

The statement of scope for this rule, SS 090-19, was approved by the Governor on August 27, 2019, published in Register No. 765A1 on September 3, 2019, and approved by the Natural Resources Board on January 22, 2020. This rule was approved by the Governor on 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, 140.20 Table 3 and Appendix I to Table 1 relating to setting numerical standards to minimize the concentration of polluting substances in groundwater and affecting small business.

DG-15-19

Analysis Prepared by the Department of Natural Resources

1. Statute Interpreted:

Sections 160.07(5), 160.15(1), 281.15, 281.19(1), and 299.11, Wis. Stats., authorize the department to modify and create rules relating to development of numerical groundwater quality standards.

2. Statutory Authority:

Sections 160.07(5), 160.15(1), 281.15, 281.19(1), and 299.11, Wis. Stats.

3. Explanation of Agency Authority:

Chapter 160, Wis. Stats., establishes an administrative process for developing numerical 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, Wis. 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), Wis. Stats. The department is also required to establish by rule preventative action limits for all substances with enforcement standards. S. 160.15(1).

Section 281.15, Wis. 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), Wis. 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, Wis. 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, Wis. 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, and to establish 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:

Section 281.12(1), Wis. Stats., grants the department general authority to carry out planning, management and regulatory programs necessary to protect, maintain and improve the quality and management of the waters of the state, ground and surface, public and private.

Chapter 280, Wis. Stats., authorizes the department to prescribe, publish and enforce minimum standards and rules to be pursued in the obtaining of pure drinking water for human consumption. 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 not yet been established for: hexavalent chromium, strontium, thiamethoxam, imidacloprid, clothianidin, isoxaflutole, isoxaflutole DKN degradate, isoxaflutole BA degradate, thien carbazole-methyl, Dacthal TPA and MTP degradates, glyphosate aminomethylphosphonic acid (AMPA) degradate, sulfentrazone, perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), 1,2,3-trichloropropane (1,2,3-TCP), 1,4-dioxane, boron, molybdenum or cobalt.

Wisconsin state drinking water maximum contaminant levels (MCLs) have been established, in ch. NR 809, Wis. Adm. Code, for: glyphosate, at 700 micrograms per liter (ug/L), *Escherichia coli* (*E. coli*) bacteria, at 0 bacteria present in a drinking water sample, trichloroethylene (TCE), at 5 ug/L, and tetrachloroethylene (PCE), at 5 ug/L. Secondary Standards, established for aesthetic quality, have been promulgated in ch. NR 809, Wis. Adm. Code, for aluminum at 50 to 200 ug/L. Note that concentration in ug/L is equivalent to parts per billion (ppb).

5. Plain Language Analysis:

Chapter 160, Wis. Stats., requires the department to develop numerical groundwater quality standards, consisting of enforcement standards and preventive action limits. Chapter NR 140, Wis. Adm. Code, establishes groundwater standards and creates a framework for implementation of the standards by the department. These proposed amendments to ch. NR 140, Wis. Adm. Code, would add new state groundwater quality standards for 17 substances and revise existing standards for another 8 substances. In accordance with 160.07, Wis. Stats., amendments to ch. NR 140, Wis. Adm. Code, groundwater quality standards for substances of public health concern are based on recommendations from DHS.

New public health related groundwater quality standards are proposed for: hexavalent chromium, strontium, thiamethoxam, imidacloprid, clothianidin, isoxaflutole, isoxaflutole DKN degradate, isoxaflutole BA degradate, thien carbazole-methyl, Dacthal TPA and MTP degradates, glyphosate, glyphosate aminomethylphosphonic acid (AMPA) degradate, sulfentrazone, *Escherichia coli* (*E. coli*) bacteria, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

Revised public health related groundwater quality standards are proposed for: trichloroethylene (TCE), tetrachloroethylene (PCE), 1,2,3-trichloropropane (1,2,3-TCP), 1,4-dioxane, aluminum, boron, molybdenum and cobalt.

