following are the maximum contaminant levels, compliance dates and best available technologies for radium-226, radium-228 and gross alpha particle radioactivity:

(1) **MAXIMUM CONTAMINANT LEVELS FOR RADIONUCLIDES.** The following are the maximum contaminant levels for radium-226, radium-228 and gross alpha particle radioactivity:

(a) **MCL FOR COMBINED RADIUM-226 AND RADIUM-228.** The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/l. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.

(b) **MCL FOR GROSS ALPHA PARTICLE ACTIVITY, EXCLUDING RADON AND URANIUM.** The maximum contaminant level for gross alpha particle activity, including radium-226 but excluding radon and uranium, is 15 pCi/l.

(c) **MCL FOR URANIUM.** The maximum contaminant level for uranium is 30 ug/l.

(2) **COMPLIANCE DATES FOR COMBINED RADIUM-226 AND RADIUM-228, GROSS ALPHA PARTICLE ACTIVITY, GROSS BETA PARTICLE AND PHOTON RADIOACTIVITY AND URANIUM.** Community water systems shall comply with the MCLs listed in sub.(1) and with s. NR 809.51(1) beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of ss. NR 809.50 and 809.51. Compliance with reporting requirements for the radionuclides under appendix A to subch. VII is required on December 8, 2003.

(3) **BEST AVAILABLE TECHNOLOGIES (BATs) FOR RADIONUCLIDES.** The department identifies, as indicated in the following table, the best technology available for achieving compliance with the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha

particle activity and beta particle and photo radioactivity. A community water system that must treat to reduce radionuclide levels below the MCLs specified in sub. (1) or s. NR 809.51 shall achieve compliance using one of the methods listed in table B, table C or table D.

Table B.--BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity

Contaminant	BAT
1. Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
2. Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/ filtration
3. Gross alpha particle activity (excluding Radon and Uranium).	Reverse osmosis.
4. Beta particle and photon ion exchange	Reverse osmosis. radioactivity

(4) SMALL WATER SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES.

Unit technologies	Limitations(see foot- notes)	Operator skill level required ¹	Raw water quality range and consideration ¹
1. Ion exchange (IE).	(^a)	Intermediate	All ground waters.
2. Point of use (POU ₂) IE	(^b)	Basic	All ground waters
3. Reverse osmosis (RO)	(^c)	Advanced	Surface waters usually require pre-filtra-tion
4. POU ₂ RO	(^b)	Basic	Surface waters usually require pre-filtra-tion.
5. Lime softening	(^d)	Advanced	All waters.
6. Green sand filtration	(^e)	Basic	
7. Co-precipitation with Barium sulfate	(^f)	Intermediate to Advanced	Ground waters with suitable water quality
8. Electrodialysis/electrodialysis reversal		Basic to Intermediate	All ground waters.
9. Pre-formed hydrous Manganese oxide filtration.	(^g)	Intermediate	All ground waters
10. Activated alumina	(^a),(^h)	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency.
11. Enhanced coagulation/filtration	(ⁱ)	Advanced	Can treat a wide range of water qualities.

¹ National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

² POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.

Limitations Footnotes: Technologies for Radionuclides:

^a The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

^b When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

^c Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.

^d The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

^e Removal efficiencies can vary depending on water quality.

^f This technology may be very limited in application to small water systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

^g This technology is most applicable to small water systems that already have filtration in place.

^h Handling of chemicals required during regeneration and pH adjustment may be too difficult for small water systems without an adequately trained operator.

ⁱ Assumes modification to a coagulation/filtration process already in place

Contaminant	Compliance technologies for system size categories (population served)		
	25–500	501–3,300	3,300–10,000
1. Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2. Gross alpha particle activity	3, 4	3, 4	3, 4
3. Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4. Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

Note: Numbers correspond to those technologies found listed in the table C of s. NR 809.50.

