1993-94 SESSION COMMITTEE HEARING RECORDS

Committee Name:

Joint Committee For Review of Administrative Rules (JCR-AR)

Sample:

Record of Comm. Proceedings … RCP
- 05hrAC-EdR_RCP_pt01a
- 05hrAC-EdR_RCP_pt01b
- 05hrAC-EdR_RCP_pt02

- Appointments … Appt
- **

- Clearinghouse Rules … CRule
- 93hrJCR-AR_CRule_93-188_pt01

- Committee Hearings … CH
- **

- Committee Reports … CR
- **

- Executive Sessions … ES
- **

- Hearing Records … HR
- **

- Miscellaneous … Misc
- **

- Record of Comm. Proceedings … RCP
- **

LCRC FORM 2

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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 93-188
AN ORDER to amend HSS 157.16 (2) (a); and to create HSS 157.165, relating to standards for maximum radioactivity in community water systems and enforcement standards and preventive action limits for radioactive substances in groundwater.

Submitted by DEPARTMENT OF HEALTH AND SOCIAL SERVICES.

10- 7-93. Received by Legislative Council.
11- 4-93. Report sent to Agency.

RNS:JES:kjf;jt

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CLEARINGHOUSE RULE 93-188

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 November 1991.]

2. Form, Style and Placement in Administrative Code

a. The definitions of "groundwater," "groundwater enforcement standard" and "preventive action limit" in s. HSS 157.165 (1) are identical or substantively equivalent to the definitions of the same terms in s. 160.01, Stats. In general, a rule should avoid unnecessary repetition of statutory language. See s. 1.08 (1), Manual. The department should review the definitions in s. HSS 157.165 (1) to determine whether cross-references to the definitions in ch. 160, Stats., would be adequate to convey the intent of the rule.

b. The first sentence in s. 157.165 (4) (intro.) contains explanatory material and not substantive requirements. The department should review this sentence to determine whether the material in it would more appropriately be placed in a note to the rule.

4. Adequacy of References to Related Statutes, Rules and Forms

a. The reference to s. 140.56, Stats., in the analysis accompanying the rule as one of the sections being implemented by the rule is broad, since s. 140.56, Stats., contains seven subsections. Can the department be more specific?

b. The Note following s. HSS 157.165 (2) references standards for radioactive substances in ch. NR 140. Chapter NR 140 presently does not contain these standards. The department should check this cross-reference.

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

a. The department should review the rule to determine whether it should specify the analytical methods that a person subject to the rule must use to measure radioactivity in groundwater. See, for example, the analytical methods specified for determination of radioactive substances in community water systems in s. HSS 157.16 (3).

b. The first clause in s. HSS 157.165 (3) (b) 2 excludes radionuclides listed in Table 157-D from the provisions of subd. 2. Does the department intend to specify the concentrations of the radionuclides listed in Table 157-D, tritium and strontium-90, that cause four millirems total body or internal organ dose equivalents? If so, the department should specify these concentrations either in the rule or by reference to Table 157-D.

c. The department should review the preventive action limits for beta particle and photon radioactivity in s. HSS 157.165 (4) (c) to ensure the clarity of these standards. These limits are only expressed in terms of millirems a year and not in terms of a concentration. Should s. HSS 157.165 (4) (c) be stated in two parts, similar in form to subds. 1 and 2 in s. HSS 157.165 (3) (b) to clarify the basis of the conversion between dose equivalents and concentration of these preventive action limits?

Clearinghouse Rule 93-188

Establishes standards for the maximum radioactivity in community water systems.

According to Michael Best and Friedrich, who requested the hearing on the rule, the EPA has not made a final recommendation for groundwater standards. They believe the state should wait until the final word from the feds.

10-3-97

PROPOSED ADMINISTRATIVE RULES - HSS 157
ANALYSIS FOR LEGISLATIVE STANDING COMMITTEES
PURSUANT TO S. 227.19(3), STATS.