Minor revisions, to clarify rule language and update rule reference information, are also proposed to ch. NR 140. These revisions include:

- Revising order of Antimony and Anthracene in s. NR 140.10, Table 1 to correct their alphabetical order in the table.
- Removing, in s. NR 140.20, Table 3, the indicator parameter for ammonia nitrogen. Health standards were established for ammonia (as N), in s. NR 140.10, Table 1, as part of the "Cycle 9"

revisions to ch. NR 140.

- Making needed additions and revisions to ch. NR 140 Appendix I to Table 1 substance names, Chemical Abstracts Service (CAS) registry numbers, and common synonyms.

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

The U.S. Environmental Protection Agency (EPA) establishes health-based drinking water maximum contaminant levels (MCLs), cancer risk levels and health advisories (HAs), that are used to assess the quality of groundwater drinking water supplies. 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.

The proposed amendments to ch. NR 140, Wis. Adm. Code, would add new or revised state numeric groundwater quality standards for: hexavalent chromium, strontium, thiamethoxam, imidacloprid, clothianidin, isoxaflutole, isoxaflutole DKN degradate, isoxaflutole BA degradate, thiencarbazone-methyl, Dacthal TPA and MTP degradates, glyphosate, glyphosate aminomethylphosphonic acid (AMPA) degradate, sulfentrazone, *Escherichia coli* (*E. coli*) bacteria, perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), trichloroethylene (TCE), tetrachloroethylene (PCE), 1,2,3-trichloropropane (1,2,3-TCP), aluminum, boron, molybdenum, cobalt and 1,4-dioxane .

Federal drinking water MCLs have been established for: glyphosate (700 ug/L), *Escherichia coli* (*E. coli*) bacteria (0 bacteria present), trichloroethylene (TCE) (5 ug/L) and tetrachloroethylene (PCE) (5 ug/L). EPA cancer slope factors have been established that can be used to determine 1 in 1,000,000 drinking water cancer risk levels. EPA cancer slope factors have been established for: hexavalent chromium [EPA OPP = 0.791 (mg/kg-day)⁻¹, EPA IRIS draft = 0.5 (mg/kg-day)⁻¹], isoxaflutole [0.0114 (mg/kg-day)⁻¹], 1,2,3-trichloropropane (1,2,3-TCP) [30 (mg/kg-d)⁻¹] and 1,4-dioxane [0.01 (mg/kg-d)⁻¹]. EPA LHAs have been established for: strontium (4,000 ug/L), the sum of Dacthal and its degradates (MTP and TPA) (70 ug/L), perfluorooctanoic acid (PFOA) (70 ng/L), perfluorooctane sulfonate (PFOS) (70 ng/L), boron (6,000 ug/L), molybdenum (40 ug/L) and 1,4-dioxane (200 ug/L).

RfDs have been established by EPA for: hexavalent chromium (0.003 mg/kg/day), thiamethoxam (0.012 mg/kg/day), imidacloprid (0.057 mg/kg/day), clothianidin (0.098 mg/kg/day), isoxaflutole (0.02 mg/kg/day), thiencarbazone-methyl (1.17 mg/kg/day), sulfentrazone (0.14 mg/kg/day), 1,2,3-trichloropropane (1,2,3-TCP) (0.004 mg/kg/day) and 1,4-dioxane (0.03 mg/kg/day).

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

A preliminary public hearing on Statement of Scope SS 090-19, related to revisions to ch. NR 140, was held on Nov. 12, 2019. Comments on the proposed scope were accepted through Nov. 19, 2019. A significant number of comments were received in support of the proposed scope for ch. NR 140 rulemaking. Comments were also received expressing concerns that the proposed scope did not list the specific substances that would be included in the proposed ch. NR 140 rulemaking effort and was therefore too broad. Those comments suggested that the list of the specific substances for which DHS provided groundwater standard recommendations should be added to the rulemaking scope.

Comments received in support of the proposed scope statement for ch. NR 140 rulemaking primarily focused on potential state groundwater quality standards for per- and polyfluoroalkyl substances (PFAS). Comments noted that there are health effects associated with exposure to PFAS compounds and that rules

and standards were needed to protect Wisconsin water resources and drinking water supplies. Comments suggested that established groundwater standards for PFAS would provide regulatory certainty to responsible parties for cleanup and remediation at contamination sites. Comments were also received suggesting that, as PFAS are often detected in the environment as a complex mixture of different PFAS compounds, they should be regulated as a "class," or group of chemicals with a similar chemical composition and mechanism of toxicity.

The department provided the DHS with a list of substances, designated the "Cycle 10" list, and requested that DHS review toxicologic information on these substances and, if appropriate, provide recommendations for health-based groundwater quality standards for the substances. Comments on the scope pointed out that the specific substances on the "Cycle 10" list, that DHS provided groundwater standard recommendations for, including two PFAS compounds, were not listed in the scope statement. Comments suggested that this lack of specificity and detail made the scope too broad and potentially noncompliant with state law, and that therefore, the scope should be rejected by the Natural Resources Board and sent back to the department to have the list of the specific substances, for which DHS provided recommendations, added to it. Comments were also received related to the specific scientific studies and methods used by DHS to develop their health-based groundwater standard recommendations.

8. Comparison with Similar Rules in Adjacent States:

The states adjacent to Wisconsin, 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 are often required to follow state-specific health risk assessment methodology when establishing groundwater protection quality standards. States may use state-specific health risk assessments, factors and methodology 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. For example, the health-based groundwater protection level for strontium used by the states surrounding Wisconsin varies by state. The level established in Minnesota is 3,000 micrograms per liter (ug/L), the level established in Michigan is 4,600 ug/L, Illinois has not established a strontium groundwater protection level, and Iowa uses the federal lifetime health advisory level of 4,000 ug/L as its strontium groundwater protection level.

The state of Minnesota has established state groundwater protection "Health Risk Limits" (HRLs) under Minnesota Statutes Section 103H.201. The state of Minnesota has established HRLs for: hexavalent chromium (100 ug/L), thiamethoxam (200 ug/L), clothianidin (200 ug/L), PFOA (35 nanograms per liter or ng/L), TCE (0.4 ug/L), PCE (5 ug/L), 1,2,3-TCP (7 ug/L) and 1,4-dioxane (100 ug/L). The Minnesota Department of Health has also calculated "Health Based Values" (HBVs) for some groundwater contaminants. Minnesota HBVs are not standards that have been promulgated by rule but are calculated concentrations that may be used as advisory levels by Minnesota state groundwater and environmental protection programs. The state of Minnesota has established HBVs for: imidacloprid (3 ug/L), glyphosate (500 ug/L), glyphosate AMPA (1,000 ug/L) degradate and PFOS (20 ng/L). The Minnesota Department of Health also issues Risk Assessment Advice (RAA) levels for some groundwater contaminants. Minnesota Department of Health RAAs are advisory concentrations developed to assist Minnesota agencies in evaluating potential health risks to humans from exposures to a chemical. Generally, RAAs contain greater uncertainty than HRLs and HBVs because the information available to develop them is

more limited. The state of Minnesota has established RAAs for: strontium (3,000 ug/L) and boron (500 ug/L).

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). The State of Michigan has established a Drinking Water Criteria/RBSL for: hexavalent chromium (100 ug/L), strontium (4,600 ug/L), glyphosate (700 ug/L), PFOA + PFOS (70 ng/L), TCE (5 ug/L), PCE (5 ug/L), 1,2,3-TCP (42 ug/L) and 1,4-dioxane (7.2 ug/L).

The state of Illinois has established state groundwater quality standards for "potable resource groundwater." Illinois Groundwater Quality Standards are state groundwater protection standards promulgated in 35 Ill. Adm. Code 620, environmental protection regulations. Illinois state "Groundwater Quality Standards for Class I: Potable Resource Groundwater" have been established for: TCE (5 ug/L), PCE (5 ug/L), boron (2,000 ug/L) and 1,4-dioxane (7.7 ug/L).

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, the estimate of one additional cancer case per million people over a lifetime of exposure, and federal drinking water maximum contaminant levels (MCLs) as "Action Levels" in their regulation of practices and activities that may adversely impact groundwater quality. Federal lifetime health advisory levels have been established for: strontium (4,000 ug/L), the sum of Dacthal and its degradates (MTP and TPA) (70 ug/L), perfluorooctanoic acid (PFOA) (70 ng/L), perfluorooctane sulfonate (PFOS) (70 ng/L), boron (6,000 ug/L), molybdenum (40 ug/L) and 1,4-dioxane (200 ug/L). EPA cancer slope factors have been established that can be used to determine NRLs for carcinogens. EPA cancer slope factors have been established for: hexavalent chromium [EPA OPP = 0.791 (mg/kg-day)-1, EPA IRIS draft = 0.5 (mg/kg-day)-1], isoxaflutole [0.0114 (mg/kg-day)-1], 1,2,3-trichloropropane (1,2,3-TCP) [30 (mg/kg-d)-1] and 1,4-dioxane [0.01 (mg/kg-d)-1]. Federal drinking water MCLs have been established for: glyphosate (700 ug/L), *Escherichia coli* (*E. coli*) bacteria (0 bacteria present), trichloroethylene (TCE) (5 ug/L) and tetrachloroethylene (PCE) (5 ug/L).

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, Wis. 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, Wis. Stats., the department is required to establish by rule a preventive action limit for each substance for which an enforcement standard is established.

The DHS has provided the department, in a document titled, Recommended Public Health Groundwater Quality Standards, Scientific Support Documents for "Cycle 10" Substances, June 2019, its recommendations for new state public health related groundwater quality standards for 17 substances: hexavalent chromium, strontium, thiamethoxam, imidacloprid, clothianidin, isoxaflutole, isoxaflutole DKN degradate, isoxaflutole BA degradate, thiencazabone-methyl, Dacthal TPA and MTP degradates, glyphosate, glyphosate aminomethylphosphonic acid (AMPA) degradate, sulfentrazone, *Escherichia coli* (*E. coli*) bacteria, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

DHS has also provided recommendations for revisions to existing public health related state groundwater quality standards for 8 additional substances: trichloroethylene (TCE), tetrachloroethylene (PCE), 1,2,3-trichloropropane (1,2,3-TCP), 1,4-dioxane, aluminum, boron, molybdenum and cobalt.

The department is proposing rules establishing the DHS enforcement standard recommendations as ch. NR 140, Wis. Adm. Code, state groundwater quality enforcement standards. The department is also proposing rules establishing ch. NR 140, Wis. Adm. Code, state groundwater quality preventive action limits in accordance with s. 160.15(1), Wis. Stats.

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

In its determination of the effect of this proposed rule on small businesses, the department used analysis and supporting documentation that included; information and analysis from the DNR Remediation and Redevelopment Program, information and analysis from the DNR Water Quality Wastewater Program and information and analysis from DATCP.

Analysis and supporting documents included information contained in the DNR Bureau for Remediation and Redevelopment Tracking System (BRRTS), data and information from the DNR Wisconsin Pollutant Discharge Elimination System (WPDES) - System for Wastewater Applications, Monitoring & Permits (SWAMP), DATCP Bureau of Agrichemical Management (ACM) AMC Annual Report 2019 (dated Oct. 6, 2020), DATCP Neonicotinoid Pesticides In Wisconsin Groundwater and Surface Water report (dated July 2019), DATCP Targeted Sampling Summary Report, 2017 (dated Nov. 2017), DATCP Agricultural Chemicals in Wisconsin Groundwater April 2017 report, and data and information from the DATCP Pesticide Database.

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

It is not expected that implementation of this rule will have a significant economic impact on small businesses. Ch. NR 140, Wis. Adm. Code, currently contains groundwater standards for substances of public health concern, substances of public welfare concern, and indicator parameters. Proposed revisions to ch. NR 140 to add new and revised state groundwater quality standards would apply to all regulated facilities, practices and activities that may impact groundwater quality in Wisconsin.

The enforcement of state groundwater quality standards is done by state regulatory agencies through their groundwater protection programs. State regulatory agencies, in exercising their statutory powers and duties, establish groundwater protection regulations that assure that regulated facilities and activities will not cause state groundwater quality standards to be exceeded. A state regulatory agency may establish specific design and management criteria to ensure that regulated facilities and activities will not cause the concentration of a substance in groundwater, affected by the facilities or activities, to exceed state groundwater quality enforcement standards or preventive action limits at applicable "point of standards application" locations.

Regulated facilities, practices and activities that are sources of the substances included in this proposed rule are likely sources of substances for which other groundwater standards already exist. Consequently, the department anticipates few cases where the proposed standards will be exceeded where existing standards are not currently being exceeded. In cases where proposed standards are exceeded, but where existing standards are not currently being exceeded, requirements for additional monitoring and remedial action may be imposed. While additional monitoring or remedial action costs may be imposed upon some regulated facilities, practices and activities, the extent of such monitoring or remedial actions, and any costs associated with them, are too speculative to quantify and may not be significant.

12. Agency Contact Person:

Bruce Rheineck – DG/5, Department of Natural Resources, 101 S. Webster Street, PO Box 7921, Madison, WI 53707; BruceD.Rheineck@wisconsin.gov; (608) 266-2104

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:

Bruce Rheineck – DG/5
 Department of Natural Resources
 101 S. Webster Street
 PO Box 7921
 Madison, WI 53707
BruceD.Rheineck@wisconsin.gov

Comments may be submitted to the department contact person listed above or to DNRAAdministrativeRulesComments@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 website, at <https://dnr.wi.gov/calendar/hearings/>. Comments may also be submitted through the Wisconsin Administrative Rules Website at <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

Substance ¹	Table 1 Public Health Groundwater Quality Standards	
	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/l)	1.8 mg/l
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor - ESA)	20	4
Aldicarb	10	2
Aluminum	200	40 20
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Antimony	6	1.2
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
Bacteria, Total Coliform	0 ³	0 ³
Barium	2 milligrams/liter (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
<u>Boron</u>	<u>4000 2000</u>	<u>200 400</u>
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
<u>Chromium, Hexavalent</u>	<u>70 nanograms/liter (ng/l)</u>	<u>7 ng/l</u>
Chromium (total)	100	10
Chrysene	0.2	0.02
<u>Clothiandin</u>	<u>1000</u>	<u>200</u>
<u>Cobalt</u>	<u>40</u>	<u>8 4</u>
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free ⁴	200	40
<u>Dacthal + MTP and TPA degradates⁵</u>	<u>70</u>	<u>14 7</u>
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
<u>Dinitrotoluene, Total Residues^{5,6}</u>	<u>0.05</u>	<u>0.005</u>
Dinoseb	7	1.4
<u>1,4-Dioxane</u>	<u>3 0.35</u>	<u>0.3 0.035</u>
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
Glyphosate	10 mg/l	1 mg/l
Glyphosate aminomethylphosphonic acid (AMPA) degradate	10 mg/l	2 mg/l
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02
Hexachlorobenzene	1	0.1
N-Hexane	600	120
Hydrogen sulfide	30	6
Imidacloprid	0.2	0.02
Isoxaflutole + Isoxaflutole Diketonitrile (DKN) degradate	3	0.3
Isoxaflutole Benzoic Acid (BA) degradate	800	160
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 + oxanilic acid (Metolachlor - ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8.4
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/l	0.2 mg/l
N-Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.1
Perfluorooctanoic acid (PFOA) + Perfluorooctane sulfonate (PFOS)	20 ng/l	2 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
Strontium	1500	150
Styrene	100	10
Sulfentrazone	1000	100
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 20	0.5 2
Tetrahydrofuran	50	10
Thallium	2	0.4
Thiamethoxam	100	10
Thiocarbazono-methyl	10 mg/l	2 mg/l
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	0.5 0.05
2,4,5-Trichlorophenoxy-propionic acid (2,4,5-TP)	50	5
1,2,3-Trichloropropane	60 0.3 ng/l	12 0.03 ng/l
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 ^{6,7}	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 diaminoatrazine).

