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Introduction

- The Paper Industry in Wisconsin
- Water Regulation in General
- The Process for Setting Groundwater Standards
- The PFAS Groundwater Standards Currently Being Developed
- PFAS and the Paper Industry
- Ways to Improve the PFAS Regulation & the Regulatory Process in General



Wisconsin's Heritage

Wisconsin is the largest manufacturer of specialty paper products in the country

- 35 Mills
- 30,000 Family-supporting Jobs
- \$2.5 Billion in Payroll
- \$214 Million in State and Local Taxes
- \$13.7 Billion of Paper Products



Water Regulation

- Anticipate compliance with new groundwater standards will become significantly more difficult for permit holders.
- Regulation is expanding beyond substances produced at the facility.
- Facilities may be expected to extract substances from the water flowing *into* the facility so the output is more pure than the inflow.

Process for Setting Groundwater Standards

1. DNR decides a substance requires a standard because it “is detected in or has a reasonable probability of entering” groundwater. DNR sends that substance to DHS.
2. DHS Determines standard and Preventive Action Limit and sends it back to DNR
3. DNR will propose rules to enforce a Preventative Action Limit (either 10% or 20% of standard)
4. If the rule does not result in standard being met, DNR must promulgate new rules

Process for Setting Groundwater Standards

Concern: Lack of Transparency & Stakeholder Input

- No input on what DNR determines is hazardous
- No input on DHS process at all
 - No input on whether federal number should be used
 - No input on whether it is an oncogene
 - No input on reasonable risk level
- DHS proposed the limit as Guidance but did not provide the support document, and allowed a one-day comment period
- Public can ask questions about how standard was set during the rulemaking at DNR, but no opportunity to change it

Why the sudden concern with the process for setting standards?

- In March 2018, DNR requested 16 new standards and 11 Revisions from DHS
- In April 2019, DNR requested 40 additional standards from DHS
- These requests included several PFAS compounds

March 2, 2018

Karen McKown, State Health Officer/Administrator
DHS, Division of Public Health
1 West Wilson St.
Madison, WI 53701-2658

Subject: Request for Reconsideration for State Groundwater Quality Standards

Dear Ms. McKown:


The Department of Natural Resources requests that your agency reconsider state health based groundwater quality standards for 16 substances (Attached 1), provided adequate toxicologic information is available. These substances have been found to, or are considered to have a reasonable probability of entering, the groundwater resources of the state.

The list of substances in Attachment 1 has been prioritized by category, in accordance with ch. 160, Stats. Other available information, such as whether a Statewide health advisory level or US Environmental Protection Agency reference dose had been established for the substance, and statewide occurrence of the substance in groundwaters, was considered in prioritizing the list.

We also request that your agency review existing groundwater standards for 14 substances (Attachment 2), and the toxicological basis for those standards. It appears that there may be new toxicologic information for these substances that may justify revising current standards.

We appreciate your assistance and look forward to working with you in our joint effort to protect public health and the environment.

Sincerely,


James A. Zachary
Acting Administrator
Division of Environmental Management

cc: Dr. Jon Matzrau - DHS
Clark Wastock - DHS
John Pelly - DNR
Lori Dowdell - DNR
Dane Foss - DNR
Joe Van Rossum - DNR
Steve Elmore - DNR
Andrew Keller - DNR
Steve Rhotack - DNR

Attachment 1

List with categorization and ranking of substances for possible new health based NR 140 Groundwater Quality Standards development

Substance	CAS RN	Category	Rank
1. Chromium, Hexavalent	18540-29-9	II	High
2. Strontium	7440-24-6	I	High
3. Thiamethoxam	153719-23-4	II	High
4. Imidacloprid	138261-41-3	II	High
5. Clothianidin	210880-92-5	II	High
6. Isoxaflutole	141112-29-0	II	High
7. Isoxaflutole DKN degradate	143701-75-1	II	High
8. Isoxaflutole BA degradate	142994-06-7	III	High
9. Thien carbazole-methyl	317815-83-1	III	High
10. Dacthal TPA & MTP degradates	(TPA) 2136-79-0 (MTP) 887-54-7	I	High
11. Glyphosate	1071-83-6	II	High
12. Glyphosate AMPA degradate	1066-51-9	II	High
13. Sulfentrazone	122836-35-5	II	High
14. Bacteria, Escherichia coli (E. coli)	N/A	I	High
15. Perfluorooctanoic Acid (PFOA)	335-67-1	I	High
16. Perfluorooctane Sulfonate (PFOS)	1763-23-1	I	High

CAS RN – Chemical Abstract Service (CAS) registry number (RN)

N/A – not applicable

Category I - detected in groundwater in excess of "federal number"

Category II - detected in groundwater but not in excess of "federal number", or detected but no "federal number" established

Category III - reasonable probability of being detected in groundwater

"Federal No." - established US EPA maximum contaminant level, "suggested no adverse response level"/health advisory level or cancer risk level

Attachment 2

List of substances for possible revisions to existing NR 140 Groundwater Quality Standards

Substance	CAS RN	Current NR 140 ES/PAL
1. Trichloroethylene (TCE)	79-01-6	5 ppb/0.5 ppb
2. Tetrachloroethylene (PCE)	127-18-4	5 ppb/0.5 ppb
3. 1,2,3-Trichloropropane (1,2,3-TCP)	96-18-4	60 ppb/12 ppb
4. 1,1-Dichloroethane (1,1-DCA)	75-34-3	850 ppb/85 ppb
5. Boron	7440-42-8	1,000 ppb/200 ppb
6. Molybdenum	7439-98-7	40 ppb/8 ppb
7. Aluminum	7429-90-5	200 ppb/40 ppb
8. Cobalt	7440-48-4	40 ppb/8 ppb
9. Barium	7440-39-3	2,000 ppb/400 ppb
10. 1,4-Dioxane	123-91-1	3 ppb/0.3 ppb
11. Bacteria, Total Coliform	N/A	0*/0*

CAS RN – Chemical Abstract Service (CAS) registry number (RN)

NR 140 ES/PAL – WI Groundwater Quality Enforcement Standard (ES) and Preventive Action Limit (PAL) in ch.

NR 140, Wis. Adm. Code

ppb = parts per billion (ppb) or micrograms per liter (ug/L)

N/A – not applicable

* bacteria not present in water sample

Attachment 1 – List of Cycle 11 Substances

<u>ABREV</u>	<u>Name</u>	<u>CAS RN</u>	<u>*Category</u>	<u>Rank</u>
	Metalaxyl	57837-19-1	II	high
	Chlorantraniliprole	500008-45-7	II	high
	Flumetsulam	98967-40-9	II	high
	Fomesafen	72178-02-0	II	high
	Hexazinone	51235-04-2	II	high
	Saflufenacil	372137-35-4	II	high
PFTrDA	Perfluorotridecanoic acid	72629-94-8	II	medium
PFTeDA	Perfluorotetradecanoic acid	376-06-7	II	medium
PFBA	Perfluorobutanoic acid	375-22-4	II	high
PFPeA	Perfluoropentanoic acid	2706-90-3	II	high
PFHxA	Perfluorohexanoic acid	307-24-4	II	high
PFHpA	Perfluoroheptanoic acid	375-85-9	II	high
PFNA	Perfluorononanoic acid	375-95-1	II	high
PFDA	Perfluorodecanoic acid	335-76-2	II	medium
PFUdA	Perfluoroundecanoic acid	2058-94-8	II	medium
PFBS	Perfluorobutanesulfonic acid	375-73-5	II	high
PFHxS	Perfluorohexanesulfonic acid	355-46-4	II	high
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	II	high
PFOSA	Perfluorooctanesulfonamide	754-91-6	II	medium
PFDoA	Perfluorododecanoic acid	307-55-1	II	medium
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	II	medium
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	II	medium
PFDS	Perfluorodecanesulfonic acid	335-77-3	II	medium
PFPeS	Perfluoropentane sulfonic acid	2706-91-4	II	high
PFPPrOPrA	Perfluoro-2-methyl-3-oxahexanoic acid	13252-13-6	III	medium
4:2 FTS	4:2 Fluorotelomer sulfonic acid	757124-72-4	III	medium
10:2 FTS	10:2 Fluorotelomer sulfonic acid	120226-60-0	III	medium
PFHxDA	Perfluorohexadecanoic acid	67905-19-5	III	medium
PFODA	Perfluorooctadecanoic acid	16517-11-6	III	medium
NaDONA	Dodecafluoro-3H-4,8-dioxanonanoate	958445-44-8	III	medium
F-53B	9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	73606-13-0	III	medium
PFDOS	Perfluorododecanesulfonic acid	79780-39-5	III	medium
PFNS	Perfluorononane sulfonic acid	68259-12-1	III	medium
MeFOSA	N-Methyl perfluorooctane sulfonamide	31506-32-8	III	medium
EtFOSA	N-Ethyl Perfluorooctane sulfamide	4151-50-2	III	medium
MeFOSAA	N-Methyl perfluorooctane sulfonamidoacetic acid	2355-31-9	III	medium
EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	III	medium
MeFOSE	N-Methyl perfluorooctane sulfonamidoethanol	24448-09-7	III	medium
EtFOSE	N-Ethyl perfluorooctane sulfonamidoethanol	1691-99-2	III	medium
HfPA-DA	GenX	62037-80-3	III	medium

*Category II - detected in groundwater but not in excess of "federal number", or detected but no "federal number" established

*Category III - reasonable probability of being detected in groundwater

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Monona Street
Box 7870
Madison, WI 53707-7870



April 10, 2004

Jeanne Ayers, Administrative
DHS Division of Public Health
1 West Wilson St.
Madison, WI 53701-2650

Subject: Request for State Groundwater Quality Standard Recommendations under ch. 100, Stats.

Dear Ms. Ayers:

The Department of Natural Resources (DNR) requests that your agency provide state, health-based groundwater quality standard recommendations for 41 substances (Attachment 1), provided adequate toxicologic information is available. These substances have been found in, or are considered to have a reasonable probability of entering the groundwater resources of the state.

The list of substances in Attachment 1 has been prioritized by category, in accordance with ch. 100, Stats. Other available information, such as whether a lifetime health advisory level or US Environmental Protection Agency reference dose had been established for the substance, and statewide occurrence of the substance in groundwater, was considered in prioritizing the list.

Substances on the attached list in category II, ranked high, have been detected in drinking water wells in Wisconsin. Therefore, we request that those category II high ranked substances be given priority and that your recommendations for these substances be transmitted to DNR as a set as soon your review is complete.

We appreciate your assistance and look forward to working with you in our joint effort to protect public health and the environment. The DNR does not intend for this request to delay your efforts to provide the DNR with recommendations on the Cycle 10 request we submitted to you in 2004.

Sincerely,

David J. Pass
Administrative
Division of Environmental Management

Wisconsin
Department of Natural Resources

Naturally WISCONSIN



Sources of PFAS

Commercial and Consumer Products Containing PFAS

- paper and packaging
- clothing and carpets
- outdoor textiles and sporting equipment
- ski and snowboard waxes
- non-stick cookware
- cleaning agents and fabric softeners
- polishes and waxes, and latex paints
- pesticides and herbicides
- hydraulic fluids
- windshield wipers
- paints, varnishes, dyes, and inks
- adhesives
- medical products
- personal care products (for example, shampoo, hair conditioners, sunscreen, cosmetics, toothpaste, dental floss)

ITRC November 2017



Source: <http://www.defence.gov.au/Environment/PFAS/pfas.asp>

PFAS Compounds of Concern

PFOA and PFOS

- Most studied
- No longer manufactured in the USA
- General agreement that hotspots should be remediated
- No agreement on acceptable level for remediation

Not all PFAS are the Same

- “PFAS” just describes a family of compounds that have a common carbon-fluorine bond
- Often grouped into “long chain” and “short chain”
- Very mixed results from existing scientific studies on health impacts

Paper Industry & PFAS

- Many facilities do not use PFAS in their manufacturing process
- PFAS may be introduced into the Paper Mill wastewater when mills take in municipal waste as a service to the local government
- PFAS may be introduced by use of recycled pulp
- PFAS compounds are present in the inflow water from historical practices throughout the state

Specialty Paper & PFAS

- Specialty paper manufacturers may use short-chain PFAS (Not PFOA and PFOS)
- Some specialty manufactures use PFAS for grease, oil, and water resistant properties
- The majority of this specialty product market requires PFAS
- Compounds used are compliant with food safety regulations (FDA, BfR) and used around the world

PFOA and PFOS Hotspots in Wisconsin

- Bureau for Remediation and Redevelopment Tracking System (BRRTS)
- <https://dnr.wi.gov/topic/Brownfields/botw.html>
- Marinette – Tyco Firefighting Foam producer
- Superior – Refinery Fire relied on Firefighting Foam to extinguish
- Ft. McCoy, Truax Field, Volk Field – Military Facilities training with Firefighting Foam

Current Regulation

- EPA: Recommended remediation at 70 ppt (2019)
- Maine: Remedial action level of 400 ppt for PFAO and 400 ppt for PFOS (2018)
- Canada: Maximum allowable concentration in *drinking water* of 200 ppt for PFOA and 600 ppt for PFOS

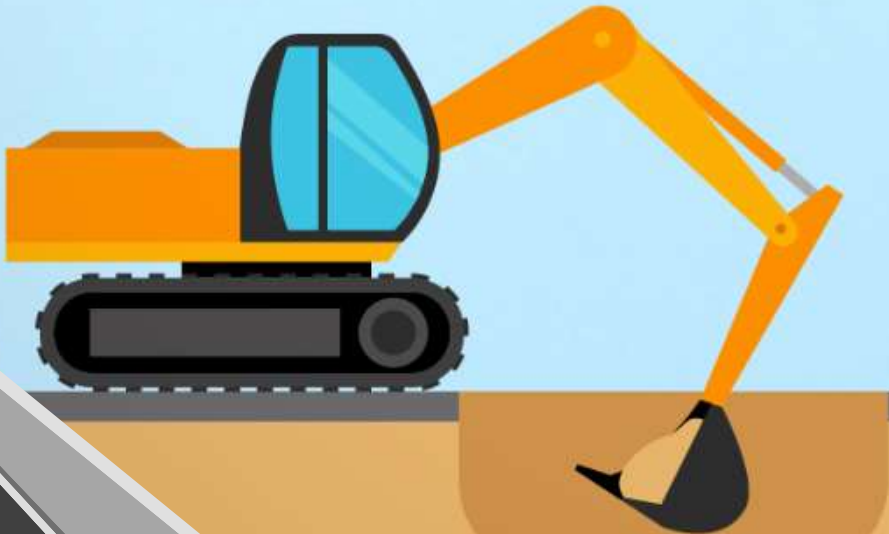
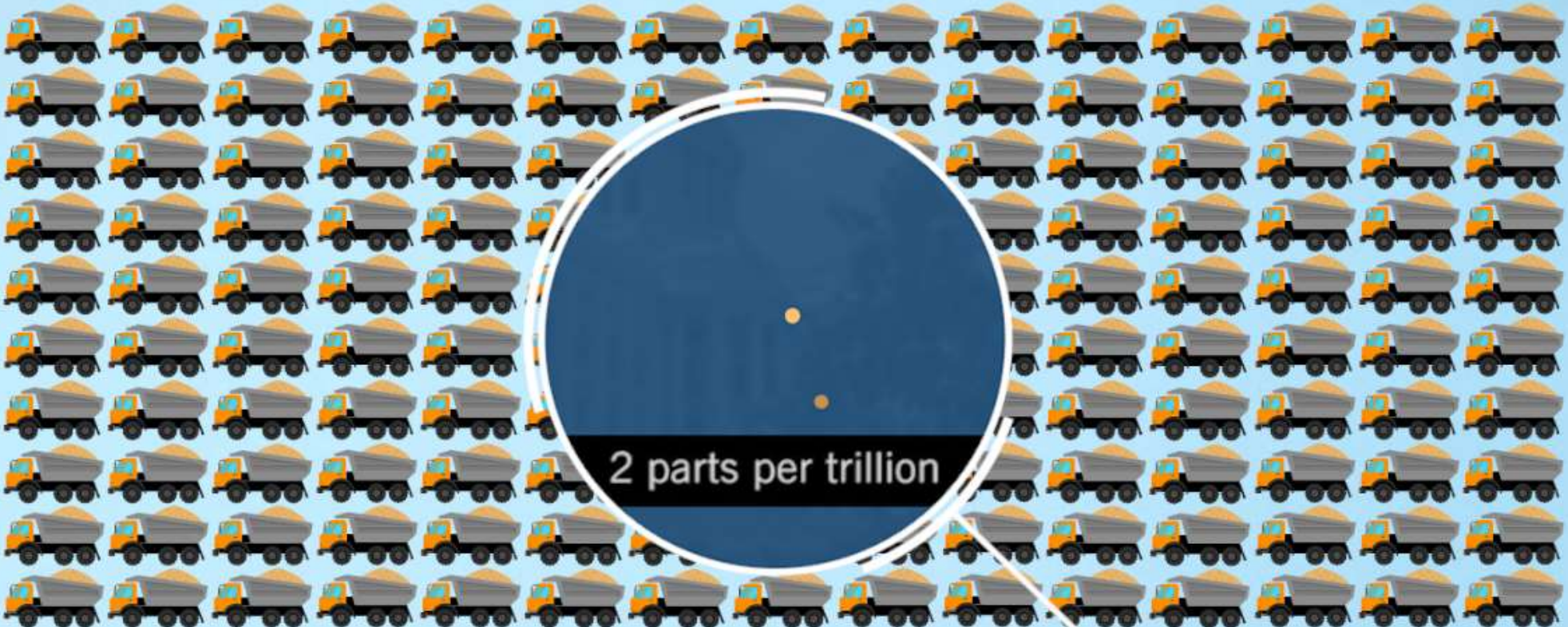
Wisconsin:

- Maximum limit in groundwater of 20 ppt for PFOA and PFOS combined
- Preventive Action Limit of 2 ppt



10 ton loads of sand





Process for Setting Groundwater Standards

Goals of Process Reform Efforts

1. Require transparency and stakeholder input at every decision point for groundwater standard development
2. Prescribe in statute the acceptable risk by requiring PRA method be used
3. Give industry time to adapt and build processes around the regulation

PFAS Regulation

Suggestions for Reasonable Regulation

1. Address 'hotspots' through program independent of groundwater standards
2. Allow science, including health impacts and testing option, to develop
3. Be realistic with standards that balance cost and benefit

Water Quality Coalition



Science • Conservancy • Cooperation



Questions?

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