Need for Rules

The Wisconsin Department of Natural Resources (DNR) is responsible under ch. 160, Stats., for maintaining the quality of groundwater in the state and, in this connection, for developing a list of substances of public health concern that may enter groundwater and setting a numerical enforcement standard and a numerical preventive action standard for each substance. However, in regard to radioactive contaminants in water, ss. 254.31 to 254.45, Stats., make the Department of Health and Family Services, on recommendation of the Radiation Protection Council, the standard-setting authority. The Department's standards for community water systems are set out in s. HSS 157.16. The Department of Natural Resources has asked the Department to also produce enforcement standards and preventive action limits for radioactive substances in groundwater. That is the reason for and purpose of this rulemaking order.

The enforcement standards for radioactive contaminants in groundwater employ the same numbers as are found in the U.S. Environmental Protection Agency's (EPA's) Drinking Water Standards for Community Drinking Water Supplies at 40 CFR 141.15 (a) and (b) and 141.16. The rationale for selecting the EPA standards is that drinking water is the pathway for ingestion of radionuclides and s. 160.07 (4), Stats., requires use of existing federal numbers.

The preventive action limit for a radioactive contaminant in groundwater is 10% of the enforcement standard, as provided in s. 160.15(1)(c), Stats., for any substance that has carcinogenic properties. All radioactive contaminants have carcinogenic properties.

The State Radiation Protection Council reviewed and approved these standards and recommended that the Department promulgate them as administrative rules.

This rulemaking order also corrects s. HSS 157.16(2)(a) by substituting "contaminant" for "containment" at two places.

Responses to Clearinghouse Recommendations

One comment of the Legislative Council's Rules Clearinghouse was accepted and the suggested change was made in the proposed rules. Responses to the other comments are as follows:

2.a. Comment: The definitions of "groundwater," "groundwater enforcement standard" and preventive action limit" in HSS 157.165(1) are identical or substantively equivalent to the definitions of those terms in s. 160.01, Stats. In general, avoid unnecessary repetition of statutory language. Consider whether cross-references to the definitions in ch. 160, Stats., would be adequate.

Response: No change. It is important for readers of the rules that key terms be defined in the rules. They should not have to consult another document.

2.b. Comment: The first sentence in HSS 157.65 (4) (intro.) contains explanatory material which is better placed in a note to the rules.

Response: No change. This sentence is an appropriate prefatory statement to the preventive action limits.

4.b. Comment: The note following HSS 157.165(2) references standards for radioactive substances in NR 140. Chapter NR 140 presently does not contain these standards. Check the cross-reference.

Response: DNR is adding the standards to NR 140, and in fact requested the promulgation of HSS 157.165 in order to add the standards to NR 140.

5.a. Comment: Review the rule to determine whether it should specify the analytical methods that someone subject to it must use to measure radioactivity in groundwater. See, for example, the analytical methods specified for determination of radioactive substances in community water systems in HSS 157.16(3).

Response: No change. These rules are being promulgated only to establish a standard requested by DNR.

5.b. Comment: The first clause in HSS 157.165(3)(b) 2. excludes radionuclides listed in Table 157-D from the provisions of subd. 2. Should the Department specify the concentration of radionuclides listed in Table 157-D, that is, tritium and strontium 90, that cause four millirems total body or internal organ dose equivalents? If so, this

should be done either in the rule or by reference to Table 157-D.

Response: No change. Table 157-D is already referenced as providing a different way to calculate the concentration of man-made radionuclides for tritium and strontium-90. The identical phrase and, indeed, the identical paragraph appear in both HSS 157.16(2), relating to community water systems, and in 40 CFR 141.16.

5.c. Comment: Review the preventive action limits for beta particle and photon radioactivity in HSS 157.165(4)(c) to make sure the standards are clear. These limits are expressed only in terms of millirems a year and not in terms of a concentration. Should HSS 157.165(4)(c) be stated in two parts, as in HSS 157.165(3)(b), to clarify the basis of the conversion between dose equivalents and concentration of these preventive action limits?