³ Total coliform bacteria may not be present in any 100 ml sample using either the membrane filter (MF) technique, the presence-absence (P-A) coliform test, the minimal medium ONPG-MUG (MMO-MUG) test or not present in any 10 ml portion of the 10-tube multiple tube fermentation (MTF) technique.

⁴ "Cyanide, free" refers to the simple cyanides (HCN, CN⁻) and /or readily dissociable metal-cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

⁵ [Dacthal + MTP and TPA degradates includes Dacthal + the monomethyl tetrachloroterephthalic acid \(MTP\) breakdown product \(degradate\) + the tetrachloroterephthalic acid \(TPA\) breakdown product \(degradate\).](#)

⁶ [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.

^{6,7} [Xylene](#) includes meta-, ortho-, and para-xylene combined.

SECTION 2. NR 140.20 Table 3 is amended to read:

NR 140.20 Table 3

Table 3
Methodology for Establishing Preventive Action Limit for Indicator Parameters

<i>Parameter</i>	<i>Minimum Increase (mg/l)</i>
Alkalinity	100
Biochemical oxygen demand (BOD ₅)	25
Calcium	25
Chemical oxygen demand (COD)	25
Magnesium	25
Nitrogen series	
Ammonia nitrogen	2
Organic nitrogen	2
Total nitrogen	5
Potassium	5
Sodium	10
Field specific conductance	200 microSiemens/cm
Total dissolved solids (TDS)	200
Total hardness	100
Total organic carbon (TOC)	1
Total organic halogen (TOX)	0.25

