DRAFT 4/7/2026

The statement of scope for this rule, SS 008-25, was approved by the Governor on February 4, 2025, published in Register No. 831A1 on March 3, 2025, and approved by the Natural Resources Board on April 9, 2025. This rule was approved by the Governor on [insert date].

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD AMENDING RULES

The Wisconsin Natural Resources Board proposes an order to **amend** NR 140.10 Table 1 and 140 Appendix I to Table 1 relating to setting numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater based on the 2025 DHS recommendations.

DG-02-25
Numeric Groundwater Standards for PFAS

Analysis Prepared by the Department of Natural Resources

1. Statute Interpreted:

Chapter 160, Stats., including ss. 160.07, 160.11, 160.13, 160.15, 160.19, and 281.15, 281.19(1), and 299.11, Stats., authorize the department to modify and create rules relating to the development of numeric groundwater quality standards.

2. Statutory Authority:

Sections 160.07, 160.11, 160.13, 160.15, 160.19, 281.15, 281.19(1), and 299.11, Stats.

3. Explanation of Agency Authority:

Chapter 160, Stats., establishes an administrative process for developing numeric state groundwater quality standards to be used as criteria for the protection of public health and welfare by all state groundwater regulatory programs. Chapter 160, Stats., directs the department to use this administrative process to establish numeric groundwater quality standards for substances of public health or welfare concern, found in, or having a reasonable probability of being detected in, the groundwater resources of the state.

The department is required to engage in rulemaking for all substances of public health concern for which the Wisconsin Department of Health Services (DHS) develops Enforcement Standard recommendations (s. 160.07(5), Stats.). The DHS develops recommendations for Enforcement Standards for substances of public health concern in accordance with the provisions of s. 160.07(4), Stats. The department, with the assistance of DHS, is required to prepare a document describing methodologies and conclusions for establishing each numeric Enforcement Standard, as described in s. 160.11, Stats. If neither a federal number nor a state drinking water standard exists for a substance, the DHS develops a recommended Enforcement Standard using the methodology specified under s. 160.13(2), Stats. The department is also required to establish by rule Preventive Action Limits for all substances with Enforcement Standards under s. 160.15(1), Stats, following methodologies described in s. 160.15, Stats. Section 160.19, Stats., requires regulatory programs and agencies to review and update their regulations when new groundwater quality standards are adopted to ensure that regulated

activities and facilities are designed and managed to prevent exceedances of such standards. Section 281.15, Stats., states that the department shall promulgate rules setting standards of water quality, applicable to the waters of the state, that protect the public interest, including the protection of public health and welfare, and the present and prospective future use of such waters for public and private water systems. Section 281.19(1), Stats., grants the department the authority to issue general orders and adopt rules applicable throughout the state for the construction, installation, use, and operation of practicable and available systems, methods and means for preventing and abating pollution of the waters of the state.

In accordance with ch. 160, Stats., the reliability of sampling data is to be considered when determining the range of responses that a regulatory agency may take, or require, to address attainment or exceedance of a state groundwater quality standard at an applicable "point of standards application."

Section 299.11, Stats., authorizes the department, in conjunction with the Department of Agriculture, Trade and Consumer Protection (DATCP), to establish uniform minimum criteria for laboratories certified to conduct water analysis testing, accepted methodologies to be followed in conducting tests and sampling protocols, and documentation procedures to be followed when collecting water samples for testing.

4. Related Statutes or Rules:

Chapter NR 809, Wis. Adm. Code, establishes minimum state drinking water standards for the protection of public health, safety and welfare. This administrative code contains numeric water quality protection standards applicable to public water supply systems in Wisconsin.

Wisconsin state drinking water standards, applicable to public drinking water systems, have been established for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Wisconsin state drinking water Maximum Contaminant Levels (MCLs) have been established, in ch. NR 809, Wis. Adm. Code, for PFOA and for PFOS, individually and combined, at 70 nanograms per liter or parts per trillion (ng/L or ppt). The department is currently undertaking a separate rulemaking process (CR 25-068/DG-01-24) to amend ch. NR 809, Wis. Adm. Code, to establish state drinking water standards for PFOA, PFOS, perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorobutanesulfonic acid (PFBS) and hexafluoropropylene oxide dimer acid (HFPO-DA/"GenX"), following the establishment of federal MCLs for these substances.

5. Plain Language Analysis:

PFAS have been widely used in industrial applications and consumer products worldwide since the 1950s. Scientific studies have linked PFAS exposure to a range of adverse health effects, including cancer, liver damage, immune system suppression, and developmental disorders. People can be exposed to PFAS through several pathways, including ingestion of contaminated groundwater.