Response: No change. These are expressed as 10% of the enforcement standard as required by s. 160.15(1)(c), Stats. The enforcement standard is in millirems a year.

Public Hearings

The Department held 4 public hearings on these proposed rules. The public hearings were joint hearings with the Department of Natural Resources (DNR) which brought to the hearings proposed amendments to its groundwater standards. The hearings were held in July 1997 in Madison, Waukesha, Green Bay and Stevens Point. A list of the 5 persons who testified on the Department's proposed standards for radioactive substances in groundwater or submitted comments in writing before or after the hearings, but within the public review period, and the Department's responses to those comments, are found in an attachment to this document.

No modifications were made in the rules in response to comments received during public review of them.

Final Regulatory Flexibility Analysis

The standards included in this order will apply to any business, agency or other organization that releases long-lived radioactive material, which is usually radium, into the groundwater, as a by-product of a mining, manufacturing or other process. This could include a small business as defined in s. 227.114(1)(a), Stats. However, any impact would be in the future. Groundwater quality protection staff

in the Department of Natural Resources (DNR) and radiation protection staff in DHFS do not know of any business, agency or other organization that currently does this. The standards point toward the future, alerting enterprises developing or wanting to use technologies which involve release of radioactive substances into the groundwater that there are DHFS standards intended to protect the public's health and that DNR is obliged to enforce those standards.

Department of Health and Family Services
Division of Health/Bureau of Public Health
-Public Hearings Summary-
Sections HSS 157.16(2)(a) and 157.165

Four public hearings were held on the proposed rules, as follows:

Madison, WI on July 28, 1997
Waukesha, WI on July 29, 1997
Green Bay, WI on July 30, 1997
Stevens Point, WI on July 31, 1997

The public hearings were joint hearings with the Department of Natural Resources which brought to the hearings proposed changes in its groundwater standards.

DHFS staff in attendance:

Paul Schmidt, Supervisor, Radiation Protection Unit, Division of Health
Linda Knobeloch, Toxicologist, Health Hazards Evaluation Unit, Division of Health
(Madison and Waukesha hearings only)

The hearing record was left open until August 7, 1997, for receipt of written comments.

All 5 persons who testified during the public review period on the DHFS proposed standards for radioactive substances in groundwater opposed the proposed standards.

Public review participants were the following:

1. Carol A. Opel, Mayor *[Commented on DHFS-proposed standards only.]*
   City of Waukesha
   Waukesha, WI

2. Harold H. Fuhrman *[Commented on DHFS-proposed standards and on DNR's enforcement of those standards.]*
   Harold H. Fuhrman and Associates
   (law firm representing City of Waukesha and Waukesha Water Utility)
   Milwaukee, WI

3. Dr. Robert E. Rowland *[Commented on DHFS-proposed standards only.]*
   (expert witness provided by Harold H. Fuhrman and Associates;
   a retired researcher who worked at Argonne National Laboratories)

4. Patrick Stevens *[Commented on DHFS-proposed standards and on DNR-proposed standards.]*
   Wisconsin Manufacturers and Commerce
   Madison, WI

5. Donald P. Gallo *[Commented on DHFS-proposed standards and on DNR-*
Michael Best & Friedrich *proposed standards.]*
(representing the Petroleum Marketers Association and the Wisconsin Association of Convenience Stores)
Milwaukee, WI

Comments received during public review of the proposed rules were the following:

1. Comment: The combined standard for radium 226 and radium 228 at a level of 5 picocuries per liter is not substantiated. It would serve the best interests of the public if the standard were subjected to scientific rigor. Do not adopt a radium 226 and 228 combined standard of 5 pCi/l. (Mayor Opel)

Response: The Department developed groundwater radioactivity standards at the request of the Department of Natural Resources (DNR). Under state law at s. 160.07(4), Stats., groundwater standards are to be based on federal numbers if these exist. There is a current federal standard (limit) for radium in drinking water. That standard is 5 pCi/l of radium 226 and 228 combined. The Department is obliged to use the existing federal number. If there were no federal number, the Department would be obliged to use the state drinking water standard. The state drinking water standard is the same as the federal drinking water standard. If the federal drinking water standard for radium is revised, that could be justification for revising the state drinking water and groundwater standards.

