



New Groundwater Standards Media Briefing Spokespeople

The following agency leadership and program staff from the Wisconsin Department of Health Services, Department of Natural Resources, and Department of Agriculture, Trade, and Consumer Protection participated in the Cycle 10 Groundwater Standards Recommendations media briefing.

Department of Health Services

- Julie Willems Van Dijk, Deputy Secretary
- Dr. Roy Irving, Hazard Assessment Section Chief, Bureau of Environmental and Occupational Health
- Dr. Sarah Yang, toxicologist, Bureau of Environmental and Occupational Health

Department of Natural Resources

- Elizabeth Kluesner, Deputy Secretary
- Darsi Foss, Administrator, Division of Environmental Management
- James Zellmer, Deputy Administrator, Division of Environmental Management
- Steve Elmore, Director, Bureau of Drinking Water and Ground Water

Department of Agriculture, Trade, and Consumer Protection

- Sara Walling, Administrator, Division of Agricultural Resource Management
- Lori Bowman, Director, Bureau of Agrichemical Management





Protecting Groundwater

An overview of how the Department of Health Services determines the amount of a substance that can be in groundwater to protect public health.

How the process works, as dictated by state law.

State agencies identify substances, related to their authority, that are detected in or have a reasonable probability of entering Wisconsin's groundwater. They submit these to DNR.

DNR designates substances as either of public health concern or public welfare concern. DNR categorizes and ranks the substances following Wisconsin state law.

DNR submits the current list of substances of public health concern to DHS. DHS reviews the substances and recommends enforcement standards to DNR.

DNR proposes rules to establish the DHS recommendations for substances of public health concern and at the same time substances identified for public welfare concern.

Here's what DHS' three-step process looks like!

1 Review literature and available scientific information

- About 60% of the process
- This process takes an extensive amount of time because we need to clearly understand the science behind each substance.
- This part can vary in how long it takes based on how many substances are being requested for review, how much research has been conducted and published on the substances and if we are assessing substances in groups to determine if a combined standard is appropriate.
- We review specific concentrations set by the U.S. Environmental Protection Agency and other health-based guidelines created by other federal and international organizations.
- We gather all available data, which can mean hundreds of scientific journal articles, to fully understand the measured effect of the substance on growth, development, reproduction, disease, cancer, or other negative health effects.
- We assess and analyze these articles to see if there is any significant technical information that was not included when the federal numbers were set.

2 Select appropriate science-based standards

- About 20% of the process
- [Wisconsin state law](#) provides the process for selecting the appropriate standard, including the scientific process to use if a federal number or state drinking water standard is not available.
- We must use the most recent federal number unless there is significant technical and scientifically valid information that was not considered when the federal number was set.

3 Write documents explaining findings and recommendations for each substance

- About 20% of the process
- Our support documents describe why we recommended each standard and aid the DNR in their rule-making process.
- We provide the overall health effects each substance can cause, how people come in contact with the substances, and a detailed summary of the results of our scientific research.

Want to learn more?

DHS' webpage provides summaries on each substance.

www.dhs.wisconsin.gov/water/gws

DNR's rule-making webpage includes additional information and our recommendations to DNR.

dnr.wi.gov/topic/Groundwater/NR140.html

See [Wis. Stat. ch. 160](#) for the specific state law.



Press Release

For Immediate Release

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Department of Health Services, Department of Natural Resources, Department of Agriculture, Trade and Consumer Protection Work to Make Groundwater Cleaner

DHS Has Sent New Groundwater Recommendations to DNR

Working together to make sure the water you drink is safe, the Department of Health Services (DHS), Department of Natural Resources (DNR), and the Department of Agriculture, Trade and Consumer Protection (DATCP) have reviewed key compounds that can be in Wisconsin's groundwater and the effects they could have on health. State health officials today provided groundwater quality standards recommendations for 27 substances to DNR as part of the state's process to protect public health. Two per-and polyfluoroalkyl substances (PFAS) – human-made chemicals used in many products, including non-stick cookware, fast food wrappers, stain resistant sprays, and firefighting foam – were among the contaminants reviewed.

“As Governor Evers declared, this is the Year of Clean Drinking Water, and we look forward to our continued partnership with the DNR as we work toward the shared goal of protecting the health of Wisconsin residents,” said Julie Willems Van Dijk, DHS Deputy Secretary. “Using a rigorous, evidence-based process will help us assure that our water is safe, no matter where we live in the state.”

“Clean drinking water in Wisconsin is a public health priority,” said Elizabeth Kluesner, DNR Deputy Secretary. “The DNR has not revised our groundwater standards for 10 years and with these science-based recommendations in hand, we will immediately begin rulemaking to protect our citizens and our natural resources from harmful contaminants. This is another example of how we are working to return Wisconsin to being a leader in the field of environmental protection.”

After DNR provided a list of substances to DHS, health officials extensively reviewed scientific literature about each substance, using federal quality standards as a starting point when available, and created a document describing the rationale for each enforcement standard. In order to make these recommendations, DHS toxicologists reviewed over 5,000 scientific findings.

State law outlines a process that DHS and DNR follow, ensuring a scientifically rigorous review of available technical information and clarity on how recommended groundwater standards are selected. There will be a period for input on these proposed standards which DNR will announce in the coming months. Having received the DHS recommendations, DNR can propose rules to incorporate these new or revised standards.

Once the rulemaking process is complete, the new or revised standards will be added to the state's 138 existing NR 140 groundwater quality standards. These standards are used for regulating facilities, practices and activities that can affect groundwater. They apply to bottled water, approved agricultural chemicals, contamination site cleanup, regulation of solid waste landfills, and more. Groundwater standards have been set or revised in 1988, 1990, 1991, 1993, 1995, 1996, 1998, 1999, 2003, 2006, and 2010.

DATCP was another important contributor to the substance list, submitting several agricultural chemicals to DNR for review. DATCP will use resulting enforcement standards to guide its work in groundwater protection.

To further protect groundwater, DHS will review an additional 40 substances in 2019 and 2020, as requested by DNR in April. State law defines the review and rulemaking process for contaminants. More information about the groundwater quality standard review and rulemaking process is available on the DHS website.

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DHS Recommended Groundwater Enforcement Standards

The development of state groundwater standards is a collaborative process involving multiple state agencies. This process is described in detail in Wisconsin law (Wis. Stat. ch. 160). Our primary responsibility is to develop groundwater standard recommendations for substances that represent a public health concern (when requested by the DNR).

The table below summarizes our recommendations for groundwater enforcement standards that were sent to the DNR.

Cycle 10 Recommendation Table

Substance	New or existing	Enforcement Standard Recommended Value	Preventive Action Limit Recommended Value
1,1-Dichloroethane	Existing	No change	850 µg/L
1,2,3-Trichloropropane	Existing	↓	0.3 ng/L
1,4-Dioxane	Existing	↓	0.35 µg/L
Aluminum	Existing	No change	200 µg/L
Bacteria (Total coliform)	Existing	No change	0
Bacteria (<i>E. coli</i>)	New	n/a	0
Barium	Existing	No change	2,000 µg/L
Boron	Existing	↑	2,000 µg/L
Clothianidin	New	n/a	1,000 µg/L
Cobalt	Existing	No change	40 µg/L
Dacthal MTP and TPA degradates	New	Combine with dacthal ⁱ	70 µg/L
Glyphosate	New	n/a	10 mg/L
Glyphosate AMPA degradate (aminomethylphosphonic acid)	New	n/a	10 mg/L
Hexavalent chromium	New	n/a	70 ng/L
Imidacloprid	New	n/a	0.2 µg/L
Isoxaflutole & isoxaflutole diketonitrile (DKN)	New	n/a	3 µg/L
Isoxaflutole benzoic acid (BA)	New	n/a	800 µg/L
Molybdenum	Existing	No change	40 µg/L
PFOA & PFOS	New	n/a	20 ng/L
Strontium	New	n/a	1,500 µg/L
Sulfentrazone	New	n/a	1,000 µg/L
Tetrachloroethylene (PCE)	Existing	↑	20 µg/L
Thiamethoxam	New	n/a	100 µg/L
Thiocarbazono-methyl	New	n/a	10 mg/L
Trichloroethylene (TCE)	Existing	↓	0.5 µg/L

i. These substances are combined with dacthal's existing enforcement standard.

ii. Although DHS is not recommending a change in the enforcement standard for this substance, we are recommending a change in the preventive action limit.

For more information:

DHS Webpage: www.dhs.wisconsin.gov/water/gws.htm

DNR Webpage: dnr.wi.gov/topic/Groundwater/NR140.html



WISCONSIN DEPARTMENT
of HEALTH SERVICES

References

1. USEPA. Glyphosate: Draft Human Health Risk Assessment in Support of Registration Review. 2017.
2. JMPR. Pesticide residues in food – Toxicological evaluations *Special Session of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues*. 2016:89-296.
3. IARC. IARC Monographs: Glyphosate. 2015.
4. ATSDR. Toxicological Profile for Glyphosate. In: Registry AFTSaD, ed. Atlanta, GA2019.
5. WHO. Glyphosate and AMPA in Drinking-water. 2005(WHO/SDE/WSH/03.04/97).



Perfluorooctanoic acid (PFOA) | 2019 Cycle 10

Substance Overview

Perfluorooctanoic acid (PFOA) is a chemical in a group of contaminants called per- and polyfluoroalkyl substances (PFAS). Because of its chemical properties, PFOA has been used as stain repellants in commercial products like carpet and fabric, as a coating for packaging, and in some fire-fighting foams.¹ PFOA can persist in the environment and in the body for long periods of time.¹

Recommendations

Wisconsin does not currently have an NR140 Groundwater Quality Public Health Enforcement Standard for PFOA.