Most Wisconsin residents rely on groundwater as their primary source of drinking water. In 2022, the department collected and analyzed water samples from 450 private potable wells across the state to assess PFAS contamination in groundwater. The study found that 71 percent of the sampled wells contained at least one detectable PFAS, indicating that PFAS contamination in groundwater is widespread in Wisconsin.

Under Chapter 160 of the Wisconsin Statutes, when a chemical is detected in groundwater, or has the potential to enter groundwater, and poses a risk to human health, the department is authorized to establish numerical groundwater quality standards to minimize the concentration of that substance. Groundwater quality standards consist of an Enforcement Standard, and a Preventive Action Limit. While an Enforcement Standard triggers a regulatory action, a Preventive Action Limit is usually about 10 to 20 percent of an Enforcement Standard and represents an early warning threshold. The statute requires the department to update Chapter NR 140, Wis. Adm. Code, to set groundwater standards using health-based recommendations issued by the Wisconsin Department of Health Services (DHS).

In April of 2024, the U.S. Environmental Protection Agency (EPA) finalized federal drinking water standards for six PFAS: PFOA, PFOS, PFNA, PFHxS, PFBS, and HFPO-DA (GenX chemicals).

In May of 2024, the department sent a letter to DHS formally requesting that DHS recommend state groundwater quality standards for the six PFAS. After conducting a review of the six compounds, DHS developed appropriate recommendations for groundwater quality standards based on statutory requirements. The recommended Enforcement Standards are aligned with the EPA values issued for PFOA, PFOS, PFNA, PFHxS, PFBS, and HFPO-DA individually. Details on the health impacts of these substances are provided in the DHS scientific support documents, available at https://www.dhs.wisconsin.gov/publications/p03694.pdf.

At the end of January 2025, the department initiated rulemaking to update groundwater quality standards consistent with the DHS recommendations. The proposed rulemaking would amend Chapter NR 140, Wis. Adm. Code, and add new groundwater quality standards for the six PFAS identified above. These standards will apply to regulated entities that must comply with Chapter NR 140, Wis. Adm. Code, particularly those activities and facilities that may potentially contribute to groundwater contamination, such as landfills and wastewater treatment facilities.

Establishing new groundwater quality standards PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA will help protect human health by limiting PFAS concentrations in groundwater. The standards establish clear numerical thresholds that determine when regulatory action is required, providing consistency and certainty for both regulatory authorities and the entities they regulate. While some efforts to address PFAS contamination are occurring independently of this rulemaking, without the establishment of these groundwater standards there would be no enforceable regulatory thresholds to trigger action. The absence of clear standards would make it more difficult for regulatory programs to require or prioritize measures to prevent, reduce, or control PFAS releases from contamination sources. The rule also establishes standards for bottled water providers and allows private well owners to seek assistance through the Well Compensation Program when PFAS levels exceed groundwater quality standards. By reducing PFAS contamination in groundwater, the rule will help lower the risk of adverse health effects associated with exposure to these substances, particularly for individuals who rely on groundwater for drinking water.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

The EPA establishes health-based drinking water MCLs, cancer risk levels, and health advisories (HAs) that are used to assess the quality of groundwater that is used as a drinking water source. Federal drinking water MCLs are established based on scientific risk assessments and, in some cases, economic and technological considerations. Cancer risk

levels are established as the concentration of a chemical in drinking water that corresponds to a specific excess estimated lifetime cancer risk. Federal lifetime health advisories (LHAs) are developed based on an established health risk acceptable daily intake (ADI) level or reference dose (RfD). An ADI or RfD is the daily oral exposure to a chemical that is likely to be without an appreciable risk over a lifetime.

In April of 2024, EPA established National Primary Drinking Water Regulation (NPDWR) public drinking water system MCLs for six PFAS: PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Five of the six PFAS were assigned individual MCLs: 4 ng/L for PFOA, 4 ng/L for PFOS, and 10 ng/L each for PFHxS, PFNA, and HFPODA. PFBS is addressed using a Hazard Index (HI) approach that also includes PFHxS, PFNA, and HFPODA. The HI MCL is calculated by dividing the measured concentration of each of these four PFAS in drinking water by its respective Health-Based Water Concentration (HBWC), and then summing the results together. If the total HI exceeds 1.0 (unitless), the mixture MCL is considered exceeded. The HBWCs are 10 ng/L for PFHxS, PFNA, and HFPODA, and 2,000 ng/L for PFBS.

The proposed amendments to ch. NR 140, Wis. Adm. Code, would add new state numeric groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA. The proposed Enforcement Standards are consistent with the individual federal MCLs for PFOA, PFOS, PFHxS, PFNA, and HFPO-DA, and with the HBWC for PFBS. Table 1 lists the proposed Enforcement Standards and compares them to the EPA federal numbers (MCLs or HBWCs).