2. Comment: The proposed standards for these radioactive substances are based on MCLs established in the 1970s. Since that time EPA has proposed modifications to those numbers that are significantly higher than the numbers proposed by the Department. Given the pending change at the federal level, the Department should not go forward at this time with these standards. Postpone action on the radioactivity standards until EPA revises the federal drinking water standard. (Mr. Stevens, Mr. Fuhrman)

Response: The Groundwater Protection Act (1983 Wisconsin Act 410) went into effect in May 1984. Act 410 created ch. 160, Stats. The Legislature intended through the new chapter to establish "an administrative process which will produce numerical standards, comprised of enforcement standards and preventive action limits, for substances in groundwater," as the basis for minimizing the concentration of polluting substances in groundwater. DNR was directed to prepare an initial list of substances for which it was to specify numerical standards by rule. Act 410 listed 27 Category I substances to be included in that list, among them "radioactivity, specifically radium 226 and 228 and uranium." DNR's rules went into effect in October 1985, but without numerical standards for radioactivity in groundwater because it had been determined that only the Department of Health and Social Services (now Health and Family Services), on recommendation of the State Radiation

Protection Council, could promulgate rules adopting those standards. DNR then formally requested the Department to promulgate those standards as rules which DNR, as the groundwater standards enforcement agency, would then incorporate in ch. NR 140. In March 1991 the State Radiation Protection Council approved the enforcement standards to be included in the rules, and in December 1991 amended its earlier approval at a meeting with DNR representatives to include standards for preventive action limits. The Department sent the proposed rules to the Legislative Council's Rules Clearinghouse for review in October 1993 and brought them to public hearing in July 1997 when DNR was ready to hold public hearings on additions to its rules, ch. NR 140, relating to groundwater quality.

The Department must not take any longer in fulfilling its responsibility under the Groundwater Protection Standards Act for promulgating rules that establish numerical standards for radioactivity in groundwater, so that the Groundwater Protection Standards Act can be fully implemented.

Under state law, a groundwater standard for a substance is to be based on the federal number for that substance if one exists: "If a single federal number exists for a substance, the federal number shall be the enforcement standard" (s. 160.07(4)(a), Stats.) The current federal standard (limit) for radium in drinking water is 5 pCi/l of radium 226 and 228 combined (that EPA drinking water standard, in effect since 1976, is in 40 CFR 141.15 and 141.16, and is found also in the 1995 groundwater standards for remedial actions at inactive uranium processing sites at 40 CFR Part 192).

Section 160.07(4) (c), Stats., states that if there is not a federal number for a substance but there is a state drinking water standard, then the state drinking water standard is to be the groundwater enforcement standard (s. 160.07(4)(c), Stats.). The groundwater standards in proposed s. HSS 157.165 are the same as the state drinking water standards for community water systems in s. HSS 157.16 which are, in turn, the same numbers used in the federal drinking water standards. Department staff evaluated existing information on radium and eventually recommended groundwater enforcement standards identical to the state community drinking water standards and the federal drinking water standards, and these are the standards that were evaluated and supported by the State Radiation Protection Council.

If the federal drinking water standard for radium is revised, that could be justification for revising the state groundwater standard. EPA's proposed revision of the drinking water standard, which would have made it 20 pCi/l for each radium isotope, was withdrawn in 1996 due to Congressional opposition to the related proposed radon standard. Because the proposed revised radium standard shared the same risk assessment as the radon standard, Congressional action taken through a binding resolution removed the basis for the EPA radium proposal. EPA has been mandated by court order to finsh evaluating the need for new radioactivity in drinking water standards by the year 2000. But that is only for completing a new risk assessment. EPA has no timetable for development of a proposed new drinking water standard for radium.