DHS recommends a combined enforcement standard of 20 nanograms per liter (ng/L) for PFOA. The recommended standard is based on a study that used modeling to estimate how much PFOA a mother has to be exposed to in order to protect the infant from developmental effects. **This standard applies to the sum of PFOA and PFOS concentrations in groundwater.**

DHS recommends that the NR140 Groundwater Quality Public Health Preventive Action Limit for PFOA be set at 10% of the enforcement standard because PFOA has been shown to have carcinogenic, teratogenic, and interactive effects.

Current Standards	
Enforcement Standard:	N/A
Preventive Action Limit:	N/A
Year:	N/A

Recommended Standards	
Enforcement Standard:	20 ng/L
Preventive Action Limit:	2 ng/L
(Sum of PFOA and PFOS)	

Health Effects

Studies in workers and people living in areas with high levels of PFOA show that PFOA may increase cholesterol, damage the liver, cause pregnancy-induced hypertension, increase the risk for thyroid disease, decrease antibody response to vaccines, decrease fertility, and cause small decreases in birth weight.¹ Studies in research animals have found that PFOA can cause damage to the liver and the immune system, birth defects, delayed development, and newborn deaths in lab animals.¹

The International Agency for Research on Cancer (IARC) classifies PFOA as possibly carcinogenic to humans and the EPA states there is suggestive evidence of carcinogenic potential for PFOA. PFOA has been shown to be genotoxic in some tests, but has not been shown to be mutagenic.^{2,3} Both PFOA and PFOS have been shown to cause the same or similar effects on the immune system, development, and reproduction in people and research animals indicating that PFOA can cause interactive effects.^{1,4,5}

References

1. ATSDR. Toxicological Profile for Perfluoroalkyls - Draft for Public Comment. In: Registry AFTSaD, ed. Atlanta, GA2017.
2. USEPA. Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA). In. Vol EPA 822-R-16-0052016.
3. USEPA. Health Effects Support Document for Perfluorooctanoic Acid (PFOA). In. Vol EPA 822-R-16-0032016.
4. USEPA. Drinking Water Health Advisory for Perfluorooctane sulfonic acid (PFOS) In. Vol EPA 822-R-16-0042016.
5. USEPA. Health Effects Support Document for Perfluorooctane sulfonic acid (PFOS) In. Vol EPA 822-R-16-0022016.



Perfluorooctane sulfonic acid (PFOS) | 2019 Cycle 10

Substance Overview

Perfluorooctane sulfonate (PFOS) is a chemical in a group of contaminants called per- and polyfluoroalkyl substances (PFAS). Because of its chemical properties, PFOS has been used as stain repellants in commercial products like carpet and fabric, as a coating for packaging, and in some fire-fighting foams.¹ PFOS can persist in the environment and in the body for long periods of time.¹

Recommendations

Wisconsin does not currently have a NR140 Groundwater Quality Public Health Enforcement Standard for PFOS.

DHS recommends an enforcement standard of 20 nanograms per liter (ng/L) for PFOS. This standard is based on the Agency for Toxic Substances and Disease Registry's (ATSDR's) intermediate oral minimum risk level for PFOS.

This standard applies to the sum of PFOS and PFOA concentrations in groundwater.

DHS recommends that the NR140 Groundwater Quality Public Health Preventive Action Limit for PFOS be set at 10% of the enforcement standard because PFOS have been shown to have carcinogenic, teratogenic and interactive effects.

Current Standards	
Enforcement Standard:	N/A
Preventive Action Limit:	N/A
Year:	N/A

Recommended Standards	
Enforcement Standard:	20 ng/L
Preventive Action Limit:	2 ng/L
(sum of PFOS and PFOA)	

Health Effects

Studies in workers and people living in areas with high levels of PFOS in drinking water show that PFOS may increase cholesterol, damage the liver, cause pregnancy-induced hypertension, increase the risk for thyroid disease, decrease antibody response to vaccines, decrease fertility, and cause small decreases in birth weight.¹⁻³ Studies in research animals have found that PFOS can cause damage to the liver and the immune system. PFOS has also been shown to cause birth defects, delayed development, and newborn deaths in animals, indicating that PFOS can cause teratogenic effects.

The EPA has classified PFOS as having suggestive evidence of carcinogenic potential.^{2,3} PFOS has not been shown to have mutagenic effects.¹⁻³ Both PFOA and PFOS have been shown to cause the same or similar effects on the immune system, development, and reproduction in people and research animals indicating that PFOS can cause interactive effects.¹⁻³



References

1. ATSDR. Toxicological Profile for Perfluoroalkyls - Draft for Public Comment. In: Registry of Toxic Substances, ed. Atlanta, GA2017.
2. USEPA. Drinking Water Health Advisory for Perfluorooctane sulfonic acid (PFOS) In. Vol EPA 822-R-16-0042016.
3. USEPA. Health Effects Support Document for Perfluorooctane sulfonic acid (PFOS) In. Vol EPA 822-R-16-0022016.

