

- (e) A subsurface field absorption system,
- (f) A land spreading system, or
- (g) Any other land area receiving liquid waste discharges.

(12) "Limit of detection" means the lowest concentration for an analytical test method and sample matrix at which the presence of a substance can be identified in an analytical sample, with a stated degree of confidence, regardless of whether the concentration of the substance in the sample can be quantified.

(13) "Limit of quantitation" means the lowest concentration for an analytical test method and sample matrix at which the quantity of a particular substance can be measured with a stated degree of confidence.

(14) "Monitoring" means all procedures used to collect data on groundwater, surface water or soils.

(15) "Point of standards application" means the specific location, depth or distance from a facility, activity or practice at which the concentration of a substance in groundwater is measured for purposes of determining whether a preventive action limit or an enforcement standard has been attained or exceeded.

(16) "Precision" means the closeness of repeated measurements of the same parameter within a sample.

(17) "Preventive action limit" means a numerical value expressing the concentration of a substance in groundwater which is adopted under s. 160.15, Stats., and ss. NR 140.10, 140.12, and 140.20.

(18) "Property boundary" means the boundary of the total contiguous parcel of land owned by a common owner, regardless of whether public or private roads run through the parcel.

(19) "Registered laboratory" means a laboratory which is registered under s. 144.95 (8), Stats., or receives reciprocal recognition under s. 144.95 (5), Stats.

(20) "Regulatory agency" means the department of agriculture, trade and consumer protection, the department of industry, labor and human relations, the department of transportation, the department of natural resources and other state agencies which regulate activities, facilities or practices which are related to substances which have been detected in or have reasonable probability of entering the groundwater resources of the state.

(21) "Substance" means any solid, liquid, semisolid, dissolved solid or gaseous material, naturally occurring or man-made chemical, parameter for measurement of water quality or biological organism which, in its original form, or as a metabolite or a degradation or waste product, may decrease the quality of groundwater.

(22) "Wastewater and sludge storage or treatment lagoon" means a natural or man-made containment structure, constructed primarily of earthen materials for the treatment or storage of wastewater or sludge, which is not a land disposal system.

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Register, May, 1986, No. 365

## Subchapter II

## Groundwater Quality Standards

NR 140.10 Public health related groundwater standards. The groundwater quality standards for substances of public health concern are listed in Table 1.

Note: For all substances that have carcinogenic, mutagenic or teratogenic properties or interactive effects, the preventive action limit is 10% of the enforcement standard. The preventive action limit is 20% of the enforcement standard for all other substances that are of public health concern. Enforcement standards and preventive action limits for additional substances will be added to Table 1 as recommendations are developed pursuant to ss. 160.07, 160.13 and 160.15, Stats.

Table 1  
Public Health Groundwater Quality Standards

Substance	Enforcement Standard (micrograms per liter - except as noted)	Preventive Action Limit (micrograms per liter - except as noted)
(1) Aldicarb	10	2
(2) Arsenic	50	5
(3) Bacteria, Total Coliform	Less than one in 100 ml for membrane filter method or not present in any 10 ml portion by fermentation tube method for both preventive action limit and enforcement standard	
(4) Barium	1 milligram/liter (mg/l)	.2 mg/l
(5) Benzene	.67	.067
(7) Cadmium	10	1
(8) Carbofuran	50	10
(9) Chromium	50	5
(10) Cyanide	460	92
(11) 1,2-Dibromoethane	.010	.001
(12) 1,2-Dibromo-3-chloropropane (DBCP)	.05	.005
(13) p-Dichlorobenzene	750	150
(14) 1,2-Dichloroethane	.5	.05
(15) 1,1-Dichloroethylene	.24	.024
(16) 2,4-Dichlorophenoxyacetic Acid	100	20
(17) Dinoseb	13	2.6
(18) Endrin	.2	.02
(19) Fluoride	2.2 mg/l	.44 mg/l
(20) Lead	50	5
(21) Lindane	.02	.002
(22) Mercury	2	.2
(23) Methoxychlor	100	20
(24) Methylene Chloride	150	15
(25) Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
(27) Selenium	10	1
(28) Silver	50	10
(29) Simazine	2.15 mg/l	.43 mg/l
(30) Tetrachloroethylene	1	.1
(31) Toluene	343	68.6
(32) Toxaphene	.0007	.00007
(33) 1,1,1-Trichloroethane	200	40
(34) 1,1,2-Trichloroethane	.6	.06
(35) Trichloroethylene	1.8	.18
(36) 2,4,5-Trichlorophenoxypropionic Acid	10	2
(38) Vinyl Chloride	.015	.0015
(39) Xylene	620	124

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85.

NR 140.12 Public welfare related groundwater standards. The groundwater quality standards for substances of public welfare concern are listed in Table 2.

Note: For each substance of public welfare concern, the preventive action limit is 50% of the established enforcement standard.

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Table 2  
Public Welfare Groundwater Quality Standards

Substance	Enforcement Standard (milligrams per liter - except as noted)	Preventive Action Limit (milligrams per liter - except as noted)
(1) Chloride	250	125
(2) Color	15 color units	7.5 color units
(3) Copper	1.0	.5
(4) Foaming agents MBAS (Methylene-Blue Active Substances)	.5	.25
(5) Iron	.3	.15
(6) Manganese	.05	.025
(7) Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
(8) Sulfate	250	125
(9) Total Dissolved Solids (TDS)	500	250
(10) Zinc	5	2.5

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85.

NR 140.14 Statistical procedures. (1) If a preventive action limit or an enforcement standard for a substance listed in Table 1 or 2 or a preventive action limit for an indicator parameter established according to s. NR 140.20 (2) is attained or exceeded at a point of standards application:

(a) The owner or operator of the facility, practice or activity at which a standard is attained or exceeded shall notify the appropriate regulatory agency that a standard has been attained or exceeded; and

(b) The regulatory agency shall require a remedial response in accordance with the rules promulgated under s. 160.21, Stats. No remedial response shall be required if it is demonstrated to the satisfaction of the appropriate regulatory agency that a scientifically valid determination cannot be made that the preventive action limit or enforcement standard has been attained or exceeded based on consideration of sampling procedures or laboratory precision and accuracy, using the statistical procedures specified in sub. (2).

(2) In determining if a preventive action limit or enforcement standard is attained or exceeded or if a change in the concentration of a substance has occurred, the regulatory agency shall utilize the most scientifically valid of the following statistical procedures which will provide a 95% level of confidence:

- (a) Student t-test;
- (b) Temporal or spatial trend analysis; or
- (c) Other scientifically valid statistical analyses which are appropriate for the data being considered.

(3) In addition to sub. (2), the following applies when a preventive action limit or enforcement standard is below the limit of quantitation:

(a) If a substance is not detected in a sample and the limit of detection is higher than the preventive action limit or enforcement standard for that substance, the preventive action limit or enforcement standard shall be considered not to have been attained or exceeded.

(b) If a substance is reported to be present in a sample above the limit of detection but below the limit of quantitation, and if the preventive action limit or enforcement standard for that substance is below the limit of detection, the preventive action limit or enforcement standard shall be considered to have been attained or exceeded only if the presence of that substance has been confirmed by a sufficient number of analyses of multiple samples and use of an appropriate statistical test under sub. (2).

(c) The owner or operator of the facility, practice or activity shall report the limit of detection and the limit of quantitation with the sample results when requested by the regulatory agency.

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85.

**NR 140.16 Monitoring and laboratory data requirements.** (1) All water quality samples collected to determine compliance with ch. 160, Stats., except field analyses for pH, specific conductance, and temperature, shall be analyzed by a laboratory certified or registered under s. 144.95, Stats., and rules adopted under that section. The results of the analysis shall be submitted to the department and the appropriate regulatory agency. This subsection does not require the submission of groundwater monitoring data which is collected voluntarily and which is not being collected to determine compliance with this chapter. The samples shall be collected in accordance with procedures specified by the department or, where no procedures are specified, in accordance with published sampling procedures.

Note: Published sampling procedures include those contained in the following sources. Other published sampling procedures are also acceptable.

1. "Procedures Manual for Ground Water Monitoring at Solid Waste Disposal Sites." EPA SW-611, Office of Water and Waste Management, U.S. Environmental Protection Agency, Dec. 1980, Washington, D.C.

2. "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground Water Samples for Selected Unstable Constituents," Book I, Chapter D2, U.S. Geological Survey, Washington, D.C.

3. "Procedures for the Collection of Representative Water Quality Data from Monitoring Wells," Cooperative Groundwater Report 7, Illinois State Water Survey, 1981, Champaign, Illinois.

4. "Manual of Ground Water Sampling Procedures," NWWA/EPA Series, Robert S. Kerr Environmental Research Laboratory, 1981, Ada, Oklahoma.

Note: This subsection does not require data from laboratories certified or registered under s. 144.95, Stats., until the laboratory certification rules become effective.

(2) The laboratory shall utilize the analytical methodology specified in rules or approved by the regulatory agency. Where no analytical methodology is specified, the laboratory shall use an analytical methodology with a limit of detection and limit of quantitation below the preventive action limit. Where the limit of detection or limit of quantitation is above the preventive action limit for that substance, the laboratory shall use the best available analytical methodology to produce the lowest limit of detection and limit of quantitation.

Table 6

*Range of Responses for Exceedance of Enforcement Standards for Substances of Health or Welfare Concern*

1. Require a revision of the operational procedures at a facility, practice or activity.
2. Require a change in the design or construction of the facility, practice or activity.
3. Require an alternate method of waste treatment or disposal.
4. Require prohibition or closure and abandonment of a facility, practice or activity.
5. Require remedial action to renovate or restore groundwater quality.
6. Revise rules or criteria on facility design, location or management practices.

(3) If an activity or practice is not subject to regulation under subch. IV of ch. 144 or 147, Stats., and if the concentration of a substance in groundwater attains or exceeds an enforcement standard at a point of standards application, the department shall take the following responses unless it can be shown to the department that, to a reasonable certainty, by the greater weight of the credible evidence, an alternative response will achieve compliance with the enforcement standard at the point of standards application:

(a) Prohibit the activity or practice which uses or produces the substance; and

(b) Require remedial actions with respect to the specific site in accordance with this chapter.

(4) If nitrates or any substance of welfare concern only attains or exceeds an enforcement standard, the department is not required to impose a prohibition or close a facility if it determines that:

(a) The enforcement standard was attained or exceeded, in whole or in part, because of high background concentrations of the substance; and

(b) The additional concentration does not represent a public welfare concern.

(5) When compliance with the enforcement standard is achieved at the point of standards application, s. NR 140.24 applies.

(6) The department may take any actions within the context of regulatory programs established in statutes or rules outside of this chapter, if those actions are necessary to protect public health and welfare or prevent a significant damaging effect on groundwater or surface water quality for present or future consumptive or nonconsumptive uses, whether or not an enforcement standard and preventive action limit for a substance have been adopted under this chapter. Nothing in this chapter authorizes an impact on groundwater quality which would cause surface water quality standards contained in chs. NR 102 to 104 to be attained or exceeded.

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85.

**NR 140.28 Exemptions.** (1) **EXEMPTIONS REQUIRED.** (a) The department may not approve a proposed facility, practice or activity at a location where a preventive action limit or enforcement standard has been attained or exceeded unless an exemption has been granted under this section.

(b) Remedial action is required under s. NR 140.24 or 140.26 when a preventive action limit or an enforcement standard has been attained or exceeded unless an exemption has been granted under this section.

(2) CRITERIA FOR GRANTING EXEMPTIONS WHERE THE BACKGROUND CONCENTRATION IS BELOW THE PREVENTIVE ACTION LIMIT. The department may grant an exemption under this section when a preventive action limit is attained or exceeded if it determines that:

(a) The measured or anticipated increase in the concentration of the substance will be minimized to the extent technically and economically feasible;

(b) Compliance with the preventive action limit is either not technically or economically feasible;

(c) The enforcement standard for that substance will not be attained or exceeded at the point of standards application; and

(d) Any existing or projected increase in the concentration of the substance above the background concentration does not present a threat to public health or welfare.

(3) CRITERIA FOR GRANTING EXEMPTIONS WHERE THE BACKGROUND CONCENTRATION IS ABOVE A PREVENTIVE ACTION LIMIT. (a) The department may grant an exemption under this section to allow a facility, practice or activity which is regulated by the department to be constructed or operated in an area where the background concentration of nitrate or a substance of public welfare concern attains or exceeds the preventive action limit if the facility, practice or activity is designed to achieve the lowest possible concentration for that substance which is technically and economically feasible and the present and anticipated increase in the concentration of the substance does not present a threat to public health or welfare.

(b) The department may grant an exemption under this section to allow a facility, practice or activity which is regulated by the department to be constructed or operated in an area where the background concentration of a substance of public health concern, other than nitrate, attains or exceeds a preventive action limit for that substance:

1. If the facility, practice or activity has not caused and will not cause the further release of that substance into the environment; or

2. If the background concentration of the substance does not exceed the enforcement standard for that substance, the facility, practice or activity has not caused and will not cause the concentration of the substance to exceed the enforcement standard for that substance and the facility, practice or activity is designed to achieve the lowest possible concentration of that substance which is technically and economically feasible.

(4) CRITERIA FOR GRANTING EXEMPTIONS WHERE THE BACKGROUND CONCENTRATION IS ABOVE AN ENFORCEMENT STANDARD. (a) The department may grant an exemption under this section to allow a facility, practice or activity which is regulated by the department to be constructed or operated in an area where the background concentration of nitrate or a substance of public welfare concern attains or exceeds an enforcement standard if the facility, practice or activity is designed to achieve the