3. Comment: Long-term health studies of people exposed to radium support a higher standard for radium in drinking water than the current value of 5 pCi/l of radium 226 and 228 combined. The EPA- proposed standard of 20 pCi/l for each radium isotope is more realistic. (Dr. Rowland; comment supported by Mr. Gallo)

Response: The EPA-proposed drinking water standard of 20 pCi/l for each radium isotope has been withdrawn due to Congressional opposition to the related radon standard. That leaves 5 pCi/l as the current federal standard and the Department's need to supply to DNR, at DNR's request, a numerical standard for radioactivity in groundwater so that both the Department and DNR comply with the Legislature's intent set out in 1983 Wisconsin Act 410 that numerical standards be in place for substances in groundwater that are of public health or of public welfare concern.

[The Department provided a background document before the hearings to persons who expressed an interest in the proposed standards. The background document sets out the scientific basis for the standards relating to radioactive substances in groundwater as proposed by the Department and was commented on by Dr. Rowland in an analysis undertaken for Mr. Fuhrman and referenced by Mr. Fuhrman in the following questions he directed to the Department and to DNR as the enforcement agency. The questions are treated here as public review comments.]

4. Comment: Why is 40 CFR Part 192, Groundwater Standards for Remedial Actions at Inactive Uranium Processing Sites (January 1995) included as a basis document for the standards in s. HSS 157.165?

Response: State law at 160.07(4), Stats., requires use of existing federal numbers when developing groundwater protection standards. The 5 pCi/l radium standard is the existing federal number, used in both the EPA drinking water standard and 40 CFR Part 192. Because it is found in 40 CFR Part 192, it is referenced there. The EPA drinking water standard is found in 40 CFR 141.15 and 141.16.

5. Comment: Do you concur with the following statement: The groundwater standards will remain in effect after the drinking water MCLs are raised unless one can show cause why the groundwater level should be raised to the drinking water level?

Response: No. Under state law groundwater standards are to be based on federal drinking water standards if these exist. Revision of a federal drinking water standard can be used to justify revision of an existing groundwater standard. The Department may, however, determine that the federal standard allows an unacceptable level of risk or that new information which is scientifically sound and was not considered by the federal agency justifies a different numerical standard.

6. Comment: A statement in the 3rd paragraph on page 95 of the background document mentions the occurrence of dissolved radium in groundwater. That statement seems to contradict a section on page 97 which states that radium coprecipitates with other minerals and does not appear to be mobile in groundwater.

Response: Agreed. These statements do indeed appear contradictory. The background document accordingly has been revised.

7. Comment: Tritium is a beta emitter and not, as the background document states, an alpha emitter.

Response: Agreed. This was a technical error in the background document. It has been corrected.

8. Comment: Do Department staff concur with Dr. Rowland's analysis of rem measurement?

Response: Not entirely. According to the National Council on Radiation Protection and Measurements in NCRP Report No. 93 the largest component of the average annual effective dose equivalent to individuals in the U.S. is from radon and its decay products, not K-40 in food. Radon contributes about 55% or 200 millirem of the total annual average exposure, with K-40 contributing about 6% or 22 millirem of the total average annual exposure. [At the hearing, Dr. Rowland clarified that he was referring only to bone dose, not whole body dose, and that the reference he used was NCRP Report No. 94. With that clarification, there was no dispute that his comment is correct. It is a technical detail and does not impact the proposed standards.]

9. Comment: Do Department staff agree that actual studies of humans are more relevant than the mice studies referred to in the background document under "acute effects"?

Response: Department staff agree that, if available, the best studies for use in risk assessment are human studies. Staff reviewed available information on acute effects of radium exposure in humans when the background document was originally prepared and found that these effects are poorly documented. In any case, a lengthy discussion of acute radiation poisoning is not relevant to the risks associated with chronic, low-level exposure from contaminated water and therefore staff did not include it in the background document and substituted animal data. Since scientifically valid human studies are rarely available, government risk assessors frequently rely on animal studies to describe the acute or chronic effects of exposure. [The acute and chronic effects sections of the background document were revised after the hearings to add some more information based on further review of the literature.]