SECTION 3. 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 RN¹	Common synonyms/Tradename²
Acetochlor	34256-82-1	Cadence, Degree, Harness, Keystone, Overtime, 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	Femik
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, Hatcher, Yuma, Whirlwind, Eraser
Chloromethane	74-87-3	Methyl chloride
<u>Chromium, Hexavalent</u>	<u>18540-29-9</u>	<u>Hexavalent chromium, Chromium 6+, Chromium (VI), Chromium hexavalent ion, Cr6+</u>
Chromium (total)	7440-47-3	
Chrysene	218-01-9	1,2-Benzphenanthrene
<u>Clothianidin</u>	<u>210880-92-5</u>	
Cobalt	7440-48-4	
Cyanazine	21725-46-2	Bladex , 2-chloro-4-ethylamino-6-nitriiloisopropylamino-s-triazine
Cyanide, free	57-12-5	
<u>Dacthal + MTP and TPA degradates</u>	1861-32-1 <u>887-54-7 (MTP)</u> <u>2136-79-0 (TPA)</u>	DPCA, Chlorothal, Daethalor , 1,4-benzene-dicarboxylic acid, <u>monomethyl tetrachloroterephthalate acid (MTP)</u> , <u>tetrachloroterephthalic acid (TPA)</u>
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- <i>n</i> -butyl phthalate, <i>n</i> -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	Ethylidene 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	<i>Telone</i> , 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)	<i>Frontier</i> , <i>Outlook</i> , <i>Propel</i> , <i>Establish</i> , <i>Sortie</i> , <i>Tower</i>
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	<i>p</i> -Dioxane
Dioxin	1746-01-6	2,3,7,8-TCDD, 2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin
Endrin	72-20-8	
EPTC	759-94-4	<i>Eptam</i> , <i>Eradicane</i>
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	<i>Freon 11</i> , Trichlorofluoromethane
Formaldehyde	50-00-0	
Glyphosate	1071-83-6	
Glyphosate aminomethyl- phosphonic acid (AMPA) degradate	1066-51-9	aminomethyl-phosphonic acid (AMPA)
Heptachlor	76-44-8	<i>Velsicol</i>
Heptachlor epoxide	1024-57-3	
Hexachlorobenzene	118-74-1	Perchlorobenzene, <i>Granox</i>
<i>N</i> -Hexane	110-54-3	Hexane, Skellysolve B
Hydrogen sulfide	7783-06-4	Dihydrogen sulfide
Imidacloprid	138261-41-3	
Isoxaflutole + Isoxaflutole Diketonitrile (DKN) degradate	141112-29-0 143701-75-1 (DKN)	
Isoxaflutole Benzoic Acid (BA) degradate	142994-06-7	
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, Isopropylacetone, <i>Hexone</i>
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-)	<i>Dual, Bicep, Milocep, Stalwart, Parallel, Prefix, Charger, Brawl, Cinch, Dual Magnum, Boundary</i>
Metolachlor ethane sulfonic acid + oxanilic acid	171118-09-5 (ESA) 152019-73-3 (OXA)	Metolachlor – ESA + OXA
Metribuzin	21087-64-9	<i>Sencor, Lexone</i>
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, Perchlorate ion
<u>Perfluorooctanoic acid (PFOA) + Perfluorooctane sulfonate (PFOS)</u>	<u>335-67-1 (PFOA)</u> <u>1763-23-1 (PFOS)</u>	<u>perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS)</u>
Phenol	108-95-2	
Picloram	1918-02-1	<i>Torden,</i> 4-amino-3,5,6-trichloropicolinic acid
Polychlorinated biphenyls ⁴		PCBs
Prometon	1610-18-0	<i>Pramitol, Prometone</i>
Pyrene	129-00-0	Benzo(def)phenanthrene
Pyridine	110-86-1	Azabenzene
Simazine	122-34-9	<i>Princep,</i> 2-chloro-4,6-diethylamino-s-tri-azine
<u>Strontium</u>	<u>7440-24-6</u>	<u>elemental strontium, Sr</u>
Styrene	100-42-5	Ethenylbenzene, Vinylbenzene
<u>Sulfentrazone</u>	<u>122836-35-5</u>	
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
<u>Thiamethoxam</u>	<u>153719-23-4</u>	
<u>Thiencarbazone-methyl</u>	<u>317815-83-1</u>	
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, <i>Silvex</i>
1,2,3-Trichloropropane	96-18-4	1,2,3-TCP, Glycerol trichlorohydrin
Trifluralin	1582-09-8	<i>Treflan</i>
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		

¹Chemical 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

²Common 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. [Table 1 contains groundwater quality standards for pesticide active ingredients and their degradation breakdown products. Active ingredients are the chemicals in a pesticide product that kill, control, or repel pests. Pesticide products are given proprietary “trade names” by the pesticide product manufacturer. A database of pesticide products approved for use in Wisconsin is accessible through the Department of Agriculture, Trade and Consumer Protection \(DATCP\) home web page \(search for “pesticide database”\). The U.S. Environmental Protection Agency \(EPA\) also maintains a database of registered pesticide products, called the Pesticide Product and Label System \(PPLS\), on its website. These pesticide product databases can be searched by active ingredient to find the pesticide products, and their trade names, that contain a specific pesticide active ingredient.](#)

³This 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).

⁴Polychlorinated 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).

⁵Xylene (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 4. 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 5. 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 _____

For Preston D. Cole, Secretary