
Wisconsin Legislative Council

INFORMATION MEMORANDUM



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GROUNDWATER PROTECTION STANDARDS

In 1984, the Wisconsin Legislature established the state's groundwater protection law, a comprehensive regulatory scheme to minimize the concentration of polluting substances in groundwater. [s. 160.001, Stats.] Pursuant to ch. 160, Stats., and ch. NR 140, Wis. Adm. Code, the Wisconsin Department of Natural Resources (DNR), the Department of Health Services (DHS), and other agencies collaborate to protect the state's groundwater resources and to provide adequate safeguards for public health and welfare.

This information memorandum provides an overview of Wisconsin's groundwater protection law and associated DNR rules. It discusses: (1) the background of Wisconsin's groundwater protection standards; (2) the process for establishing groundwater standards; (3) monitoring requirements; and (4) responses to groundwater contamination under state law.

BACKGROUND

Wisconsin's groundwater protection law originated from the Joint Legislative Council's 1982 Special Committee on Groundwater Management. The Joint Legislative Council directed the special committee to recommend objectives for Wisconsin's groundwater management policy, including goals, rules, procedures, and statutory authority.¹

As recommended by the special committee, the Legislature created a regulatory framework centered on the adoption of numerical standards for groundwater contamination. The Legislature gave broad authority to regulatory agencies to establish regulations to assure that facilities and activities would not cause groundwater pollutants to exceed these standards. [s. 160.001, Stats.]

The Legislature also adopted the special committee's recommendation to create a Groundwater Coordinating Council. The Groundwater Coordinating Council serves as a means of increasing the efficiency and effectiveness of state agencies in their groundwater management activities. Among other responsibilities, the council helps state agencies exchange information related to groundwater, advises on research activities and appropriations through its [joint solicitation](#) process, and assists agencies with their groundwater monitoring. [s. 160.50 (1), Stats.]

Differentiating the Groundwater Law From Other Environmental Laws

Many of Wisconsin's environmental laws, including those relating to the protection of surface and drinking water, reflect the state's implementation of federal laws.² In contrast, Wisconsin's groundwater protection law is exclusively a product of state action. While state groundwater standards incorporate certain numbers developed at the federal level, federal law does not

¹ Legislative Council, *Legislation Relating to Groundwater Management*, RL 83-25 (Aug. 17, 1983).

² Wisconsin's surface water quality and drinking water protection laws reflect Wisconsin's implementation of the federal Clean Water Act and the Safe Drinking Water Act. [33 U.S.C. s. 1251 *et seq.* (1972); 42 U.S.C. s. 300f *et seq.* (1974).]

require Wisconsin to adopt any particular standards for groundwater, as is required for surface and drinking water.

Multiagency Approach to Groundwater Protection

While DNR and DHS are mainly responsible for establishing numerical groundwater standards (as discussed below), the groundwater protection law also requires various regulatory agencies to manage their programs to comply with groundwater protection standards. In the context of the groundwater protection law, “regulatory agencies” include DNR, the Department of Agriculture, Trade and Consumer Protection (DATCP); the Department of Safety and Professional Services (DSPS); the Department of Transportation (DOT); and “other state agencies that regulate activities, facilities, or practices which are related to substances that have been detected in or have a reasonable probability of entering the groundwater resources of the state.” [s. 160.01 (7), Stats.]

Each regulatory agency has a range of responsibilities relating to Wisconsin’s groundwater protection law. For example, DNR regulates wastewater treatment plants, DATCP manages pesticide use, DSPS regulates private onsite wastewater treatment systems (POWTS), and DOT oversees salt storage.³ Although DNR plays a central role in the implementation of the groundwater protection law, other agencies may manage remedial actions depending upon the type of facility, activity, or practice causing groundwater contamination.

ESTABLISHING GROUNDWATER PROTECTION STANDARDS

The groundwater protection law specifies a technical process for DNR and DHS to jointly establish numerical groundwater standards, which are promulgated through the administrative rulemaking process.⁴

Dual-Agency Role

DNR and DHS share responsibility for establishing groundwater standards for substances of public health concern. DHS recommends a standard for each substance submitted to it by DNR, and then DNR promulgates that recommended standard as a rule. [s. 160.07 (3), Stats.] The two agencies have a memorandum of understanding regarding the information, methodology, procedures, and responsibilities of each agency in establishing enforcement standards. [ss. 160.07 (1) and 160.11, Stats.]

Identifying Substances to be Regulated

The first step in establishing groundwater standards is identifying substances that may affect groundwater quality. To identify these substances, each regulatory agency submits to DNR a list of substances related to facilities, activities, and practices within its authority that are detected in, or that have a reasonable probability of, entering the groundwater. [s. 160.05 (1), Stats.]

³ For a more detailed summary regarding various agencies’ roles, see Wisconsin Groundwater Coordinating Council, [Summary of Wisconsin’s Groundwater Law](#) (N.D.).

⁴ Legislative Council, [Administrative Rulemaking](#), Information Memorandum (Sep. 2024) [offers a general](#) description of the process for promulgating a permanent administrative rule. However, the Wisconsin Supreme Court’s recent ruling in [Evers v. Marklein](#), 2025 WI 36, affected the steps of that process relating to legislative oversight of agency rulemaking.

Additionally, any person may petition a regulatory agency to add or delete a substance from the list it submitted to DNR.⁵ [s. 160.05 (2), Stats.]

After receiving a list of substances, DNR places each substance into one of three categories, based on the substance's detected concentration in groundwater or the probability of detection. Then, DNR ranks each substance within its category and specifies whether a substance is of public health or public welfare concern. [s. 160.05 (3), (4), and (6), Stats]. DNR submits the list of substances that are of public health concern to DHS, which recommends an enforcement standard for each substance. Finally, DNR promulgates the recommended standard as a rule. [s. 160.07 (2), (3), and (5), Stats.]

Enforcement Standards and Preventive Action Limits

Groundwater protection standards are established on a two-tiered basis: an enforcement standard and a preventive action limit (PAL) are determined for each substance. An "enforcement standard" is a numerical expression of the concentration of a substance in groundwater that, when attained or exceeded, establishes that a violation has occurred, subjecting the facility, activity, or practice to immediate enforcement action.⁶ A PAL is a lesser concentration of the substance, as compared to the enforcement standard, and functions as a warning that a groundwater problem is occurring. [s. 160.01 (2) and (6), Stats.]

Generally, if there is a federal number (a drinking water standard, maximum contaminant level, or suggested no-adverse-response level set by the U.S. Environmental Protection Agency), DHS recommends the most recent federal number as the enforcement standard. [ss. 160.01 (3) and 160.07 (4), Stats.] If there is no federal number for a substance, DHS generally recommends the state drinking water standard. However, DHS may also use a standard that differs from a federal number if:

[T]here is significant technical information which is scientifically valid and which was not considered when the federal number was established, upon which DHS concludes, utilizing the [statutorily required] methodology and with a reasonable scientific certainty, that such a standard is justified. [s. 160.07 (4) (e), Stats.]

In determining an enforcement standard for a substance for which there is no federal number, or for which DHS has determined it will use a standard that differs from a federal number, DHS must recommend an enforcement standard following a technical methodology set forth in state law.⁷ [s. 160.13, Stats.] DHS's recommendation must rely on a substance's "acceptable daily intake,"⁸ which may be based on determinations at the federal level or, under certain circumstances, DHS's own determinations. [s. 160.13 (2) (b), Stats.] If no federal "acceptable

⁵ The list of regulated substances generally includes chemical compounds, bacteria, and various metals. For a complete list of substances regulated under the groundwater protection law, see [ss. NR 140.10](#) and [140.12, Wis. Adm. Code](#).

⁶ A substance's concentration must only attain, not necessarily exceed, an enforcement standard or PAL for the applicable regulatory agency to take remedial action.