10. Comment: Would the proposed amendments to ch. NR 140 be violated if the City of Waukesha or one of its customers sprinkled its lawns with municipal water containing more than 5 pCi/l of radium 226 and 228 combined?

Response by DNR: Chapter 160, Stats., and ch. NR 140 apply to facilities, practices and activities which are regulated. Watering lawns is not regulated.

11. Comment: At what point and under what circumstances, if any, is groundwater deemed contaminated in violation of the proposed amendments to chs. NR 140 and HSS 157.165 when the water of Waukesha containing by nature more than 5 pCi/l of radium 226 and 228 combined is deposited on the surface of the earth or into surface waters or discharged into storm sewers or sanitary sewers?

Response by DNR: A violation of groundwater standards in ch. NR 140 would occur only if there were concentrations of a substance in groundwater above the standards in ch. NR 140 at a point of standards application. When regulated, most discharges to groundwater would be covered by a Wisconsin Pollution Discharge Elimination System (WPDES) permit which would regulate discharges to the subsurface to comply with the groundwater standards. The WPDES permit would specify the points of standards application which typically include monitoring wells or a point of groundwater use. Discharges of Waukesha water with concentrations of radiological paramenters in excess of the proposed standards is unlikely to trigger remediation requirements under ch. NR 140.

12. Comment: What effect, if any, will the proposed amendments to ch. NR 140 and s. HSS 157.165 have upon land-spreading wastewater treatment plant (WWTP) sludge containing City of Waukesha water having more than 5 pCi/l of radium 226 and 228 combined?

Response by DNR: None. Land disposal of WWTP sludge containing radioactive substances is regulated under s. NR 204.07(3)(n).

9-25-97

PROPOSED ORDER OF THE
DEPARTMENT OF HEALTH AND FAMILY SERVICES
AMENDING AND CREATING RULES

To amend HSS 157.16 (2) (a) and to create HSS 157.165, relating to standards for maximum radioactivity in community water systems and enforcement standards and preventive action limits for radioactive substances in groundwater.

Analysis Prepared by the Department of Health and Family Services

The Wisconsin Department of Natural Resources (DNR) is responsible under ch. 160, Stats., for maintaining the quality of groundwater in the state, and, in this connection, for developing a list of substances of public health concern that may enter groundwater and setting a numerical enforcement standard and a numerical preventive action standard for each substance. However, in regard to radioactive contaminants in water, ss. 254.31 to 254.45, Stats., the Radiation Protection Act, makes the Department of Health and Family Services, on recommendation of the Radiation Protection Council, the standard-setting authority. The Department's standards for community water systems are set out in s. HSS 157.16. The Department of Natural Resources has asked the Department to also produce enforcement standards and preventive action limits for radioactive substances in groundwater. That is the reason for and purpose of this rulemaking order.

The enforcement standards for radioactive contaminants in groundwater employ the same numbers as are found in the U.S. Environmental Protection Agency's (EPA's) Drinking Water Standards for Community Drinking Water Supplies at 40 CFR 141.15 (a) and (b) and 141.16. The rationale for selecting the EPA standards is that drinking water is the pathway for ingestion of radionuclides and s. 160.07 (4), Stats., requires use of existing federal numbers.

The preventive action limit for a radioactive contaminant in groundwater is 10% of the enforcement standard, as provided in s. 160.15(1)(c), Stats., for any substance that has carcinogenic properties. All radioactive contaminants have carcinogenic properties.

The State Radiation Protection Council reviewed and approved these standards and recommended that the Department promulgate them as administrative rules.

This rulemaking order also corrects s. HSS 157.16 (2) (a) by substituting "contaminant" for "containment" at two places.

The Department's authority to amend and create these rules is found in ss. 250.04(7) and 254.36(2), Stats. The rules implement ss. 160.07 and 160.15(1), 254.33, 254.34, and 254.36(2), (3) and (6), Stats.

