

**NATURAL RESOURCES BOARD AGENDA ITEM**

**SUBJECT:** Request authorization to hold public hearings on Board Order DG-24-09, revisions to ch. NR 140, Wis. Adm. Code, relating to groundwater quality

**FOR:** OCTOBER 2009 BOARD MEETING

**TO BE PRESENTED BY:** Michael D. Lemcke - Chief, DG Groundwater Section

**SUMMARY:**

Amendments are being proposed to ch. NR 140, Wis. Adm. Code, Groundwater Quality. Chapter NR 140 establishes Wisconsin state groundwater quality standards for both substances of public health concern and substances of public welfare concern. Amendments to ch. NR 140 are proposed to add 15 new, and revise 15 existing, groundwater quality standards for substances of public health concern.

Chapter NR 140 was adopted by the Natural Resources Board in 1985 to comply with Wisconsin Statute Chapter 160. The statute prescribes a very specific process for developing state groundwater quality standards. In accordance with s. 160.05(1), Stats., regulatory agencies provide the Department with lists of substances detected in, or having a reasonable probability of entering, the groundwater resources of the state. The Department then proposes amendments to ch. NR 140 groundwater standards based on Wisconsin Department of Health Services recommendations.

Proposed new groundwater quality standards include those for agricultural pesticides, pesticide metabolites and compounds related to the production of explosives and munitions. Affected parties include regulated facilities, practices and activities that impact groundwater quality. These may include pesticide manufacturers, agricultural pesticide users and parties responsible for cleanup of sites where explosives and munitions were manufactured and tested.

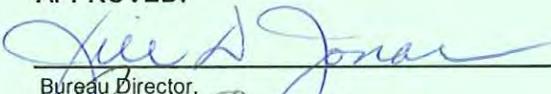
The Board has approved amendments to ch. NR 140 in the past to add and revise groundwater quality standards, and to clarify rule language. There are currently state groundwater quality standards established for 123 substances of public health concern, 8 substances of public welfare concern and 15 indicator parameters in ch. NR 140.

**RECOMMENDATION:** Authorize public hearings for Board Order DG-24-09, revisions to ch. NR 140, Wis. Adm. Code, relating to groundwater quality

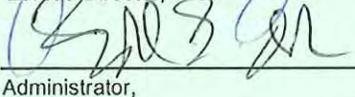
**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input type="checkbox"/>            | Fiscal Estimate Required                              | Yes | <input checked="" type="checkbox"/> | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/>            | Attached |
| No | <input type="checkbox"/>            | Background Memo                                       | Yes | <input checked="" type="checkbox"/> | Attached |

**APPROVED:**

  
Bureau Director,

9/15/09  
Date

  
Administrator,

9/15/09  
Date

  
Secretary, Matt Frank

10-2-09  
Date

cc: Laurie J. Ross - AD/8

Jill Jonas, DG/5

Bill Phelps, DG/5

DATE: September 11, 2009

FILE REF: NR 140

TO: Members, Natural Resources Board

FROM: Matthew J. Frank, Secretary 

SUBJECT: Background Memo - Proposed amendments to Wisconsin Administrative Code Chapter NR 140, Groundwater Quality

### 1. Why rule is being proposed

Amendments are being proposed to Wisconsin Administrative Code Chapter NR 140, Groundwater Quality. Chapter NR 140, Wis. Adm. Code, establishes Wisconsin state groundwater quality standards for both substances of public health concern and for substances of public welfare concern. Amendments to ch. NR 140, are proposed to:

- 1) add new state groundwater quality standards for 15 substances of public health concern to s. NR 140.10, Wis. Adm. Code.
- 2) revise existing s. NR 140.10, Wis. Adm. Code, groundwater quality standards, for 15 substances of public health concern.
- 3) make minor revisions and additions to update s. NR 140.10, Wis. Adm. Code, Table 1 and Appendix I to Table 1.

Chapter NR 140 was adopted by the Natural Resources Board in 1985 to comply with Wisconsin Statute Chapter 160. Chapter 160, Stats., was created in May of 1984, as part of 1983 Wisconsin Act 410, and requires the Department of Natural Resources (Department) to develop groundwater quality standards for substances detected in, or having a reasonable probability of entering the groundwater resources of the state.

Chapter NR 140 establishes state groundwater quality standards at two levels, preventive action limit (PAL) and enforcement standard (ES). In accordance with ch. 160, Stats., ES groundwater quality standards for substances of public health concern are established based on recommendations received from the Department of Health Services (DHS). PAL groundwater quality standards for substances of public health concern are set at either 20% of the concentration of the established ES, or at 10% of the concentration of the established ES if the substance has carcinogenic, mutagenic or teratogenic properties, or interactive effects.

The Department is required to consult with other state agencies, and to consider individual petitions submitted by members of the public, in identifying substances for possible groundwater quality standard setting. In accordance with s. 160.05(1), Stats., state regulatory agencies, such as the Department of Agriculture, Trade and Consumer Protection (DATCP), the Department of Commerce (COMM) and the Department of Transportation (DOT) identify substances related to the facilities, activities and practices they regulate that have been found in, or have a reasonable probability of entering, the groundwater of the state. These substances are added to the Department's list of substances and the Department consults with

DHS to determine which substances on the list are of potential public health concern and which are potentially of concern with respect to human welfare. Available information on the list of substances is reviewed, and the list is prioritized based on substance toxicity, mobility and persistence in the environment.

DHS staff review existing regulatory and toxicological information for substances of potential health concern. If a federal number, such as a federal drinking water standard or cancer risk level, has been established for a substance, this number is used as the recommended ch. NR 140 ES. If no federal number (or state drinking water standard) exists, DHS calculates a recommended ch. NR 140 enforcement standard, in accordance with ch. 160, Stats., based on an assessment of the potential human health effects of the substance.

In accordance with ch. 160, Stats., the Department is required to propose rules establishing the recommendations from DHS as groundwater quality standards in ch. NR 140. DHS recommendations for groundwater standards, along with any other proposed revisions to ch. NR 140, are drafted as amendments to the code and the Department requests authorization from the Natural Resources Board to hold public hearings on these amendments.

## 2. Summary of the rule

Amendments to Chapter NR 140 are being proposed to add new state groundwater quality standards for 15 substances, as indicated below:

<u>Substance</u>	<b>Proposed Standards</b> (ug/L - except as noted)	
	<u>ES</u>	<u>PAL</u>
1,4-Dioxane (p-dioxane)	3	0.3
Acetochlor	1	0.1
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor-ESA + Acetochlor-OXA)	230	46
Aluminum	170	17
Ammonia (as N)	9.7 mg/L	0.97 mg/L
Chlorodifluoromethane (HCFC-22)	7 mg/L	0.7 mg/L
Chlorpyrifos	2	0.4
Dimethenamid/Dimethenamid-P	50	5
Dinitrotoluene, Total Residues	0.05	0.005
Ethyl Ether (Diethyl Ether)	1000	100
Manganese	300	60
Metolachlor ethane sulfonic acid + oxanilic acid (Metolachlor-ESA + Metolachlor-OXA)	1.3 mg/L	0.26 mg/L
Perchlorate	7	0.7
Propazine	10	2
Tertiary Butyl Alcohol (TBA)	12	1.2

Amendments to Chapter NR 140 are being proposed to revise existing state groundwater quality standards for 15 substances as indicated below:

<b>Substance</b>	<b>Current Standards</b> (ug/L - except as noted)		<b>Proposed Standards</b> (ug/L - except as noted)	
	<b>ES</b>	<b>PAL</b>	<b>ES</b>	<b>PAL</b>
1,3-Dichlorobenzene	1250	125	600	120
1,3 Dichloropropene (cis/trans)	0.2	0.02	0.4	0.04
Acetone	1000	200	9 mg/L	1.8 mg/L
Boron	960	190	1000	200
Carbaryl	960	192	40	4
Chloromethane	3	0.3	30	3
Dibutyl phthalate	100	20	1000	100
Ethylene Glycol	7 mg/L	700	14 mg/L	2.8 mg/L
Methyl ethyl ketone (MEK)	460	90	4 mg/L	0.8 mg/L
Metolachlor	15	1.5	100	10
Metribuzin	250	50	70	14
Phenol	6 mg/L	1.2 mg/L	2 mg/L	0.4 mg/L
Prometon	90	18	100	20
Toluene	1000	200	800	160
Xylene	10 mg/L	1 mg/L	2 mg/L	0.4 mg/L

Amendments to Chapter NR 140 are being proposed to make minor revisions and additions to update s. NR 140.10, Wis. Adm. Code, Table 1 and Appendix I to Table 1 as indicated below:

- Replacing current "Chromium" in ch. NR 140 Table 1 with "Chromium (total)" to clarify that ch. NR 140 standards apply to total chromium (combination of chromium III and chromium VI).
- Replacing current "Cyanide" term in ch. NR 140 Table 1 with "Cyanide, free" to clarify that ch. NR 140 standards apply to "free cyanide" (HCN, CN<sup>-</sup> and metal-cyanide complexes that are easily dissociated into free cyanide ions).
- Changing "Metolachlor" in ch. NR 140 Table 1 to "Metolachlor/s-Metolachlor" to clarify that ch. NR 140 standards apply to both Metolachlor (CAS RN 51218-45-2) and its stereo isomer, s-Metolachlor (CAS RN 87392-12-9).
- Revising units for field specific conductance in s. NR 140.20 Table 3 from micromhos/cm (micromhos per centimeter) to μS/cm (microsiemens per centimeter).
- Revising s. NR 140.28(5)(c)6 note to add "for discharges, as defined by s. 283.01(4), Stats" language related to the need for a wastewater discharge permit.
- Adding CAS RN of 142363-53-9 for Alachlor-ESA to Appendix I to Table 1.
- Changing existing Appendix I to Table 1 CAS RN for Asbestos from 12001-29-5 (chrysotile asbestos) to 1332-21-4 (asbestos, all forms).
- Adding "Chromium (total)", with CAS RN of 7440-47-3, to ch NR 140 Appendix I to table 1.
- Adding CAS RN of 542-75-6 for cis/trans 1,3 Dichloropropene (mixed isomers) to ch. NR 140 Appendix I to Table 1.
- Changing existing Appendix I to Table 1 CAS RN for Fluoride from 16984-48-8 to 7681-49-4.
- Adding 1,1,1,2-PCA synonym for 1,1,1,2 tetrachloroethane to ch. NR 140 Appendix I to table 1.
- Adding 1,1,2,2-PCA synonym for 1,1,2,2 tetrachloroethane to ch. NR 140 Appendix I to table 1.
- Adding 1,1,1-TCA synonym for 1,1,1 trichloroethane to ch. NR 140 Appendix I to table 1.

### **3. How proposal affects existing policy**

The proposed amendments continue the existing policy of protecting Wisconsin's groundwater by utilizing the procedures in ch. 160, Stats., to establish new state groundwater quality standards for 15 substances. These new groundwater quality standards would be added to the present ch. NR 140 groundwater standards. There are currently standards for 131 substances of public health or welfare concern. Existing state groundwater standards for 15 substances would be revised. The addition of new standards for 15 substances, and revisions to the existing standards for 15 additional substances, will not affect how regulatory programs respond to exceedances of ES and PAL groundwater standards listed in ch. NR 140.

### **4. Previous Board action**

Chapter NR 140 was initially adopted by the Natural Resources Board in 1985 to comply with ch. 160, Stats. This code established groundwater quality standards for 36 substances of public health concern and 10 substances of public welfare concern, and created a framework for implementation of the standards by the Department. The Board approved amendments to ch. NR 140 in 1988, 1990, 1991, 1993, 1995, 1996, 1998, 1999, 2003, 2006 and 2007, to add standards for additional substances and to clarify the rule language. There are now groundwater standards for 123 substances of public health concern, 8 substances of public welfare concern and 15 indicator parameters in ch. NR 140.

### **5. Who is impacted by the proposed rule**

The proposed groundwater standards would apply to all regulated facilities, practices and activities which may impact groundwater quality. If the proposed groundwater quality standards are adopted, state agencies are required to review their administrative codes and make any necessary changes to comply with the standards.

Pesticide use, handling and storage is regulated by DATCP. That Agency may be affected by the proposed standards for 4 pesticides: chlorpyrifos, acetochlor, dimethenamid/dimethenamid-P and propazine, and the proposed standards for the pesticide metabolite degradation products: acetochlor ethane sulfonic acid plus oxanilic acid (acetochlor-ESA+OXA), and metolachlor ethane sulfonic acid plus oxanilic acid (metolachlor-ESA+OXA). More monitoring for these substances may be required. Agricultural users of pesticides might also potentially be affected by these rules as restrictions on use of these pesticides might be placed on them if they, or their metabolite degradation products, were to be found extensively in groundwater above proposed standards.

COMM has some regulatory responsibility for facilities, practices, and activities which could cause groundwater impacts from organic or inorganic chemicals. While the Department regulates solid waste, hazardous waste, spills and wastewater discharges, COMM regulates underground storage tanks and small scale on-site wastewater treatment systems. Proposed standards for 1,4-dioxane, aluminum, ammonia, chlorodifluoromethane, dinitrotoluenes, ethyl ether, manganese, perchlorate or tertiary butyl alcohol may impact groundwater clean-up at facilities, practices, and activities which are the source of these substances.

At this time there are no known controversies with the proposed amendments to ch. NR 140. However historically, when the Department has established standards relating to agricultural chemicals, the producers of those chemicals have provided comments. In addition, when a health advisory level for total dinitrotoluene residues was developed in 2007 by DHS, both the Department of the Army and Citizens for Safe Water Around Badger (CSWAB) provided comments.

## **6. Environmental Analysis**

Section NR 150.03, Wis. Adm. Code, (Environmental Analysis and Review Procedures for Department Actions) describes the appropriate categories for various proposed Departmental actions. The Department has determined that this rule proposal is a Type III action. Type III actions normally do not have the potential to cause significant environmental effects, normally do not significantly affect energy usage and normally do not involve unresolved conflicts in the use of available resources. This rule proposal is not expected to cause any of these effects. In accordance with s. 150.20, Wis. Adm. Code, Type III actions do not require an environmental assessment (EA) or environmental impact statement (EIS).

## **7. Small Business Regulatory Flexibility Analysis**

The Department does not believe that the proposed rule will have a significant economic impact on a substantial number of small businesses. The compliance and reporting requirements in ch. NR 140 are not changed by the proposed amendments. If a groundwater quality standard is exceeded, the owner or operator of a facility, practice or activity, including any small business, must report the violation to the appropriate regulatory agency. There would be 15 new substances for which a facility may have to monitor and report exceedances and 15 additional substances with revised standards. Of the 15 revised standards, 9 are proposed to be less restrictive than their current standard.

Chapter 160, Stats., requires establishment of both design and performance standards. Individual state agency regulatory programs establish design and operational standards in their specific program rules. Performance standards (groundwater quality standards) are contained in ch. NR 140. Chapter 160, Stats., does not allow for less stringent schedules, deadlines or reporting requirements, or for exemptions to remedial action, when a groundwater quality standard is attained or exceeded, based on the size of the business causing the contamination.

There would be adverse impacts on public health, welfare, safety and the environment if small businesses were not required to meet regulatory reporting requirements and implement remedial responses. The more quickly contamination can be evaluated and responses initiated, the less likely that public health safety and welfare will be adversely affected. If small businesses were exempt from these requirements, groundwater contamination would continue unabated at least until the Department could appropriate sufficient resources to undertake this work. The delay, or possibility that nothing would be done, would lead to adverse impacts on public health, welfare, safety and the environment.

The type of small businesses that are typically impacted by ch. NR 140 include dry cleaners, small manufacturers, agricultural cooperatives, farmers, underground storage tank owners, small solid waste disposal facilities, small wastewater treatment operations, as well as others. In effect, any small business that has a permitted or unpermitted discharge of a substance exceeding the health or welfare groundwater

quality standards listed in ch. NR 140 is responsible for responding to the release consistent with the requirements of ch. NR 140.

There will be 15 additional new groundwater quality standards, and 15 revised standards, which would be used as design and compliance standards, and for clean-up standards in the event of a spill or unpermitted discharge. If remedial action or other response is necessary, the individual programs which regulate the facility, practice or activity would determine the appropriate level of clean-up required. As the cost of remedial options varies, the cost of remediation of groundwater contamination for small businesses will vary, depending on the complexity of the site and contamination at the facility, practice or activity, and federal and state laws that are being used to guide the remedial action.

The majority of the substances for which new groundwater quality standards are proposed have already been detected in groundwater at one or more sites in Wisconsin. The adoption of design, compliance and clean-up standards for these substances may aid small businesses in a number of ways. The standards will provide specifications for facility and activity design purposes, inform whether a substance detected in groundwater does or does not exceed a standard and, if it does, let a small business know when the clean-up efforts are finished based on standards being met. When substances are detected in groundwater for which a standard does not exist in ch. NR 140, the Department may require clean-up of the groundwater "to the extent practicable" which may be overly conservative depending upon the actual toxicity of the substance detected.

**Fiscal Estimate — 2009 Session**

<input checked="" type="checkbox"/> Original	<input type="checkbox"/> Updated	LRB Number	Amendment Number if Applicable
<input type="checkbox"/> Corrected	<input type="checkbox"/> Supplemental	Bill Number	Administrative Rule Number NR 140, Wis. Adm. Code

Subject  
 Amendments to ch. NR 140, Wis. Adm. Code (Groundwater Quality)

Fiscal Effect  
 State:  No State Fiscal Effect  
 Indeterminate

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

<input type="checkbox"/> Increase Existing Appropriation	<input type="checkbox"/> Increase Existing Revenues	<input type="checkbox"/> Increase Costs — May be possible to absorb within agency's budget. <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Decrease Existing Appropriation	<input type="checkbox"/> Decrease Existing Revenues	
<input type="checkbox"/> Create New Appropriation	<input type="checkbox"/> Decrease Costs	

Local:  No Local Government Costs  
 Indeterminate

1. <input type="checkbox"/> Increase Costs <input type="checkbox"/> Permissive <input type="checkbox"/> Mandatory	3. <input type="checkbox"/> Increase Revenues <input type="checkbox"/> Permissive <input type="checkbox"/> Mandatory	5. Types of Local Governmental Units Affected: <input type="checkbox"/> Towns <input type="checkbox"/> Villages <input type="checkbox"/> Cities <input type="checkbox"/> Counties <input type="checkbox"/> Others <input type="checkbox"/> School Districts <input type="checkbox"/> WTCS Districts
2. <input type="checkbox"/> Decrease Costs <input type="checkbox"/> Permissive <input type="checkbox"/> Mandatory	4. <input type="checkbox"/> Decrease Revenues <input type="checkbox"/> Permissive <input type="checkbox"/> Mandatory	

Fund Sources Affected <input type="checkbox"/> GPR <input type="checkbox"/> FED <input type="checkbox"/> PRO <input type="checkbox"/> PRS <input type="checkbox"/> SEG <input type="checkbox"/> SEG-S	Affected Chapter 20 Appropriations
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Assumptions Used in Arriving at Fiscal Estimate

SUMMARY OF RULE - Chapter NR 140, Wis. Adm. Code, establishes Wisconsin state groundwater quality standards and creates a framework for implementing those standards in compliance with Wis. Stat. Ch. 160. These proposed amendments to NR 140 add a new enforcement standard (ES) and preventive action limit (PAL) for 15 substances, and revise existing ESs and PALs for an additional 15 substances. In accordance with Wis. Stat. Ch. 160, these proposed amendments to NR 140 groundwater quality standards are based on recommendations from the Wisconsin Department of Health Services.

Chapter NR 140 currently contains groundwater standards for 123 substances of public health concern, 8 substances of public welfare concern and 15 indicator parameters. The proposed new and revised standards would apply to all regulated facilities, practices and activities which may impact groundwater quality. 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 should be few cases where the proposed standards would be exceeded where existing standards are not currently being exceeded. Thus, the Department does not anticipate significant additional costs to the regulated community associated with these new and revised NR 140 standards. Also, any additional monitoring costs to the regulated community should be minimal, and the workload of state regulatory agencies should not change substantially.

FISCAL IMPACT - Although additional monitoring costs may be imposed upon the state or local government entities that are within the regulated community, the extent of such monitoring and any costs associated with it--while too speculative to quantify at this time--are not expected to be significant. Further, any increased monitoring costs associated with the setting of an ES and PAL for new substances and the lowering of the existing ES and PAL for other substances may be offset by cost savings associated with the relaxing of ESs and PALs for other compounds. Thus, on balance, the Department believes it is unlikely that there will be additional costs to state and local governments resulting from adopting these groundwater standards.

Long-Range Fiscal Implications

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature 	Telephone No. 266-2794	Date (mm/dd/ccyy) 09-11-09

**Fiscal Estimate — 2009 Session**

**Page 2 Assumptions Narrative  
Continued**

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number

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Assumptions Used in Arriving at Fiscal Estimate – Continued

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### Fiscal Estimate Worksheet — 2009 Session

Detailed Estimate of Annual Fiscal Effect

Original       Updated  
 Corrected       Supplemental

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 140, Wis. Adm. Code

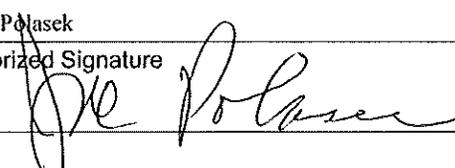
Subject  
 Amendments to ch. NR 140, Wis. Adm. Code (Groundwater Quality)

One-time Costs or Revenue Impacts for State and/or Local Government (do not include in annualized fiscal effect):  
 None

Annualized Costs:		Annualized Fiscal Impact on State Funds from:	
		Increased Costs	Decreased Costs
<b>A. State Costs by Category</b>			
State Operations — Salaries and Fringes		\$	\$ -
(FTE Position Changes)		( FTE )	(- FTE )
State Operations — Other Costs			-
Local Assistance			-
Aids to Individuals or Organizations			-
<b>Total State Costs by Category</b>		\$	\$ -
<b>B. State Costs by Source of Funds</b>			
GPR		\$	\$ -
FED			-
PRO/PRS			-
SEG/SEG-S			-
State Revenues	Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	Increased Revenue	Decreased Revenue
GPR Taxes		\$	\$ -
GPR Earned			-
FED			-
PRO/PRS			-
SEG/SEG-S			-
<b>Total State Revenues</b>		\$	\$ -

#### Net Annualized Fiscal Impact

	<u>State</u>	<u>Local</u>
Net Change in Costs	\$ _____	\$ _____
Net Change in Revenues	\$ _____	\$ _____

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature 	Telephone No. 266-2794	Date (mm/dd/ccyy) 09-11-09

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

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

**DG-24-09**

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.

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.

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, 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 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 for: 1,4-Dioxane, Acetochlor, Acetochlor ESA + OXA, Ammonia (as N), Chlorodifluoromethane, Chlorpyrifos, Dimethenamid/Dimethenamid-P, Dinitrotoluene Total Residues, Ethyl Ether, Metolachlor ESA + OXA, Perchlorate, Propazine or Tertiary Butyl Alcohol. Secondary Standards, established for aesthetic quality, have been promulgated in s. NR 809.60, Wis. Adm. Code, for Aluminum and Manganese. These ch. NR 809 Secondary Standards are 50 to 200 parts per billion (ppb) for aluminum, and 50 ppb for manganese. Note, units are parts per billion (ppb), 1 ppb is equivalent to 1 microgram per liter (ug/L).

**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. These proposed amendments to ch. NR 140 would add new state groundwater quality standards for 15 substances and revise existing standards for another 15 substances. In accordance with ch. 160, Stats., amendments to ch. NR 140 groundwater quality standards are based on recommendations from the Department of Health Services.

New public health related groundwater quality standards are proposed for: 1,4-Dioxane, Acetochlor, Acetochlor - ESA + OXA, Aluminum, Ammonia, Chlorodifluoromethane, Chlorpyrifos, Dimethenamid/Dimethenamid-P, Dinitrotoluenes, Ethyl Ether, Manganese, Metolachlor - ESA + OXA, Perchlorate, Propazine and Tertiary Butyl Alcohol.

Revised public health related groundwater quality standards are proposed for: 1,3-Dichlorobenzene, 1,3-Dichloropropene, Acetone, Boron, Carbaryl, Chloromethane, Dibutyl Phthalate, Ethylene Glycol, Methyl Ethyl Ketone, Metolachlor, Metribuzin, Phenol, Prometon, Toluene and Xylene.

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

- Replacing current "Chromium" in ch. NR 140 Table 1 with "Chromium (total)" to clarify that ch. NR 140 standards apply to total chromium (combination of chromium III and chromium VI).
- Replacing current "Cyanide" term in ch. NR 140 Table 1 with "Cyanide, free" to clarify that ch. NR 140 standards apply to "free cyanide" (HCN, CN<sup>-</sup> and metal-cyanide complexes that are easily dissociated into free cyanide ions).
- Changing "Metolachlor" in ch. NR 140 Table 1 to "Metolachlor/s-Metolachlor" to clarify that ch. NR 140 standards apply to both Metolachlor (CAS RN 51218-45-2) and its stereo isomer, s-Metolachlor (CAS RN 87392-12-9).
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- Adding 1,1,2,2-PCA synonym for 1,1,2,2 tetrachloroethane to ch. NR 140 Appendix I to table 1.
- Adding 1,1,1-TCA synonym for 1,1,1 trichloroethane to ch. NR 140 Appendix I to table 1.

different health risk assessment factors and methodologies has lead to the establishment of different state groundwater protection standard levels for the same substance. For example, the health based groundwater protection quality standard for manganese used by the states surrounding Wisconsin varies by state - the standard used in Minnesota is 300 ppb, the standard used in Michigan is 860 ppb, Illinois uses 150 ppb and the standard used in Iowa is 300 ppb, 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. The State of Minnesota has established HRLs for Acetochlor at 9 ppb and for Ethyl Ether at 1,000 ppb. 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: Metolachlor-ESA at 800 ppb, Metolachlor-OXA at 800 ppb, Acetochlor-ESA at 300 ppb and Acetochlor-OXA at 100 ppb. 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 a RAA for Manganese at 300 ppb.

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: 1,4-Dioxane at 85 ppb, Manganese at 860 ppb, Aluminum at 300 ppb, Propazine at 200 ppb, Chlorpyrifos at 22 ppb, Ethyl Ether at 3,700 ppb and Tertiary Butyl Alcohol at 3,900 ppb. The State of Michigan also has established a Drinking Water Criteria/RBSL for "all potential sources of nitrate-nitrogen", including ammonia nitrogen, in groundwater drinking water supplies at 10,000 ppb.

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 Manganese at 150 ppb. The state of Illinois also has established "Groundwater Cleanup Objectives" in 8 Ill. Adm. Code 259. Illinois Groundwater Cleanup Objectives include both Illinois state Groundwater Quality Standards and Human Threshold Toxicant Advisory Concentrations (HTTACs). Illinois has established state Groundwater Cleanup Objectives for Class I, Potable Resource Groundwater: at 21 ppb for Chlorpyrifos, at 2 ppb for Acetochlor and at 10,000 ppb for Ammonia. The Illinois Acetochlor groundwater cleanup objective value was established in accordance with the Acetochlor Registration Agreement monitoring program. The state groundwater cleanup objective for Ammonia was developed based on the US EPA's 30,000 ppb Lifetime Health Advisory level for ammonia in drinking water.

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. As noted in section 6 above, federal lifetime health advisory levels have been established at 2 ppb for Chlorpyrifos, at 300 ppb for Manganese and at 10 ppb for Propazine. Federal 1 in 1,000,000 drinking water cancer risk levels have been established at 3 ppb for 1,4-Dioxane and at 0.05 ppb for DNT (mixture of 2,4-/2,6-DNT).

**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), cancer risk levels and health advisories (HAs). 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.

No federal drinking water MCLs have yet been established for any of the substances for which new Wisconsin state groundwater quality standards are proposed. Federal 1 in 1,000,000 drinking water cancer risk levels have been established at 3 ppb for 1,4-Dioxane and at 0.05 ppb for DNT (mixture of 2,4-/2,6-DNT). US EPA LHAs have been established at 2 ppb for Chlorpyrifos, at 300 ppb for Manganese and at 10 ppb for Propazine. The US EPA has also developed an "Interim Drinking Water Health Advisory" of 15 ppb for Perchlorate. RfDs have been established by EPA for: Dimethenamid at 0.05 mg/kg-day, Ethyl Ether at 0.2 mg/kg-day and Perchlorate at 0.0007 mg/kg-day. A Reference Concentration (RfC) for Chronic Inhalation Exposure of 50 mg/cu.m has been established by EPA for Chlorodifluoromethane.

US EPA Contaminant Candidate List (CCL): The Contaminant Candidate List (CCL) is the US EPA's list of unregulated contaminants which may require national drinking water regulation in the future. The current list is designated Contaminant Candidate List 2 (CCL 2). Substances currently on EPA's CCL 2 include: Aluminum, Acetochlor, Acetochlor-ESA, Acetochlor-OXA, Metolachlor-ESA, Metolachlor-OXA and Perchlorate. Substances currently proposed for inclusion on EPA's draft CCL 3 include: 1,4-Dioxane, Acetochlor, Acetochlor-ESA, Acetochlor-OXA, Chlorodifluoromethane, Metolachlor-ESA, Metolachlor-OXA, and Perchlorate.

**7. Comparison of similar rules in adjacent states (Minnesota, Iowa, Illinois and Michigan):** The proposed amendments to ch. NR 140, Wis. Adm. Code, would add new state numeric groundwater quality standards for 15 substances: 1,4-Dioxane, Acetochlor, Acetochlor ESA + OXA, Aluminum, Ammonia (as N), Chlorodifluoromethane, Chlorpyrifos, Dimethenamid/Dimethenamid-P, Dinitrotoluenes (Total Residues), Ethyl Ether, Manganese, Metolachlor ESA + OXA, Perchlorate, Propazine and Tertiary Butyl Alcohol. The groundwater quality standards contained in ch. 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 values/levels/standards in their regulation of practices and activities that might impact the quality of groundwater resources. Three of the states surrounding Wisconsin have promulgated individual state groundwater protection standards and one utilizes 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 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

**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 Services (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.

The DHS has provided the Department, in a document titled *Scientific Support Documentation for Cycle 9 Revisions of NR 140.10 Groundwater Enforcement Standard & Preventive Action Limit Recommendations* (dated May 2009), its recommendations for new state public health related groundwater quality standards for 15 substances: 1,4-Dioxane, Acetochlor, Acetochlor ESA + OXA, Aluminum, Ammonia (as N), Chlorodifluoromethane, Chlorpyrifos, Dimethenamid/Dimethenamid-P, Dinitrotoluenes, Ethyl Ether, Manganese, Metolachlor ESA + OXA, Perchlorate, Propazine and Tertiary Butyl Alcohol. DHS has also provided recommendations for revisions to existing public health related state groundwater quality standards for 15 additional substances: 1,3-Dichlorobenzene, 1,3-Dichloropropene, Acetone, Boron, Carbaryl, Chloromethane, Dibutyl Phthalate, Ethylene Glycol, Methyl Ethyl Ketone, Metolachlor, Metribuzin, Phenol, Prometon, Toluene and Xylene.

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), 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 2001 - 2007, and the NASS Agricultural Chemical Use Database. Information used from the UW Department of Agronomy included the UW Extension 2008 Herbicide price list and the UW Extension Corn and Soybean Herbicide Chart. Information from DATCP included data from DATCP's *Agricultural Chemicals in Wisconsin Groundwater - Final Report March 2008* document and results from the agency's groundwater monitoring 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, Wis. Adm. Code, currently contains groundwater standards for 123 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 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 an applicable "point of standards application" location.

Regulated facilities, practices and activities, which are sources of the substances for which new and revised 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 at this time, are not expected to be significant.

The proposed revisions to state groundwater quality standards include new and revised standards for some pesticides and pesticide degradation products found in Wisconsin groundwater. New proposed groundwater quality standards include standards for the insecticide chlorpyrifos, the herbicides acetochlor, dimethenamid and propazine, and the herbicide degradation products acetochlor ethane sulfonic acid and oxanilic acid, and metolachlor ethane sulfonic acid and oxanilic acid.

The insecticide active ingredient chlorpyrifos is used in corn to control rootworm, and in soybeans to control aphids and spider mites. There are currently 32 insecticide products registered in Wisconsin that contain the active ingredient chlorpyrifos. Chlorpyrifos has been reported as detected in groundwater at 2% of DATCP Agricultural Chemical Cleanup Program sites. In a DATCP 2007 statewide survey of agricultural chemicals in Wisconsin groundwater, no chlorpyrifos was reported detected in 398 private water supply wells sampled.

Acetochlor and dimethenamid/dimethenamid-P are herbicides that have been used in Wisconsin to control weeds in corn and soybeans. There are currently 46 herbicide products registered in Wisconsin that contain the active ingredient acetochlor or dimethenamid/dimethenamid-P. Acetochlor has been reported as detected in groundwater at 25% of DATCP Agricultural Chemical Cleanup Program sites and dimethenamid/dimethenamid-P has been reported as detected at 27% of those sites. In DATCP's 2007 statewide survey of agricultural chemicals in Wisconsin groundwater, no "parent" acetochlor or dimethenamid/dimethenamid-P were reported as detected in 398 private water supply wells sampled. Metabolite degradation products of these herbicides were, however, detected in some of the sampled wells.

Propazine is a herbicide used for weed control on sorghum, umbelliferous crops (carrots, parsley etc.) and greenhouse ornamentals. It is also a contaminant of the herbicide atrazine, which is used in Wisconsin on corn. There are currently no herbicide products registered in Wisconsin that contain the active ingredient propazine. Propazine has been reported as detected in groundwater at 22% of DATCP Agricultural Chemical Cleanup Program sites.

The acetochlor ethane sulfonic acid and oxanilic acid (acetochlor ESA & OXA) degradation products of acetochlor have been found in Wisconsin groundwater. In DATCP's 2007 statewide survey of agricultural chemicals in Wisconsin groundwater, acetochlor ESA & OXA were reported as detected in 16 private water supply wells and 3 private water supply wells respectively, of 398 wells sampled. The highest levels of acetochlor ESA & OXA reported in the DATCP study were 2.32 ppb and 4.36 ppb respectively. The highest levels reported in the DATCP groundwater monitoring database for private water supply wells are 9.52 ppb for acetochlor-ESA and 4.36 ppb for acetochlor-OXA.

In the DATCP's 2007 statewide survey of agricultural chemicals in Wisconsin groundwater, metolachlor ESA & OXA were reported as detected in 106 private water supply wells and 18 private water supply

wells respectively, of 398 wells sampled. The highest levels of metolachlor ESA & OXA reported in the DATCP study were 6.54 ppb and 1.37 ppb respectively. The highest levels reported in the DATCP groundwater monitoring database for private water supply wells are 31.2 ppb for metolachlor-ESA and 22.8 ppb for metolachlor-OXA.

As it appears that the occurrence of the pesticides chlorpyrifos, acetochlor, dimethenamid/dimethenamid-P and propazine in Wisconsin groundwater is limited to DATCP Agricultural Chemical Cleanup Program sites, and as the pesticide metabolite degradation products acetochlor ESA & OXA and metolachlor ESA & OXA have been detected statewide at levels relatively low compared to proposed state groundwater quality standards for those substances, and as comparably priced alternative herbicide products appear to be available to state farmers, the Department has determined that any management practice restrictions placed on the pesticides chlorpyrifos, acetochlor, dimethenamid/dimethenamid-P and propazine to limit their impact on Wisconsin groundwater, or on acetochlor or metolachlor to limit the impact of their ESA or OXA metabolite degradation products on groundwater, are unlikely to have a significant economic impact on corn or soybean growers in Wisconsin.

**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.

**12. Place where comments are to be submitted and deadline for submission:** to be determined

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

**Table 1  
Public Health Groundwater Quality Standards**

<b>Substance<sup>1</sup></b>	<b>Enforcement Standard (micrograms per liter - except as noted)</b>	<b>Preventive Action Limit (micrograms per liter - except as noted)</b>
<u>Acetochlor</u>	<u>1</u>	<u>0.1</u>
<u>Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor - ESA + OXA)</u>	<u>230</u>	<u>46</u>
Acetone	<del>1000</del> <u>9 mg/l</u>	<del>200</del> <u>1.8 mg/l</u>
Alachlor	2	0.2
<del>Alachlor ethane sulfonic acid (Alachlor- (Alachlor - ESA)</del>	20	4
Aldicarb	10	2
<u>Aluminum</u>	<u>170</u>	<u>17</u>
<u>Ammonia (as N)</u>	<u>9.7 mg/l</u>	<u>0.97 mg/l</u>
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 <sup>2</sup>	0.3 <sup>2</sup>
Bacteria, Total Coliform	0 <sup>2</sup>	0 <sup>3</sup>
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	<del>960</del> <u>1000</u>	<del>190</del> <u>200</u>
Bromodichloromethane	0.6	0.06

Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	<del>960</del> 40	<del>192</del> 4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
<u>Chlorodifluoromethane</u>	<u>7 mg/l</u>	<u>0.7 mg/l</u>
Chloroethane	400	80
Chloroform	6	0.6
<u>Chlorpyrifos</u>	<u>2</u>	<u>0.4</u>
Chloromethane	-3 30	-0.3 3
Chromium (total)	100	10
Chrysene	0.2	0.02
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free	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	<del>100</del> 1000	<del>20</del> 100
Dicamba	300	60
1,2-Dichlorobenzene	600	60
1,3-Dichlorobenzene	<del>1250</del> 600	<del>125</del> 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)	<del>0.2</del> 0.4	<del>0.02</del> 0.04
Di (2-ethylhexyl) phthalate	6	0.6
<u>Dimethenamid/Dimethenamid-P</u>	<u>50</u>	<u>5</u>
Dimethoate	2	0.4
2,4-Dinitrotoluene	0.05	0.005
2,6-Dinitrotoluene	0.05	0.005
<u>Dinitrotoluene, Total Residues</u>	<u>0.05</u>	<u>0.005</u>
Dinoseb	7	1.4
<u>1,4-Dioxane</u>	<u>3</u>	<u>0.3</u>
Dioxin (2, 3, 7, 8-TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
<u>Ethyl ether</u>	<u>1000</u>	<u>100</u>
Ethylene glycol	<del>7 mg/l</del> 14 mg/l	<del>0.7 mg/l</del> 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
N-Hexane	600	120

Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
<u>Manganese</u>	<u>300</u>	<u>60</u>
Mercury	2	0.2
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	460 <u>4 mg/l</u>	-90 <u>0.8 mg/l</u>
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert-butyl ether (MTBE)	60	12
<u>Metolachlor/s-Metolachlor</u>	<u>15 <u>100</u></u>	<u>1.5 <u>10</u></u>
<u>Metolachlor ethane sulfonic acid + oxanilic acid</u> (Metolachlor - ESA + OXA)	<u>1.3 mg/L</u>	<u>0.26 mg/L</u>
Metribuzin	250 <u>70</u>	50 <u>14</u>
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
N-Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
<u>Perchlorate</u>	<u>7</u>	<u>0.7</u>
Phenol	6 mg/l <u>2 mg/l</u>	1.2 mg/l <u>0.4 mg/l</u>
Picloram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	-90 <u>100</u>	48 <u>20</u>
<u>Propazine</u>	<u>10</u>	<u>2</u>
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	40	.4
Styrene	100	10
<u>Tertiary Butyl Alcohol (TBA)</u>	<u>12</u>	<u>1.2</u>
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 <u>800</u>	-0.2 mg/l <u>160</u>
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 <sup>4</sup>	10 mg/l <u>2 mg/l</u>	1 mg/l <u>0.4 mg/l</u>

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

<sup>2</sup> 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).

<sup>3</sup> 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.

\*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. NR 140.20, Table 3 is amended to read:

**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 (BODs)	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 micromhos/cm $\mu$ S/cm
Total dissolved solids (TDS)	200
Total hardness	100
Total organic carbon (TOC)	1
Total organic halogen (TOX)	0.25

SECTION 3. NR 140.28(5)(c)6 note is amended to read:

Note: The issuance of a wastewater discharge permit by the Department is required prior to the infiltration or injection of substances or remedial material into unsaturated soil or groundwater for discharges, as defined by s. 283.01(4), Stats. A wastewater discharge permit establishes the effluent or injection limits for substances or remedial material which may be infiltrated or injected into unsaturated soil or groundwater. A temporary exemption granted under this subsection applies to substances or remedial material which may enter groundwater or may be detected at a point of standards applications; it does not apply to substances or remedial material infiltrated or injected into unsaturated soil.

SECTION 4. Appendix to Table 1 is amended to read:

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

<b>Substance</b>	<b>CAS RN<sup>1</sup></b>	<b>Common synonyms/Trade name<sup>2</sup></b>
<u>Acetochlor</u>	<u>34256-82-1</u>	<u>Cadence, Degree, Harness, Keystone, Overtime, Volley</u>
<u>Acetochlor ethane sulfonic acid + oxanilic acid</u>	<u>187022-11-3 (ESA)</u> <u>184992-44-4 (OXA)</u>	<u>Acetochlor - ESA + OXA</u>
Acetone	67-64-1	Propanone
Alachlor	15972-60-8	Lasso
Alachlor ethane sulfonic acid ( <del>Alachlor-ESA</del> )	<u>142363-53-9</u>	<u>Alachlor-ESA, Alachlor Ethane Sulfonate, MON 5775</u>
Aldicarb	116-06-3	Temik
<u>Aluminum</u>	<u>7429-90-5</u>	
<u>Ammonia</u>	<u>7664-41-7</u>	



Dioxin	1746-01-6	2,3,7,8-TCDD, 2,3,7,8-Tetrachlorodibenzo- p-dioxin
Endrin	72-20-8	<i>Eptam, Eradicane</i>
EPTC	759-94-4	Phenylethane, EB
Ethylbenzene	100-41-4	<u>Diethyl Ether</u>
<u>Ethyl ether</u>	<u>60-29-7</u>	
Ethylene glycol	107-21-1	
Fluoranthene	206-44-0	Benzo(jk)fluorene
Fluorene	86-73-7	2,3-Benzidine, Diphenylmethane
Fluoride	<del>16984-48-8</del> <u>7681-49-4</u>	<i>Freon 11</i> , Trichlorofluoromethane
Fluorotrichloromethane	75-69-4	
Formaldehyde	50-00-0	<i>Velsicol</i>
Heptachlor	76-44-8	Perchlorobenzene, <i>Granox</i>
Heptachlor epoxide	1024-57-3	Hexane, Skellysolve B
Hexachlorobenzene	118-74-1	Dihydrogen sulfide
N-Hexane	110-54-3	
Hydrogen sulfide	7783-06-4	
Lindane	58-89-9	
<u>Manganese</u>	<u>7439-96-5</u>	
Mercury	7439-97-6	
Methanol	67-56-1	Methyl alcohol, Wood alcohol
Methoxychlor	72-43-5	Dichloromethane, Methylene dichloride
Methylene chloride	75-09-2	MEK, 2-Butanone
Methyl ethyl ketone	78-93-3	MIBK, 4-Methyl-2-pentanone,
Methyl isobutyl ketone	108-10-1	Isopropylacetone, <i>Hexone</i>
		MTBE, 2-Methoxy-2-methyl-propane,
Methyl tert-butyl ether	1634-04-4	tert-Butyl methyl ether
		<i>Dual, Bicep, Milocep, Stalwart, Parallel, Prefix,</i>
Metolachlor/s-Metolachlor	51218-45-2	<i>Charger, Brawl, Cinch, Dual Magnum, Boundary</i>
	<u>87392-12-9</u> (s-)	<u>Metolachlor - ESA + OXA</u>
<u>Metolachlor ethane sulfonic acid + oxanilic acid</u>	<u>171118-09-5</u> (ESA)	
	<u>152019-73-3</u> (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
<u>Perchlorate</u>	<u>7790-98-9</u>	<u>Ammonium perchlorate</u>
Phenol	108-95-2	
Picloram	1918-02-1	<i>Tordon</i> , 4-amino-3,5,6-trichloropicolinic acid
		PCBs
Polychlorinated biphenyls <sup>†</sup>		<i>Pramitol, Prometone</i>
Prometon	1610-18-0	
		Benzo(def)phenanthrene
Pyrene	129-00-	Azabenzene
Pyridine	110-86-1	<i>Princep</i> , 2-chloro-4,6-diethylamino- s-triazine
Simazine	122-34-9	Ethynylbenzene, Vinylbenzene
		<u>TBA</u>
Styrene	100-42-5	1,1,1,2-TCA, 1,1,1,2-PCA
<u>Tertiary Butyl Alcohol</u>	<u>75-65-0</u>	1,1,2,2-TCA, 1,1,2,2-PCA
1,1,1,2-Tetrachlorethane	630-20-6	Perchloroethylene, PERC, Tetrachloroethene
1,1,2,2-Tetrachloroethane	79-34-5	THF
Tetrachloroethylene	127-18-4	Methylbenzene
Tetrahydrofuran	109-99-9	
Toluene	108-88-3	
Toxaphene	8001-35-2	
1,2,4-Trichlorobenzene	120-82-1	Methyl chloroform, 1,1,1-TCA
1,1,1-Trichloroethane	71-55-6	1,1,2-TCA, Vinyl trichloride
1,1,2-Trichloroethane	79-00-5	TCE, Chloroethene
Trichloroethylene	79-01-6	2,4,5-TP, <i>Silvex</i>
2,4,5-Trichlorophenoxy-propionic acid	93-72-1	

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 <sup>5</sup>		

<sup>1</sup>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

<sup>2</sup>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.

<sup>3</sup>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).

<sup>4</sup>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 RN 12674-11-2), 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).

<sup>5</sup>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)

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on \_\_\_\_\_.

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 \_\_\_\_\_  
Matthew J. Frank, Secretary

(SEAL)