⁷ If a federal number is established or changes after an enforcement standard is recommended by DHS, DNR determines if the enforcement standard needs revision. [s. 160.07 (6), Stats.]

⁸ An "acceptable daily intake" is the dose of a substance which, if ingested daily over an entire human lifetime, appears to be without appreciable risk on the basis of all known facts at the time it is established. [s. 160.13 (1) (a), Stats.]

daily intake” exists, DHS must calculate an “acceptable daily intake” in accordance with procedures determined by state law.⁹ [s. 160.13 (2) (b) 2. and 3., Stats.]

Requirements for Establishing PALs

DNR must establish a PAL for each substance with an enforcement standard. For substances of public health concern, the law generally requires a PAL equal to 20 percent of the enforcement standard. However, for substances with certain types of harmful effects, the law specifies a PAL of 10 percent of the applicable enforcement standard. Additionally, DNR may establish a more stringent PAL if it concludes, to a reasonable degree of scientific certainty, that a more stringent level is necessary to protect human health or welfare. [s. 160.15, Stats.]

GROUNDWATER MONITORING

Together, DNR, other regulatory agencies, and the Groundwater Coordinating Council develop and operate a system for monitoring and sampling groundwater to determine if PALs or enforcement standards are violated. [s. 160.27 (1), Stats.]

Monitoring System Components

State law directs DNR to develop and operate a system for monitoring and sampling groundwater. Through a variety of monitoring practices, DNR and other agencies coordinate with regulated facilities to determine if current designs and management practices are sufficient to minimize groundwater contamination and ensure compliance with state groundwater quality standards. [s. 160.27 (2), Stats.]

DNR and other regulatory agencies also require all owners and operators of regulated facilities, practices, or activities to conduct regulatory monitoring by installing and sampling groundwater monitoring wells.¹⁰ The owner or operator must demonstrate compliance with state groundwater quality standards or notify the appropriate regulatory agency when a standard is violated. [s. NR 140.14 (1) (a), Wis. Adm. Code.]

Other Monitoring Requirements

All groundwater samples are collected and handled in accordance with procedures specified by the applicable regulatory agency, or where no sampling procedures are specified, with [DNR's Groundwater Sampling Desk Reference](#) or [Groundwater Sampling Field Manual](#). If the owner or operator of the facility, practice, or activity believes that a sample does not accurately represent the groundwater quality in the vicinity, the owner or operator may resample the well and submit results to DNR, explaining why the original sample results are invalid. [s. NR 140.16 (1), Wis. Adm. Code.]

⁹ If no federal “acceptable daily intake” exists, DHS must determine the “acceptable daily intake” by dividing a substance’s “no-observable-effect level” by a suitable uncertainty factor. A “no-observable-effect level” is the level of intake of a substance which, when administered to a group of humans or experimental animals, does not produce any of the effects observed or measured at any higher level of intake and produces no significant difference between the test group and an unexposed control group of humans or animals maintained under identical conditions. [s. 160.13 (1) (c) and (2) (b) 3., Stats.]

¹⁰ A regulatory agency determines the “point of standards application,” which is the specific location, depth or distance from a facility, activity, or practice at which the groundwater is measured. [s. 160.01 (5), Stats.]

Lastly, DNR must cooperate with American Indian tribes and bands and, with their approval, provide advice and assistance on establishing a groundwater monitoring program on tribal lands. [s. 160.36, Stats.]

ENFORCEMENT AND RESPONSES TO GROUNDWATER CONTAMINATION

For each substance that has an enforcement standard or PAL, each regulatory agency must promulgate rules that set forth the range of responses that the agency may take, or which it may require the person controlling a facility, activity, or practice that is a source of the substance to take, if an enforcement standard or PAL is violated. [s. 160.21 (1), Stats.]

Regulatory agencies take a holistic, site-specific approach when considering responses to groundwater contamination.¹¹ The groundwater protection law empowers agencies to require a range of responses for contamination, which vary depending on the type and age of a facility, hydrogeological conditions, and the cost-effectiveness of responses. Generally, responses must be designed, to the extent technically and economically feasible, to prevent any new releases of the substance and must restore contaminated groundwater within a reasonable time. [s. 160.23 (1), Stats., and ss. NR 140.24 (2) and 140.26 (2), Wis. Adm. Code.]

DNR's Response When an Enforcement Standard or PAL is Violated

If a groundwater contaminant's concentration violates an enforcement standard or PAL, the owner or operator of the contaminated site must notify DNR as soon as practical, or within 10 days, after receiving the results.¹² The notification must include a preliminary analysis of the cause and significance of the concentration. Upon receipt of the notice, DNR evaluates the information and determines the proper, site-specific response based on the cause and significance of the substance's concentration. [ss. NR 140.24 (1) and (2) and 140.26 (1) and (2), Wis. Adm. Code.]

While DNR can pursue many of the same responses to address violations of enforcement standards and PALs, the department can pursue a more urgent and direct remedial response when an enforcement standard is violated compared to a PAL. For example, when contamination levels reach an enforcement standard, DNR must: (1) prohibit the activity or practice that uses or produces the substance; or (2) implement site-specific remedial actions, unless the owner or operator can show that, with reasonable certainty, an alternative response

¹¹ In addition to all other relevant information, DNR considers the: (a) background water quality; (b) reliability of sampling data; (c) public health, welfare, and environmental effects of the substance; (d) the probability that a PAL or an enforcement standard may be violated outside the design management zone; (e) performance of the facility, practice, or activity; (f) location of the monitoring point; (g) other known or suspected sources of the substance in the area; (h) hydrogeologic conditions; (i) extent of groundwater contamination; and (j) alternate responses. [s. NR 140.24 (1) (c), Wis. Adm. Code.]

¹² Although this information memorandum focuses on DNR's responses to groundwater standard violations, other regulatory agencies also develop enforcement actions for certain contaminants under their groundwater protection rules. For more information on how other regulatory agencies enforce groundwater standards, see: (a) [ss. ATCP 31.07 and 31.08, Wis. Adm. Code](#), governing DATCP's site-specific remedial responses to groundwater contamination of pesticides; (b) [s. Trans 277.08, Wis. Adm. Code](#), governing DOT's responses to highway salt groundwater contamination; and (c) [s. SPS 383.29, Wis. Adm. Code](#), governing DSPS's range of responses to groundwater contamination attributable to a POWTS.

will achieve compliance with the enforcement standard.¹³ [s. 160.25 (1), Stats.] In contrast, when a PAL is violated, DNR is not empowered to prohibit the substance, activity, or practice, unless no other remedial action would prevent a violation of an enforcement standard.¹⁴ [s. 160.23 (4), Stats.]

DNR rules specify the range of general remedial responses that the department may take, or require the owner or operator of a facility, practice, or activity to take, if an enforcement standard or PAL is violated. Examples of remedial responses available for PAL and enforcement standard violations include revisions to operational procedures at a facility, requirements relating to waste treatment, and changes to facility design, location, and management practices. [ss. NR 140.24 (4) and 140.26 (2), Wis. Adm. Code.] Responses for PAL violations can also include less stringent requirements, such as further investigation of contamination and increased monitoring. [s. NR 140.24 (4), Wis. Adm. Code.] DNR rules also establish criteria under which the department may determine that no response for a PAL violation is necessary. [s. NR 140.24 (5), Wis. Adm. Code.]

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¹³ DNR is not required to impose a prohibition or close a facility if the enforcement standard was violated in part because of high background concentrations of the substance and if additional concentration does not present a public welfare concern. [s. 160.25 (3), Stats.]

¹⁴ If DNR issues a prohibition, its boundary and duration must be reasonably related in time and scope to maintaining compliance with the PAL or enforcement standards. [s. 160.23 (4), Stats.]