SECTION 1. HSS 157.16 (2) (a) is amended to read:

HSS 157.16 (2) (a) Alpha activity. 1. The maximum ~~containment~~ contaminant level for radium-226 and radium-228 in community water systems is 5 pCi/l.

2. The maximum ~~containment~~ contaminant level for gross alpha particle activity ~~+~~, including radium-226 but excluding radon and uranium ~~+~~, in community water systems is 15 pCi/l.

SECTION 2. HSS 157.165 is created to read:

HSS 157.165 RADIOACTIVITY IN GROUNDWATER. (1) DEFINITIONS. In this section:

(a) "Groundwater" means any of the waters of the state, as defined in s. 144.01(19), Stats., occurring in a saturated subsurface geological formation of rock or soil, as distinguished from surface water.

(b) "Groundwater enforcement standard" means a numerical value expressing the maximum concentration of a radioactive substance in groundwater, which is established under this section for use under s. 160.07, Stats.

(c) "Preventive action limit" means a numerical value expressing the concentration of a radioactive substance in groundwater, which is adopted under s. 160.15, Stats.

(2) PURPOSE AND APPLICABILITY. This section establishes groundwater enforcement standards for use in monitoring, controlling and, if necessary, limiting human exposure to radioactive materials introduced into groundwater by regulated human activities. These maximum levels are for radionuclides discharged to the environment as effluents produced by human activities. Nothing in this section requires the reduction of background levels of naturally occurring radionuclides in groundwater.

Note: The standards for radioactive substances set out in ch. NR 140 are identical to the standards in this section. See ch. 160, Stats., and ch. NR 140 for additional information about groundwater quality standards.

(3) GROUNDWATER ENFORCEMENT STANDARDS. (a) Alpha activity. 1. The groundwater enforcement standard for radium-226 and radium-228 combined in groundwater is 5 pCi/l(0.18 Bq/l).

2. The groundwater enforcement standard for gross alpha particle activity in groundwater, including radium-226 but excluding radon and uranium, is 15 pCi/l(0.54 Bq/l).

(b) Beta particle and photon radioactivity. The groundwater enforcement standard for beta particle and photon radioactivity is as follows:

1. The average annual concentration of beta particle and photon radioactivity from human-produced radionuclides in groundwater shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirems a year (0.04 millisievert a year); and

2. Except for the radionuclides listed in Table 157-D, the concentrations of human-produced radionuclides causing 4 millirems (0.04 millisievert) total body or organ dose equivalents shall be calculated on the basis of 2-liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," national bureau of standards handbook 69, U.S. department of commerce, amended August 1963. 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 millirems a year (0.04 millisievert a year).

Note: National Bureau of Standards Handbook 69 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(4) PREVENTIVE ACTION LIMITS. Radioactive substances have carcinogenic properties. Accordingly, the preventive action limit for a radioactive substance shall be 10% of the enforcement standard, as specified in s. 160.15(1)(c), Stats., for substances with carcinogenic properties. Preventive action limits for radioactive substances are the following:

(a) For radium-226 and radium-228 combined, 0.5 pCi/l(0.018 Bq/l);

(b) For gross alpha particle activity, including radium-226 but excluding radon and uranium, 1.5 pCi/l(0.054 Bq/l); and

(c) For beta particle and photon radioactivity from human-produced radionuclides, 0.4 millirems a year (0.004 millisievert a year).

(5) EFFECTS OF HIGHER LIMITS OF DETECTION OR QUANTITATION. If a preventive action limit or enforcement standard established in this section is below the limit of detection or quantitation when a groundwater sample is tested, s. NR 140.14 (3) shall apply.

The rules contained in this order shall take effect on the first day of the month following their publication in the Wisconsin Administrative Register, as provided in s. 227.22(2), Stats.

Wisconsin Department of Health and
Family Services

Dated:

By: _____
Joseph Leean
Secretary

SEAL: