

**ORDER OF THE STATE OF WISCONSIN
NATURAL RESOURCES BOARD
AMENDING RULES**

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The Wisconsin Natural Resources Board proposes an order .
to amend NR 140.10 Table 1 and Appendix 1, relating to .
groundwater quality standards .
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DG-18-07

Analysis Prepared by the Department of Natural Resources

1. Statutes interpreted: In promulgating this rule, ss. 281.12(1), 281.15, 281.19(1) and 299.11, Stats., and ch. 160, Stats., have been interpreted as authorizing the department to modify and create rules relating to development of numerical groundwater quality standards.

2. Statutory authority: Sections 281.12(1), 281.15, 281.19(1) and 299.11, Stats., and ch. 160, Stats.

3. Explanation of agency authority to promulgate the proposed rules under the statutory authority: Section 281.12(1), Stats., grants the Department the 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. 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 standard application". Section 299.11, Stats., authorizes the Department, in conjunction with the Department of Agriculture Trade and Consumer Protection, 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.

Chapter 160, 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, 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.

4. Related statute or rule: Chapter 280, 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 foralachlor ethane sulfonic acid (alachlor-ESA).

5. Plain language analysis of the proposed rule: Chapter 160, 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. The proposed amendments to NR 140 would add groundwater quality standards for one additional substance. In accordance with ch. 160, Stats., amendments to NR 140 groundwater quality standards are based on recommendations from the Department of Health and Family Services. New public health related groundwater quality standards are proposed foralachlor ethane sulfonic acid (alachlor-ESA).

6. Summary of and preliminary comparison with any existing or proposed federal regulation: The United States Environmental Protection Agency (US EPA) establishes health based drinking water maximum contaminant levels (MCLs) and health advisory levels (HALs). Federal MCLs are established based on scientific risk assessments and, in some cases, economic and technological considerations. Federal HALs are developed based on established reference doses (RfDs). No federal MCL, HAL or RfD has yet been established foralachlor-ESA. Alachlor-ESA is currently on the US EPA Contaminant Candidate List (CCL). The CCL is the US EPA's list of unregulated contaminants which may require national drinking water regulation in the future.

7. Comparison of similar rules in adjacent states (Minnesota, Iowa, Illinois and Michigan): The proposed amendments to NR 140 would add numeric groundwater quality standards foralachlor-ESA. The groundwater quality standards contained in NR 140 are used in Wisconsin by state regulatory agencies as state groundwater protection standards. These standards are used as contamination site cleanup levels, design and management criteria for regulated activities and as minimum public health and welfare protection standards for contaminants in groundwater.

The states surrounding Wisconsin - Minnesota, Michigan, Illinois and Iowa, also use groundwater protection standards in their regulation of practices and activities that may impact the quality of groundwater resources. Some of the states surrounding Wisconsin have promulgated individual state groundwater protection standards and some utilize established federal standards (federal drinking water maximum contaminant levels, lifetime health advisory levels and established cancer risk levels) as their state groundwater protection standards.

Groundwater protection quality standards are usually developed based on health risk assessments. States are often required to follow state specific health risk assessment methodologies when establishing groundwater protection quality standards. States may use state specific health risk assessment factors and procedures in calculating and developing their groundwater protection standards. This use of different health risk assessment factors, procedures and methodologies has led to the establishment of differing state groundwater protection standard levels for the same substance. For example, the groundwater protection quality standard for naphthalene used by the states surrounding Wisconsin varies by state - the standard used in Minnesota is 300 micrograms per liter ($\mu\text{g/L}$), the standard used in Michigan is 520 $\mu\text{g/L}$ and the standard used in Iowa and Wisconsin is 100 $\mu\text{g/L}$, the federal lifetime health advisory level.

The state of Minnesota has established state groundwater protection "Health Risk Limits" (HRLs) under Minnesota Statutes Section 103H.201. There is no established Minnesota state HRL foralachlor-ESA. The Minnesota Department of Health has 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. Minnesota has established a HBV foralachlor-ESA at 40 $\mu\text{g/L}$.

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). There is no established Michigan Drinking Water Criteria or RBSL for alachlor-ESA.

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 Illinois 35 Ill. Adm. Code 620 environmental protection regulations. No Illinois state "Groundwater Quality Standards for Class I: Potable Resource Groundwater" have been established for alachlor-ESA. The state of Illinois also has established "Groundwater Cleanup Objectives". Illinois Groundwater Cleanup Objectives include both Illinois state Groundwater Quality Standards and Human Threshold Toxicant Advisory Concentrations (HTTACs) established in 35 Ill. Adm. Code 620. No Illinois HTTAC has been established for alachlor-ESA.

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 lifetime health advisory levels (HALs), negligible risk levels for carcinogens (NRLs) or drinking water maximum contaminant levels (MCLs) as "Action Levels" in their regulation of practices and activities that may adversely impact groundwater quality. No federal HAL, NRL or MCL has yet been established for alachlor-ESA.

8. Summary of the factual data and analytical methodologies that the agency used in support of the proposed rule and how any related findings support the regulatory approach chosen for the proposed rule: In accordance with s. 160.07, Stats., the Department is required, for substances of public health concern, to propose rules establishing recommendations from the Department of Health and Family Services (DHFS) as 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.

The DHFS has provided the Department, in a June 2007 document titled *Scientific Support Documentation for Groundwater Enforcement Standard and Preventive Action Limit Recommendations for Ethane Sulfonic Acid Metabolite of Alachlor (Alachlor-ESA)*, its recommendations for state groundwater quality standards for alachlor-ESA. In developing their recommendations for state groundwater quality enforcement standards for alachlor-ESA, DHFS followed the applicable analytical methodologies required under ss. 160.07 and 160.13, Stats.

The Department has proposed rules establishing the DHFS enforcement standard recommendation for alachlor-ESA as a NR 140 state groundwater quality enforcement standard. The Department has proposed rules establishing a NR 140 state groundwater quality preventive action limit for alachlor-ESA in accordance with s. 160.15(1), Stats.

9. Any analysis and supporting documentation that the agency used in support of the agency's determination of the rule's effect on small business under s. 227.114, Stats., or that was used when the agency prepared 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 from the United States Department of Agriculture - National Agricultural Statistics Service (NASS), the University of Wisconsin (UW) - Department of Agronomy and the Wisconsin Department of Agriculture Trade and Consumer Protection (DATCP). Information used from the United States Department of Agriculture NASS included agricultural chemical usage reports from 1992 to 2005

and data from the NASS Agricultural Chemical Use Database. Information used from the UW Department of Agronomy included the UW Extension 2006 Herbicide Price List. Information used from DATCP included results from the agency's well sampling and pesticide registration databases.

10. Effects on small business, including how the rule will be enforced: The Department has determined that this rule order will not have a significant economic impact on small businesses. Chapter NR 140 currently contains groundwater standards for 122 substances of public health concern, 8 substances of public welfare concern and 15 indicator parameters. The proposed groundwater standard revisions would apply to all regulated facilities, practices and activities which may impact groundwater quality.

The enforcement of Wisconsin 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, practices and activities will not cause the concentration of a substance in groundwater, affected by a regulated facility, practice or activity, to exceed state groundwater quality enforcement standards or preventive action limits at applicable "point of standards application" locations.

Regulated facilities, practices and activities, which are sources of the substances for which groundwater standards are proposed are, for the most part, likely sources of substances for which groundwater standards already exist. Consequently, there will likely be few cases where the proposed standards will be exceeded where existing standards are not currently being exceeded. Additional monitoring costs may be imposed upon regulated facilities, practices and activities, but the extent of such monitoring and any costs associated with it, while too speculative to quantify, are not expected to be significant.

The proposed revisions to state groundwater quality standards include new standards for alachlor-ESA, a degradation product of the herbicide alachlor. Alachlor has been used in Wisconsin mainly on field and sweet corn crops. Data on agricultural chemical use in Wisconsin indicates that the use of alachlor on corn crops has decreased significantly over the past 15 years. A check of alachlor containing corn herbicide products registered for use on sweet corn in Wisconsin shows that there are currently limited availability and options for alachlor containing products to be used on sweet corn in the state.

Use of alachlor as an herbicide on field corn crops has decreased significantly. Usage of alachlor on field corn in 1992 was reported to have been 2,358,000 lbs., or on an estimated 30% of the state field corn acreage (NASS *Crop Production 1992 Summary and Agricultural Chemical Usage Survey* report). Since 1992 alachlor use in Wisconsin has steadily decreased. Alachlor use in Wisconsin in 2003 was reported at 172,000 lbs., or on an estimated 3% of state field corn acreage (NASS *Agricultural Chemical Usage 2003 Field Crops Summary* report). No alachlor use was reported on Wisconsin field corn in 2005 (NASS *Agricultural Chemical Usage 2005 Field Crops Summary* report), the latest year for which field corn crop chemical use data is available.

Alachlor has also been used in Wisconsin as an herbicide on sweet corn. Use of alachlor on sweet corn in Wisconsin has also declined and currently there is limited availability and options for alachlor containing products to be used on sweet corn. Usage of alachlor on sweet corn for processing in 1994 was reported to have been 145,000 lbs., or on an estimated 45% of the state sweet corn for processing acreage (NASS *Vegetables - 1994 Summary and Agricultural Chemical Usage Survey* report). In 2004, the latest year for which vegetable crop chemical use data is available, alachlor use on sweet corn for processing was reported to have been 48,300 lbs., or on an estimated 29% of the state sweet corn for processing acreage (NASS *Agricultural Chemical Usage 2004 Vegetables Summary* report).

Usage of alachlor on sweet corn for fresh market in 1994 was reported to have been 5,900 lbs., or on an estimated 44% of the state sweet corn for fresh market acreage (NASS *Vegetables - 1994 Summary and Agricultural Chemical Usage Survey* report). In 2002 alachlor use on sweet corn for fresh market was reported to have been 1,900 lbs., or on an estimated 11% of the state sweet corn for processing acreage (NASS *Agricultural Chemical Usage 2002 Vegetables Summary* report). In 2004, the latest year for which vegetable crop chemical use data is available, no alachlor use on sweet corn for fresh market was reported (NASS *Agricultural Chemical Usage 2004 Vegetables Summary* report).

There are a number of corn herbicide products available to farmers in Wisconsin. Corn herbicide products containing alachlor are marketed in Wisconsin for use via preplant incorporated (PPI) or pre-emergence (Pre) application. The University of Wisconsin (UW) Department of Agronomy *Herbicide Price List, 2006* (UW Extension 2007 *Pest Management in Wisconsin Field Crops* bulletin, Appendix Table 3) contains price per acre estimates for PPI/Pre herbicide products for use on corn crops. PPI/Pre herbicide products for use on corn crops are listed in the 2006 Herbicide Price List in the \$14.55 to \$18.98 (per acre) range for application at coarse soil application rates, and in the \$19.36 to \$23.33 (per acre) range for application at medium soil application rates. Lariat and Micro-Tech, PPI/Pre corn herbicide products that contain alachlor, are listed on the 2006 Herbicide Price List. Lariat is listed at \$14.05 (per acre), for application at coarse soil application rates, and \$21.07 (per acre) for application at medium soil application rates. Micro-Tech is listed at \$13.50 (per acre) for application at coarse soil application rates, and \$16.88 (per acre) for application at medium soil application rates.

Results from the Department of Agriculture Trade and Consumer protection (DATCP) well sampling database, through January of 2007, showed that approximately 17% of water supply wells tested (historically, 243 of 1,464) have been above the proposed alachlor-ESA groundwater quality preventive action limit of 4 µg/L. The DATCP well sampling database also shows that, through January 2007, approximately 1% of water supply wells tested (historically, 13 of 1,464) have been above the proposed alachlor-ESA groundwater quality enforcement standard level of 20 µg/L.

Because few water supply wells have tested above proposed alachlor-ESA groundwater standards, and as use of alachlor has decreased in Wisconsin to relatively low levels, and because available alachlor herbicide products are priced comparably to other corn herbicide products, the Department has determined that any management practice restrictions that might be placed on alachlor to prevent exceedances of state groundwater quality standards for alachlor-ESA, are unlikely to have a significant economic impact on Wisconsin corn growers.

11. Agency Contact Person: William Phelps, Wisconsin Dept. of Natural Resources, Bureau of Drinking Water & Groundwater, 101 S. Webster St., Madison, WI, 73707-7921; (608) 267-7619; William.Phelps@Wisconsin.gov.

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

**Table 1
Public Health Groundwater Quality Standards**

| Substance¹ | Enforcement Standard (micrograms per liter – except as noted) | Preventive Action Limit (micrograms per liter – except as noted) |
|---|--|---|
| Acetone | 1000 | 200 |
| Alachlor | 2 | 0.2 |
| <u>Alachlor ethane sulfonic acid (Alachlor-ESA)</u> | <u>20</u> | <u>4</u> |

| | | |
|--|----------------------------------|------------------|
| Aldicarb | 10 | 2 |
| Antimony | 6 | 1.2 |
| Anthracene | 3000 | 600 |
| Arsenic | 10 | 1 |
| Asbestos | 7 million fibers per liter (MFL) | 0.7 MFL |
| Atrazine, total chlorinated residues | 3 ² | 0.3 ² |
| 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 |
| Boron | 960 | 190 |
| Bromodichloromethane | 0.6 | 0.06 |
| Bromoform | 4.4 | 0.44 |
| Bromomethane | 10 | 1 |
| Butylate | 400 | 80 |
| Cadmium | 5 | 0.5 |
| Carbaryl | 960 | 192 |
| Carbofuran | 40 | 8 |
| Carbon disulfide | 1000 | 200 |
| Carbon tetrachloride | 5 | 0.5 |
| Chloramben | 150 | 30 |
| Chlordane | 2 | 0.2 |
| Chloroethane | 400 | 80 |
| Chloroform | 6 | 0.6 |
| Chloromethane | 3 | 0.3 |
| Chromium | 100 | 10 |
| Chrysene | 0.2 | 0.02 |
| Cobalt | 40 | 8 |
| Copper | 1300 | 130 |
| Cyanazine | 1 | 0.1 |
| Cyanide | 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 | 100 | 20 |
| Dicamba | 300 | 60 |
| 1,2-Dichlorobenzene | 600 | 60 |
| 1,3-Dichlorobenzene | 1250 | 125 |
| 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) | 0.2 | 0.02 |
| Di (2-ethylhexyl) phthalate | 6 | 0.6 |
| Dimethoate | 2 | 0.4 |
| 2,4-Dinitrotoluene | 0.05 | 0.005 |
| 2,6-Dinitrotoluene | 0.05 | 0.005 |
| Dinoseb | 7 | 1.4 |
| Dioxin (2, 3, 7, 8-TCDD) | 0.00003 | 0.000003 |
| Endrin | 2 | 0.4 |
| EPTC | 250 | 50 |
| Ethylbenzene | 700 | 140 |
| Ethylene glycol | 7 mg/l | 0.7 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 |
| <i>N</i> -Hexane | 600 | 120 |
| Hydrogen sulfide | 30 | 6 |
| Lead | 15 | 1.5 |
| Lindane | 0.2 | 0.02 |
| Mercury | 2 | 0.2 |
| Methanol | 5000 | 1000 |
| Methoxychlor | 40 | 4 |
| Methylene chloride | 5 | 0.5 |
| Methyl ethyl ketone (MEK) | 460 | 90 |
| Methyl isobutyl ketone (MIBK) | 500 | 50 |
| Methyl tert-butyl ether (MTBE) | 60 | 12 |
| Metolachlor | 15 | 1.5 |
| Metribuzin | 250 | 50 |
| 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/l | 0.2 mg/l |
| <i>N</i> -Nitrosodiphenylamine | 7 | 0.7 |
| Pentachlorophenol (PCP) | 1 | 0.1 |
| Phenol | 6 mg/l | 1.2 mg/l |
| Picloram | 500 | 100 |
| Polychlorinated biphenyls (PCBs) | 0.03 | 0.003 |
| Prometon | 90 | 18 |
| Pyrene | 250 | 50 |
| Pyridine | 10 | 2 |
| Selenium | 50 | 10 |
| Silver | 50 | 10 |
| Simazine | 4 | 0.4 |
| Styrene | 100 | 10 |
| 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 | 1 mg/l | 0.2 mg/l |
| 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 ⁴ | 10 mg/l | 1 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 deethyl atrazine), 2-chloro-4-amino-6-ethylamino-s-triazine (formerly deisopropyl atrazine) and 2-chloro-4,6-diamino-s-triazine (formerly diamino atrazine).

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 Xylene includes meta-, ortho-, and para-xylene combined. The preventive action limit has been set at a concentration that is intended to address taste and odor concerns associated with this substance.

SECTION 2. Appendix 1 to Table 1 is amended to read:

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

| Substance | CAS RN¹ | Common synonyms/Tradename² |
|---|---------------------------|--|
| Acetone | 67-64-1 | <i>Propanone</i> |
| Alachlor | 15972-60-8 | <i>Lasso</i> |
| <u>Alachlor ethane sulfonic acid (Alachlor-ESA)</u> | | <u>Alachlor Ethane Sulfonate, MON 5775</u> |
| Aldicarb | 116-06-3 | <i>Temik</i> |
| Anthracene | 120-12-7 | Para-naphthalene |
| Asbestos | 12001-29-5 | |
| Bentazon | 25057-89-0 | <i>Basagran</i> |
| 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, <i>Sutan</i> + |
| Carbaryl | 63-25-2 | <i>Sevin</i> |
| Carbofuran | 1563-66-2 | <i>Furadan</i> |
| Carbon disulfide | 75-15-0 | Carbon bisulfide |
| Carbon tetrachloride | 56-23-5 | Tetrachloromethane, Perchloroethane |
| Chloramben | 133-90-4 | |
| Chlordane | 57-74-9 | |
| Chloroethane | 75-00-3 | Ethyl chloride, Monochloroethane |
| Chloroform | 67-66-3 | Trichloromethane |
| Chloromethane | 74-87-3 | Methyl chloride |
| Chrysene | 218-01-9 | 1,2-Benzphenanthrene |
| Cobalt | 7440-48-4 | |
| Cyanazine | 21725-46-2 | <i>Bladex</i> , 2-chloro-4-ethylamino-6-nitriloisopropylamino-s-triazine |
| Cyanide | 57-12-5 | |
| Dacthal | 1861-32-1 | DPCA, Chlorothal, <i>Dacthalor</i> , 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- <i>n</i> -butyl phthalate, <i>n</i> -Butyl phthalate |
| Dicamba | 1918-00-9 | <i>Banvel</i> |
| 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 | <i>Freon 12</i> |
| 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 |

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|--|---------------|---|
| 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 | | <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 |
| 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 |
| Dinoseb | 88-85-7 | 2-(1-methylpropyl)-4,6-dinitrophenol |
| Dioxin | 1746-01-6 | 2,3,7,8-TCDD, 2,3,7,8-Tetrachlorodibenzo-p-dioxin |
| Endrin | 72-20-8 | |
| EPTC | 759-94-4 | <i>Eptam</i> , <i>Eradicane</i> |
| Ethylbenzene | 100-41-4 | Phenylethane, EB |
| Ethylene glycol | 107-21-1 | |
| Fluoranthene | 206-44-0 | Benzo(jk)fluorene |
| Fluorene | 86-73-7 | 2,3-Benzidine, Diphenylenemethane |
| Fluoride | 16984-48-8 | |
| Fluorotrichloromethane | 75-69-4 | <i>Freon 11</i> , Trichlorofluoromethane |
| Formaldehyde | 50-00-0 | |
| Heptachlor | 76-44-8 | <i>Velsicol</i> |
| Heptachlor epoxide | 1024-57-3 | |
| Hexachlorobenzene | 118-74-1 | Perchlorobenzene, <i>Granox</i> |
| N-Hexane | 110-54-3 | Hexane, Skellysolve B |
| Hydrogen sulfide | 7783-06-4 | Dihydrogen sulfide |
| Lindane | 58-89-9 | |
| 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 | 51218-45-2 | <i>Dual</i> , <i>Bicep</i> , <i>Milosep</i> |
| 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 |
| Phenol | 108-95-2 | |
| Picloram | 1918-02-1 | <i>Tordon</i> , 4-amino-3,5,6-trichloropicolinic acid |
| Polychlorinated biphenyls ⁴ | | PCBs |
| Prometon | 1610-18-0 | <i>Pramitol</i> , <i>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-triazine |
| Styrene | 100-42-5 | Ethenylbenzene, Vinylbenzene |
| 1,1,1,2-Tetrachlorethane | 630-20-6 | 1,1,1,2-TCA |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 1,1,2,2-TCA |
| 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 |
| 1,1,2-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 | | |

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 (CASRN 10061-01-5) and *trans* 1,3-Dichloropropene (CASRN 10061-02-6).

⁴ Polychlorinated biphenyls (CASRN 1336-36-3); this category contains congener chemicals (same molecular composition, different molecular structure and formula), including constituents of Aroclor-1016 (CASRN 12674-11-2), Aroclor-1221 (CASRN 11104-28-2), Aroclor-1232 (CASRN 11141-16-5), Aroclor-1242 (CASRN 53469-21-9), Aroclor-1248 (CASRN 12672-29-6), Aroclor-1254 (CASRN 11097-69-1), and Aroclor-1260 (CASRN 11096-82-5).

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

SECTION 3. NATURAL RESOURCES BOARD DIRECTIVE: In the event that a reference dose or federal number, as defined in s. 160.01(3), Stats., is adopted by the federal environmental protection agency foralachlor ethane sulfonic acid (alachlor-ESA) the Department shall, within 60 days, initiate rulemaking in accordance with the applicable provisions of ch. 160, Stats., to revise existing state groundwater quality standards foralachlor-ESA to incorporate the new reference dose or federal number.

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on August 15, 2007.

The rules shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin _____

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By _____
Scott Hassett, Secretary

(SEAL)