SECTION 2. NR 809.515 is created to read:

NR 809.515 Maximum contaminant level goals for radionuclides. MCLGs for radionuclides, including combined radium-226 and radium-228, gross alpha particle activity (excluding radon and uranium), beta particle and photon radioactivity, and uranium, are zero for each contaminant.

SECTION 3. NR 809.52(2) to (5) are created 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 B.

Table B.—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

(3) To judge compliance with the maximum contaminant levels listed in s. NR 809.50, averages of data shall be used and shall be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

(4) 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 shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level, 1.96σ where σ is the standard deviation of the net counting rate of the sample.

(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 C.

Table C--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

SECTION 4. NR 809.53 is repealed and recreated to read:

NR 809.53 Radioactivity monitoring frequency and compliance requirements for community water systems. (1) MONITORING REQUIREMENTS FOR GROSS ALPHA PARTICLE ACTIVITY, RADIUM-226, RADIUM-228 AND URANIUM. (a) Initial monitoring. Community water systems shall conduct initial monitoring to determine compliance with ss. NR 809.50(1) and 809.51(1) by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium and beta particle and photon radioactivity in drinking water, "detection limit" is defined in s. NR 809.52(4).

(b) Applicability and sampling location. Community water system applicability and sampling location requirements shall be as follows.

1. Applicability and sampling location for existing community water systems or sources. All existing community water systems shall sample at every entry point to the distribution system that is representative of all sources being used, hereafter called a sampling point, under normal operating conditions. The community water system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or the department has designated a distribution system location, in accordance with par. (c)2.c.

2. Applicability and sampling location for new community water systems or sources. All new community water systems or community water systems that use a new source of water shall begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. Community water systems shall conduct more frequent monitoring when ordered by the department in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radioactivity in finished water.

(c) Initial monitoring. Community water systems shall conduct initial monitoring for gross alpha particle activity, radium-226, radium-228 and uranium as follows:

1. Except as provided in subd. 2., a community water system shall collect 4 consecutive quarterly samples at all sampling point before December 31, 2007.

2. As an alternative to the requirement of subd. 1., a community water system may use historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point for the following situations:

a. To satisfy initial monitoring requirements, a community water system having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003.

b. To satisfy initial monitoring requirements, a community water system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003.

c. To satisfy initial monitoring requirements, a community water system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003, provided that the department finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The department shall make a written finding indicating how the data conforms to these requirements.

3. For gross alpha particle activity, uranium, radium-226 and radium-228 monitoring, the department may waive the final 2 quarters of initial monitoring for a sampling point if the results of the samples from the previous 2 quarters are below the detection limit.

4. If the average of the initial monitoring results for a sampling point is above the MCL, the community water system shall collect and analyze quarterly samples at that sampling point until the community water system has results from 4 consecutive quarters that are at or below the MCL, unless the community water system enters into another schedule as part of a formal compliance agreement with the department.

(d) Reduced monitoring. The department may allow community water systems to reduce the future frequency of monitoring from once every 3 years to once every 6 or 9 years at each sampling point, based on the following criteria:

1. If the average of the initial monitoring results for each contaminant, i.e., gross alpha particle activity, uranium, radium-226 or radium-228, is below the detection limit specified in s. NR 809.50(3), table B, the community water system shall collect and analyze for that contaminant using at least one sample at that sampling point every 9 years.

2. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below one-half the MCL, the community water system shall collect and analyze for that contaminant using at least one sample at that sampling point every 6 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below one-half the MCL, the community water system shall collect and analyze for that contaminant using at least one sample at that sampling point every 6 years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above one-half the MCL but at or below the MCL, the community water systems shall collect and analyze at least one sample at that sampling point every 3 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above one-half the MCL, but at or below the MCL, the community water system shall collect and analyze at least one sample at that sampling point every 3 years.

4. Community water systems shall use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods. For example, if a

community water system's sampling point is on a 9-year monitoring period, and the sample result is above one-half MCL, then the next monitoring period for the sampling point is 3 years.

5. If a community water system has a monitoring result that exceeds the MCL while on reduced monitoring, the community water system shall collect and analyze quarterly samples at that sampling point until the community water system has results from 4 consecutive quarters that are below the MCL, unless the community water system enters into another schedule as part of a formal compliance agreement with the department.

(e) Compositing. To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228 or uranium, a community water system may composite up to 4 consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The department will treat analytical results from the composited as the average analytical result to determine compliance with the MCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than one-half MCL, the department may direct the community water system to take additional quarterly samples before allowing the community water system to sample under a reduced monitoring schedule.

(f) Gross alpha particle activity measurement substitutions. A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/l. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The gross alpha measurement shall have a confidence interval of 95% (1.65 , where s is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a community water system uses a gross alpha particle activity measurement in lieu of a radium-226 or uranium or both measurement, the gross alpha particle activity analytical result shall be used to determine the future monitoring frequency for radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, one-half the detection limit shall be used to determine compliance and the future monitoring frequency.

(2) MONITORING AND COMPLIANCE REQUIREMENTS FOR BETA PARTICLE AND PHOTON RADIOACTIVITY. To determine compliance with the maximum contaminant levels in s. NR 809.51 for beta particle and photon radioactivity, a community water system shall monitor at a frequency as follows:

(a) Community water systems designated by the department as vulnerable, shall sample for beta particle and photon radioactivity. Community water systems shall collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the department. Community water systems already designated by the department shall continue to sample until the department reviews and either reaffirms or removes the designation.

1. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at an entry point has a running annual average, computed quarterly, less than or equal to 50 pCi/l, the department may reduce the frequency of monitoring at that entry point to once every 3 years. Community water systems shall collect all samples required in this subsection during the reduced monitoring period.

2. For community water systems in the vicinity of a nuclear facility, the department may allow the community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the community water system's entry points, where the department determines if the data is applicable to a particular community water system. In the

event there is a release from a nuclear facility, community water systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this subsection.

3. At the discretion of the department, suppliers of water utilizing only ground waters may be required to monitor for manmade radioactivity.

(b) Community water systems designated by the department as utilizing waters contaminated by effluents from nuclear facilities shall sample for beta particle and photon radioactivity. Community water systems shall collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, hereafter called a sampling point, beginning within one quarter after being notified by the department. Community water systems already designated by the department as community water systems using waters contaminated by effluents from nuclear facilities shall continue to sample until the department reviews and either reaffirms or removes the designation.

1. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of 3 monthly samples.

Note: Quarterly monitoring for gross beta particle activity based on the analysis of monthly samples is recommended.

2. For iodine-131, a composite of 5 consecutive daily samples shall be analyzed once each quarter. As ordered by the department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

3. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of 4 consecutive quarterly samples or analysis of 4 quarterly samples.

Note: Annual monitoring for strontium-90 and tritium by means of the analysis of a composite of 4 consecutive quarterly samples is recommended.

4. If the gross beta particle activity beta minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average, computed quarterly, less than or equal to 15 pCi/l, the department may reduce the frequency of monitoring at that sampling point to every 3 years. Community water systems shall collect all samples required in this paragraph during the reduced monitoring period.

5. For community water systems in the vicinity of a nuclear facility, the department may allow the community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the community water system's entry points, where the department determines if the data is applicable to a particular community water system. In the event that there is a release from a nuclear facility, community water systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this paragraph.

(c) Community water systems designated by the department to monitor for beta particle and photon radioactivity may not apply to the department for a waiver from the monitoring frequencies specified in either par. (a) or (b).

(d) Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Community water systems may subtract the potassium-40 beta particle activity value from

the total gross beta particle activity value to determine if 50 pCi/l is exceeded. The potassium-40 beta particle activity shall be calculated by multiplying elemental potassium concentrations, in mg/l, by a factor of 0.82.

(e) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds 50 pCi/l, an analysis of the sample shall be performed to identify the major radioactive constituents present in the sample and the appropriate doses shall be calculated and summed to determine compliance with s. NR 809.51(1) using the formula in s. NR 809.51(2). Doses shall also be calculated and combined for measured levels of tritium and strontium to determine compliance.

(f) Community water systems shall monitor monthly at the sampling points that exceed the maximum contaminant level in s. NR 809.51 beginning the month after the exceedance occurs. Community water systems shall continue monthly monitoring until the system has established, by a rolling average of 3 monthly samples, that the MCL is being met. Community water systems that establish that the MCL is being met shall return to quarterly monitoring until they meet the requirements in par. (a)1. or (b)4.

(3) GENERAL MONITORING AND COMPLIANCE REQUIREMENTS FOR RADIONUCLIDES. (a) The department may require more frequent monitoring than specified in subs. (1) and (2), or may require confirmation samples at its discretion. The results of the initial and confirmation samples shall be averaged for use in compliance determinations.

(b) Each public water system shall monitor at the time designated by the department during each compliance period.

(c) Compliance with ss. NR 809.50(1) and 809.51(1) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the community water system is in violation of the MCL.

1. For community water systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, the community water system is out of compliance with the MCL.

2. For community water systems monitoring more than once per year, if any sample result will cause the running annual average, as defined in this chapter, to exceed the MCL at any sample point, the community water system is out of compliance with the MCL immediately.

3. Community water systems shall include all samples taken and analyzed under this section in determining compliance, even if that number is greater than the minimum required.

4. If a community water system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance shall be based on the running average of the samples collected.

5. If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 or uranium or both. If the gross alpha particle activity result is less than detection, $\frac{1}{2}$ the detection limit shall be used to calculate the annual average.

(d) The department may delete results of obvious sampling or analytic errors.

SECTION 5. NR 809.905 is created to read:

NR 809.905 Conditional waivers from the maximum contaminant levels for radionuclides.

(1) The department shall consider conditional waivers from the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity, excluding radon and uranium, and beta particle and photon radioactivity as follows:

(a) The department has identified the following as the best available technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in ss. NR 809.50(1) and 809.51, for the purposes of issuing variances and exemptions, as shown in s. NR 809.50(3), table B.

(b) In addition, the department identifies the following as the best available technology, treatment techniques or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in ss. NR 809.50(1) and 809.51 for the purposes of issuing conditional waivers to small drinking water systems, defined as those serving 10,000 persons or fewer, as shown in s. NR 809.50(4), table D.

(2) The department shall require community water systems to install or use or both any treatment technology identified in s. NR 809.50(3), Table B, or in the case of community water systems that serve 10,000 persons or fewer, s. NR 809.50(3), table C and table D, as a condition for granting a variance except as provided in sub. (3). If, after the system's installation of the treatment technology, the system cannot meet the MCL, the system shall be eligible for a variance under s. NR 809.90.

(3) If a community water system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment technologies identified in this section would only achieve a de minimus reduction in the contaminant level, the department may issue a schedule for compliance that requires the system being granted the variance to examine other treatment technologies as a condition of obtaining the variance.

(4) If the department determines that a treatment technology identified under sub. (3) is technically feasible, the department may require the system to install or use or both that treatment technology in connection with a compliance schedule issued under s. NR 809.90. The department's determination shall be based upon studies by the system and other relevant information.

(5) The department may require a community water system to use bottled water, point-of-use devices, point-of-entry devices or other means as a condition of granting a variance or an exemption from the requirements of s. NR 809.50 or 809.51 to avoid an unreasonable risk to health.

(6) Community water systems that use bottled water as a condition for receiving a variance or an exemption from s. NR 809.50 or 809.51 shall meet the requirements in either s. NR 809.90 (4)(a) or s. NR 809.90(4)(b) and (c).

(7) Community water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or an exemption from the radionuclides MCLs shall meet the conditions in s. NR 809.90(3).

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on October 24, 2001.

The rules 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

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By _____
Darrell Bazzell, Secretary

(SEAL)