Table 1. Proposed enforcement standards and comparison to EPA federal numbers

PFAS compound	Proposed Enforcement Standards (in ng/L or ppt)	EPA federal numbers (in ng/L or ppt)
PFOA	4	4 (MCL)
PFOS	4	4 (MCL)
PFHxS	10	10 (MCL)
PFNA	10	10 (MCL)
PFBS	2,000	2,000 (HBWC)
HFPO-DA	10	10 (MCL)

7. If Held, Summary of Comments Received During Preliminary Comment Period and at Public Hearing on the Statement of Scope:

The department held an online preliminary public hearing on the statement of scope on March 6, 2025. Thirty-nine members of the public attended the hearing. The public comment period ended on March 6, 2025. The department received 11 written comments on the proposed statement of scope from individuals and organizations. Ten supplied testimonies in support. One joint statement from the Wisconsin Paper Council, Wisconsin Manufacturers & Commerce, and Midwest Food Products Association made several suggestions, including conducting additional outreach with the regulated community and incorporating economic impact costs into the scope statement.

8. Comparison with Similar Rules in Adjacent States:

Minnesota, Michigan, Illinois, and Iowa use groundwater protection values/levels/standards in their regulation of practices and activities that might impact the quality of groundwater.

Minnesota, Michigan, and Illinois have promulgated individual state groundwater protection standards. Iowa uses established federal standards (federal drinking water MCLs, LHAs and established cancer risk levels) as its state groundwater protection standards.

Groundwater protection quality values/levels/standards are usually developed based on health risk assessments. States may use state-specific health risk assessments, factors, and methodologies in calculating and developing their groundwater protection standards. This use of different health risk assessment factors and methodologies has led to the establishment of different state groundwater protection values/levels/standards for the same substance. The proposed Enforcement Standards in Wisconsin for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA are the same as those in Illinois, and in Iowa, with the exception of PFBS in Iowa, which is addressed through a hazard index approach for mixtures of PFHxS, PFNA, PFBS, and HFPO-DA. Compared to Michigan, the proposed Enforcement Standards in Wisconsin are more stringent for PFOA, PFOS, PFHxS, and HFPO-DA, and less stringent for PFNA and PFBS. Compared to Minnesota, the proposed Enforcement Standards in Wisconsin are more stringent for PFHxS, and less stringent for PFOA, PFOS and PFBS. Table 2 presents the thresholds for each of the six PFAS in Wisconsin and adjacent states, followed by state-specific details.

Table 2. Proposed enforcement standards and comparison to thresholds in adjacent states.

PFAS compound	Wisconsin proposed Enforcement Standards (in ng/L or ppt)	Minnesota thresholds (in ng/L or ppt)	Michigan thresholds (in ng/L or ppt)	Illinois thresholds (in ng/L or ppt)	Iowa thresholds (in ng/L or ppt)
PFOA	4	0.24	8	4	4
PFOS	4	2.3	16	4	4
PFHxS	10	47	51	10	10
PFNA	10	NA	6	10	10
PFBS	2,000	100	420	2,000	Hazard Index MCL standard of 1 (unitless) for mixtures of PFHxS, PFNA, PFBS and HFPO-DA.
HFPO-DA	10	NA	370	10	10

Minnesota: The State of Minnesota has established state groundwater protection "Health Risk Limits" (HRLs) under Minnesota Statutes Section 103H.201. In 2025, the state of Minnesota established an HRL for PFOA at 0.24 ng/L and an HRL for PFOS at 2.3 ng/L. In 2023, Minnesota established an HRL for PFHxS at 47 ng/L and an HRL for PFBS at 100 ng/L.

Michigan: The State of Michigan has established state groundwater protection quality standards. Michigan "Drinking Water Criteria and Risk Based Screening Levels (RBSLs) are Michigan state groundwater protection standards authorized in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA). As established under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and as amended [MCL 324.20120a(5)], Michigan state drinking water standards become the PFOA and PFOS generic cleanup criteria for groundwater used as

drinking water. Michigan has established RBSLs for PFOA at 8 ng/L, for PFOS at 16 ng/L, for PFHxS at 51 ng/L, for PFNA at 6 ng/L, for PFBS at 420 ng/L and for HFPO-DA at 370 ng/L.

Illinois: Illinois groundwater quality standards are enforceable standards used for the beneficial use and protection of groundwater in the state. 35 Illinois Administrative Code (IAC) Part 690 establishes regulations for groundwater quality, including standards for the quality of groundwater. In April 2025, updates to 35 IAC Part 690 Groundwater Quality were published in the Illinois Register that included state groundwater quality standards for six PFAS. Those Part 690 PFAS groundwater standards for “Class I Potable Resource” groundwater are: PFOA = 4 ng/L, PFOS = 4 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L, for PFBS = 2,000 ng/L and for HFPO-DA = 10 ng/L.

Iowa: The State of Iowa has not established specific state groundwater protection standards. In accordance with Iowa Environmental Protection Regulations 567 IAC Chapter 133, Iowa uses established federal EPA lifetime health advisory levels, "negligible risk levels" (NRLs) for carcinogens (estimate of one additional cancer case per million people over a lifetime of exposure) and federal drinking water MCLs as "Action Levels" in their regulation of practices and activities that may adversely impact groundwater quality. Current federal MCLs for PFAS are: PFOA = 4.0 ng/L, PFOS = 4.0 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L and HFPO-DA = 10 ng/L. A Hazard Index MCL standard of 1 (unitless) has been established to regulate mixtures of one or more of PFHxS, PFNA, PFBS and HFPO-DA.

9. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

In accordance with s. 160.07, Stats., the department is required, for substances of public health concern, to propose rules establishing recommendations from DHS as state groundwater quality Enforcement Standards. In accordance with s. 160.15, Stats., the department is required to establish by rule a Preventive Action Limit for each substance for which an Enforcement Standard is established.

To develop proposed groundwater standards, DHS follows the process described in ss. 160.07 to 160.17, Stats. This includes a review of federal numbers, state drinking water standards, acceptable daily intake values from the EPA, research studies, and peer-reviewed scientific research. DHS then develops a scientific support document describing the findings of their review and the basis for the recommended proposed groundwater standards. At the conclusion of its review, DHS provides the department its recommendations for groundwater quality standards for the protection of public health.

DHS recommended new groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA in a document titled *Scientific Support Documents for Public Health Recommended Groundwater Standards - Cycle 12, February 2025*. This document is available at the DHS website: https://www.dhs.wisconsin.gov/publications/p03694.pdf.

10. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

The department does not anticipate economic impacts to small businesses. The proposed rule does not impose any compliance or reporting requirements on small businesses, nor are any design or operational standards contained in the rule.

Entities that may be affected by the rule include facilities that are regulated under a variety of department programs, and may include facilities such as landfills and wastewater treatment facilities that might discharge liquid waste to groundwater.

The numeric groundwater standards adopted in ch. NR 140, Wis. Adm. Code, are not self-implementing. They are implemented through other statutory provisions and administrative rules that use the groundwater standards in regulatory actions, requirements, responses, and enforcement mechanisms. State regulatory agencies, in exercising their statutory authority and duties that are established elsewhere in statutes and administrative rules, are required to establish regulations that ensure that regulated facilities and activities will not cause state groundwater quality standards to be exceeded.

After the department establishes groundwater standards in ch. NR 140, Wis. Adm. Code, each state regulatory agency is required to review its administrative rules and amend or create rules necessary to ensure that the activities, practices, and facilities regulated by the regulatory agency comply with the new standards (s. 160.19, Stats.). The implementation and compliance costs of this rule could be affected – either increased or decreased – by changes in the regulatory authority or requirements of the programs that use the standards.

In recent years, several actions related to PFAS source reduction have occurred. On a voluntary basis, industry has begun transitioning to alternatives for certain PFAS, and PFOA and PFOS are no longer manufactured in the United States.

In addition, certain activities – such as the cleanup of PFAS-contaminated sites and limitations or conditions on the land application of biosolids and sludge containing PFAS – are already being implemented under existing departmental authority and would occur regardless of the establishment of PFAS groundwater standards. Therefore, a cost associated with these activities is not included in the cost estimate of this rulemaking.

The department estimates that costs will be incurred by both industrial and publicly owned wastewater treatment facilities that discharge treated liquid waste to groundwater through a land treatment or disposal system, such as an absorption pond or seepage cell. In total, six municipal facilities and four industrial facilities are anticipated to be impacted after the groundwater standards are established. These costs are associated with PFAS monitoring of discharged liquid waste, PFAS monitoring of groundwater, source reduction measures, and treatment of liquid waste prior to discharge to groundwater. In addition, the department estimates that 138 landfills will be required to conduct PFAS groundwater monitoring in the first year of the rule implementation, with 14 sites requiring additional monitoring in the second year. The department anticipates that the highest two-year cost will be $9,893,388 as a result of the establishment of groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA.

2025 Wisconsin Act 200 provides funding for several activities aimed at addressing PFAS contamination in the state. Some of these funded activities may overlap with actions evaluated in the economic impact analysis for this rule. Because the specific allocation and implementation details of these funds have not yet been finalized, the potential cost reductions associated with this funding are not reflected in the estimates presented in this economic impact analysis. As a result, the cost estimates should be considered conservative and may overestimate the potential economic impact of this rule.

The department will review public comments received on the draft EIA and work to finalize the EIA for submission with the proposed rule.

11. Effect on Small Business (initial regulatory flexibility analysis):

The department does not anticipate economic impacts to small businesses. The proposed rule does not impose any compliance or reporting requirements on small businesses, nor are any design or operational standards contained in the rule.

12. Agency Contact Person:

Carla Romano, Ground Water Section Manager
Phone: 608-910-3458
E-mail: carla.romano1@wisconsin.gov

13. Place where comments are to be submitted and deadline for submission:

Written comments may be submitted at the public hearings, by regular mail, or email to:

Carla Romano, DG/5
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921
Phone: 608-910-3458
E-mail: DNR140GroundwaterQualityStandards@wisconsin.gov

Comments may be submitted to the department contact person listed above or to DNRAdministrativeRulesComments@wisconsin.gov until the deadline given in the upcoming notice of public hearing. The notice of public hearing and deadline for submitting comments will be published in the Wisconsin Administrative Register and on the department's Hearings and Meetings Calendar.

- Access the Wisconsin Administrative Register (https://docs.legis.wisconsin.gov/code/register).
- Access the department's Hearings and Meetings Calendar (https://dnr.wisconsin.gov/calendar).
- Submit comments through the Wisconsin Administrative Rules Website (https://docs.legis.wisconsin.gov/code/chr/active).

RULE TEXT

SECTION 1. NR 140.10 Table 1 is amended to read:

NR 140.10 Table 1

Table 1
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter − except as noted)	Preventive Action Limit (micrograms per liter − except as noted)
Acetochlor	7	0.7
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor − ESA + OXA)	230	46
Acetone	9 milligrams/liter (mg/1)	1.8 mg/1
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor − ESA)	20	4
Aldicarb	10	2
Aluminum	200	40
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Anthracene	3000	600
Antimony	6	1.2
Arsenic	10	1
Asbestos	7 million fibers per liter (MFL)	0.7 MFL
Atrazine, total chlorinated residues	3[2]	0.3[2]
Bacteria, *E. coli*	0	0
Barium	2 mg/l	0.4 mg/l
Bentazon	300	60
Benzene	5	0.5
Benzo(b)fluoranthene	0.2	0.02
Benzo(a)pyrene	0.2	0.02
Beryllium	4	0.4
Boron	1000	200
Bromodichloromethane	0.6	0.06
Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	40	4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
Chlorodifluoromethane	7 mg/l	0.7 mg/l
Chloroethane	400	80

Chloroform	6	0.6
Chlorpyrifos	2	0.4
Chloromethane	30	3
Chromium (total)	100	10
Chrysene	0.2	0.02
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free[3]	200	40
Dacthal	70	14
1,2−Dibromoethane (EDB)	0.05	0.005
Dibromochloromethane	60	6
1,2−Dibromo−3−chloropropane (DBCP)	0.2	0.02
Dibutyl phthalate	1000	100
Dicamba	300	60
1,2−Dichlorobenzene	600	60
1,3−Dichlorobenzene	600	120
1,4−Dichlorobenzene	75	15
Dichlorodifluoromethane	1000	200
1,1−Dichloroethane	850	85
1,2−Dichloroethane	5	0.5
1,1−Dichloroethylene	7	0.7
1,2−Dichloroethylene (cis)	70	7
1,2−Dichloroethylene (trans)	100	20
2,4−Dichlorophenoxyacetic Acid (2,4−D)	70	7
1,2−Dichloropropane	5	0.5
1,3−Dichloropropene (cis/trans)	0.4	0.04
Di (2−ethylhexyl) phthalate	6	0.6
Dimethenamid/Dimethenamid−P	50	5
Dimethoate	2	0.4
2,4−Dinitrotoluene	0.05	0.005
2,6−Dinitrotoluene	0.05	0.005
Dinitrotoluene, Total Residues[4]	0.05	0.005
Dinoseb	7	1.4
1,4−Dioxane	3	0.3
Dioxin (2, 3, 7, 8−TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
Ethyl ether	1000	100
Ethylene glycol	14 mg/l	2.8 mg/l
Fluoranthene	400	80
Fluorene	400	80
Fluoride	4 mg/l	0.8 mg/l
Fluorotrichloromethane	3490	698
Formaldehyde	1000	100
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02
Hexachlorobenzene	1	0.1

Hexafluoropropylene oxide dimer acid (HFPO-DA)	10 nanograms/liter (ng/l)	1 ng/l
N−Hexane	600	120
Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
Manganese	300	60
Mercury	2	0.2
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	4 mg/l	0.8 mg/l
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert−butyl ether (MTBE)	60	12
Metolachlor/s−Metolachlor	100	10
Metolachlor ethane sulfonic acid + oxanilicacid (Metolachlor − ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8
Monochlorobenzene	100	20
Naphthalene	100	10
Nickel	100	20
Nitrate (as N)	10 mg/l	2 mg/l
Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
Nitrite (as N)	1 mg/1	0.2 mg/l
N−Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.l
Perfluorobutanesulfonic acid (PFBS)	2000 ng/l	200 ng/l
Perfluorohexanesulfonic acid (PFHxS)	10 ng/l	1 ng/l
Perfluorononanoic acid (PFNA)	10 ng/l	1 ng/l
Perfluorooctanesulfonic acid (PFOS)	4 ng/l	0.4 ng/l
Perfluorooctanoic acid (PFOA)	4 ng/l	0.4 ng/l
Phenol	2 mg/l	0.4 mg/l
Picloram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	100	20
Propazine	10	2
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	4	0.4
Styrene	100	10
Tertiary Butyl Alcohol (TBA)	12	1.2
1,1,1,2−Tetrachloroethane	70	7
1,1,2,2−Tetrachloroethane	0.2	0.02
Tetrachloroethylene	5	0.5
Tetrahydrofuran	50	10

Thallium	2	0.4
Toluene	800	160
Toxaphene	3	0.3
1,2,4−Trichlorobenzene	70	14
1,1,1−Trichloroethane	200	40
1,1,2−Trichloroethane	5	0.5
Trichloroethylene (TCE)	5	0.5
2,4,5−Trichlorophenoxy−propionic acid(2,4,5−TP)	50	5
1,2,3−Trichloropropane	60	12
Trifluralin	7.5	0.75
Trimethylbenzenes (1,2,4− and 1,3,5− combined)	480	96
Vanadium	30	6
Vinyl chloride	0.2	0.02
Xylene[5]	2 mg/l	0.4 mg/l

[1] Appendix I contains Chemical Abstract Service (CAS) registry numbers, common synonyms and trade names for most substances listed in Table 1.

[2] Total chlorinated atrazine residues includes parent compound and the following metabolites of health concern: 2−chloro−4−amino−6−isopropylamino−s−triazine (formerly deethylatrazine), 2−chloro−4−amino−6−ethylamino−s−triazine (formerly deisopropylatrazine) and 2−chloro−4,6−diamino−s−triazine (formerly diaminoa-trazine).

[3] "Cyanide, free" refers to the simple cyanides (HCN, CN^-) and /or readily dissofoaciable metal−cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

[4] Dinitrotoluene, Total Residues includes the dinitrotoluene (DNT) isomers: 2,3−DNT, 2,4−DNT, 2,5−DNT, 2,6−DNT, 3,4−DNT and 3,5−DNT.

[5] Xylene includes meta−, ortho−, and para−xylene combined.

Note: Consistent with the Department of Health Services' recommendation for the NR 140 ammonia standard, the department will use total ammonia, which is the sum of ionized ammonia and un−ionized ammonia in groundwater, in applying groundwater ammonia standards.

Note: Acronyms in common use for oxanilic acid (for the pesticide metabolites acetochlor oxanilic acid and metolachlor oxanilic acid in Table 1 above) include both "OA" and "OXA".

SECTION 2. NR 140 Appendix I to Table 1 is amended to read:

NR 140 Appendix I to Table 1

CHAPTER NR 140
APPENDIX I TO TABLE 1
PUBLIC HEALTH GROUNDWATER QUALITY STANDARDS

Substance	**CAS RN[1]**	**Common synonyms/*Tradename*[2]**
Acetochlor	34256−82−1	*Cadence, Degree, Harness, Keystone, Over-time, Volley*
Acetochlor ethane sulfonic acid + oxanilic acid	187022−11−3 (ESA) 184992−44−4 (OXA)	Acetochlor − ESA + OXA

Acetone	67−64−1	*Propanone*
Alachlor	15972−60−8	*Lasso*
Alachlor ethane sulfonic acid	142363−53−9	Alachlor−ESA, Alachlor Ethane Sulfonate, MON 5775
Aldicarb	116−06−3	*Temik*
Aluminum	7429−90−5	
Ammonia	7664−41−7	
Anthracene	120−12−7	Para−naphthalene
Asbestos	1332−21−4	
Bentazon	25057−89−0	*Basagran*
Benzene	71−43−2	
Benzo(b)fluoranthene	205−99−2	B(b)F,3,4−Benzofluoranthene
Benzo(a)pyrene	50−32−8	BaP, B(a)P
Boron	7440−42−8	
Bromodichloromethane	75−27−4	Dichlorobromomethane, BDCM
Bromoform	75−25−2	Tribromomethane
Bromomethane	74−83−9	Methyl bromide
Butylate	2008−41−5	S−ethyl di−isobutylthiocarbamate, *Sutan+*
Carbaryl	63−25−2	*Sevin*
Carbofuran	1563−66−2	*Furadan*
Carbon disulfide	75−15−0	Carbon bisulfide
Carbon tetrachloride	56−23−5	Tetrachloromethane, Perchloroethane
Chloramben	133−90−4	
Chlordane	57−74−9	
Chlorodifluoromethane	75−45−6	HCFC−22, Freon 22
Chloroethane	75−00−3	Ethyl chloride, Monochloroethane
Chloroform	67−66−3	Trichloromethane
Chlorpyrifos	2921−88−2	*Dursban, Lorsban, Warhawk, Hatchet, Yuma, Whirlwind, Eraser*
Chloromethane	74−87−3	Methyl chloride
Chromium (total)	7440−47−3	
Chrysene	218−01−9	1,2−Benzphenanthrene
Cobalt	7440−48−4	
Cyanazine	21725−46−2	*Bladex* , 2−chloro−4−ethylamino−6−nitriloisopropylamino−s−triazine
Cyanide, free	57−12−5	
Dacthal	1861−32−1	DPCA, Chlorothal, *Dacthalor*, 1,4−benzene-dicarboxylic acid
Dibromochloromethane	124−48−1	Chlorodibromomethane, DBCM
1,2−Dibromo−3−chloropropane	96−12−8	DBCP, Dibromochloropropane
1,2−Dibromoethane	106−93−4	EDB, Ethylene dibromide, Dibromoethane
Dibutyl phthalate	84−74−2	DP, Di−*n*−butyl phthalate, *n*−Butyl phthalate
Dicamba	1918−00−9	*Banvel*

1,2−Dichlorobenzene	95−50−1	o−Dichlorobenzene, o−DCB
1,3−Dichlorobenzene	541−73−1	m−Dichlorobenzene, m−DCB
1,4−Dichlorobenzene	106−46−7	p−Dichlorobenzene, p−DCB
Dichlorodifluoromethane	75−71−8	*Freon 12*
1,1,−Dichloroethane	75−34−3	Ethylidine chloride
1,2−Dichloroethane	107−06−2	1,2−DCA, Ethylene dichloride
1,1−Dichloroethylene	75−35−4	1,1−DCE, 1,1−Dichloroethene, Vinylidene chloride
1,2−Dichloroethylene (cis)	156−59−2	cis−Dichloroethylene, 1,2−Dichloroethene (cis)
1,2−Dichloroethylene (trans)	156−60−5	trans−1,2−Dichloroethylene
2,4−Dichlorophenoxyacetic acid	94−75−7	2,4−D
1,2−Dichloropropane	78−87−5	Propylene dichloride
1,3−Dichloropropene (cis/trans)[3]	542−75−6	*Telone*, DCP, Dichloropropylene
Di(2−ethylhexyl) phthalate	117−81−7	DEHP, Bis(2−ethylhexyl) phthalate, 1,2−Benzenedicarboxylic acid, Bis (2−ethyl- hexyl)ester
Dimethenamid/Dimethinamid−P	87674−68−8 163515−14−8 (−P)	*Frontier, Outlook, Propel, Establish, Sortie, Tower*
Dimethoate	60−51−5	
2,4−Dinitrotoluene	121−14−2	2,4−DNT, 1−methyl−2,4−dinitrobenzene
2,6−Dinitrotoluene	606−20−2	2,6−DNT, 2−methyl−1,3−dinitrobenzene
Dinitrotoluene, Total Residues	25321−14−6	Dinitrotoluene, DNT
Dinoseb	88−85−7	2−(1−methylpropyl)−4,6−dinitrophenol
1,4−Dioxane	123−91−1	*p*−Dioxane
Dioxin	1746−01−6	2,3,7,8−TCDD,2,3,7,8−Tetrachlorodibenzo−p−dioxin
Endrin	72−20−8	
EPTC	759−94−4	*Eptam, Eradicane*
Ethylbenzene	100−41−4	Phenylethane, EB
Ethyl ether	60−29−7	Diethyl Ether
Ethylene glycol	107−21−1	
Fluoranthene	206−44−0	Benzo(jk)fluorene
Fluorene	86−73−7	2,3−Benzidine, Diphenylenemethane
Fluoride	7681−49−4	
Fluorotrichloromethane	75−69−4	*Freon11*, Trichlorofluoromethane
Formaldehyde	50−00−0	
Heptachlor	76−44−8	*Velsicol*
Heptachlor epoxide	1024−57−3	
Hexachlorobenzene	118−74−1	Perchlorobenzene, *Granox*
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	HFPO-DA, GenX

N−Hexane	110−54−3	Hexane, Skellysolve B
Hydrogen sulfide	7783−06−4	Dihydrogen sulfide
Lindane	58−89−9	
Manganese	7439−96−5	
Mercury	7439−97−6	
Methanol	67−56−1	Methyl alcohol, Wood alcohol
Methoxychlor	72−43−5	
Methylene chloride	75−09−2	Dichloromethane, Methylene dichloride
Methyl ethyl ketone	78−93−3	MEK, 2−Butanone
Methyl isobutyl ketone	108−10−1	MIBK, 4−Methyl−2−pentanone, Isopropyla-cetone, *Hexone*
Methyl tert−butyl ether	1634−04−4	MTBE, 2−Methoxy−2−methyl−propane, tert−Butyl methyl ether
Metolachlor/s−Metolachlor	51218−45−2 87392−12−9 (s−)	*Dual, Bicep, Milocep, Stalwart, Parallel, Prefix, Charger, Brawl, Cinch, Dual Mag-num, Boundary*
Metolachlor ethane sulfonic acid + oxanilic acid	171118−09−5 (ESA) 152019−73−3 (OXA)	Metolachlor − ESA + OXA
Metribuzin	21087−64−9	Sencor, Lexone
Molybdenum	7439−98−7	
Monochlorobenzene	108−90−7	Chlorobenzene
Naphthalene	91−20−3	
N−Nitrosodiphenylamine	86−30−6	NDPA
Pentachlorophenol	87−86−5	PCP, Pentachlorohydroxybenzene
Perchlorate	14797−73−0	Perchlorate and perchlorate salts, Perchlo-rate ion
Perfluorobutanesulfonic acid (PFBS)	375-73-5	PFBS
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFHxS
Perfluorononanoic acid (PFNA)	375-95-1	PFNA
Perfluorooctanoic acid (PFOA)	335-67-1	PFOA
Perfluorooctane sulfonate (PFOS)	1763−23−1	PFOS
Phenol	108−95−2	
Picloram	1918−02−1	*Tordon*, 4−amino−3,5,6−trichloropicolinic acid
Polychlorinated biphenyls[4]		PCBs
Prometon	1610−18−0	*Pramitol, Prometone*
Pyrene	129−00−0	Benzo(def)phenanthrene
Pyridine	110−86−1	Azabenzene
Simazine	122−34−9	*Princep,* 2−chloro−4,6−diethylamino−s−tri- azine
Styrene	100−42−5	Ethenylbenzene, Vinylbenzene

Tertiary Butyl Alcohol	75−65−0	TBA
1,1,1,2−Tetrachlorethane	630−20−6	1,1,1,2−TCA, 1,1,1,2−PCA
1,1,2,2,−Tetrachloroethane	79−34−5	1,1,2,2−TCA, 1,1,2,2−PCA
Tetrachloroethylene	127−18−4	Perchloroethylene, PERC, Tetrachloroethene
Tetrahydrofuran	109−99−9	THF
Toluene	108−88−3	Methylbenzene
Toxaphene	8001−35−2	
1,2,4−Trichlorobenzene	120−82−1	
1,1,1−Trichloroethane	71−55−6	Methyl chloroform, 1,1,1−TCA
1,1,2−Trichloroethane	79−00−5	1,1,2−TCA, Vinyl trichloride
Trichloroethylene	79−01−6	TCE, Chloroethene
2,4,5−Trichlorophenoxy−propionic acid	93−72−1	2,4,5−TP, *Silvex*
1,2,3−Trichloropropane	96−18−4	1,2,3−TCP, Glycerol trichlorohyrin
Trifluralin	1582−09−8	*Treflan*
1,2,4−Trimethylbenzene	95−63−6	
1,3,5−Trimethylbenzene	108−67−8	
Vanadium	7440−62−2	
Vinyl chloride	75−01−4	VC, Chloroethene
Xylene[5]		

[1]Chemical Abstracts Service (CAS) registry numbers are unique numbers assigned to a chemical substance. The CAS registry numbers were published by the U.S. Environmental Protection Agency in 40 CFR Part 264, Appendix IV

[2]Common synonyms include those widely used in government regulations, scientific publications, commerce and the general public. A trade name, also known as the proprietary name, is the specific, registered name given by a manufacturer to a product. Trade names are listed in *italics.* Common synonyms and trade names should be cross-referenced with CAS registry number to ensure the correct substance is identified.

[3]This is a combined chemical substance which includes cis 1,3-Dichloropropene (CAS RN 10061-01-5) and trans 1,3-Dichloropropene (CAS RN 10061-02-6).

[4]Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals (same molecular composition, different molecular structure and formula), including constituents of Aroclor-1016 (CAS RN12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5).

[5]Xylene (CAS RN 1330-20-7) refers to a mixture of three isomers, meta-xylene (CAS RN 108-38-3), ortho-xylene (CAS RN 95-47-6), and para-xylene (CAS RN 106-42-3)

SECTION 3. EFFECTIVE DATE. This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 4. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].

Dated at Madison, Wisconsin _____

State of Wisconsin
Department of Natural Resources

BY _____
Steven Little, Deputy Secretary
For Karen Hyun, Ph.D., Secretary