

## Five questions about PFAS

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### **What are PFAs and what are the challenges?**

Per- and polyfluoroalkyl substances (PFAS) belong to a class of thousands of chemicals that have been widely used in a variety of industrial processes and products. Since first being synthesized and introduced in the 1940's, PFAS can be found in aqueous film forming foams (AFFFs) used for fire-fighting and training and in numerous commercial and industrial products. Due to their desired chemical stability of these compounds and their fate and transport, PFAS are now ubiquitous in the environment. From epidemiological studies, certain PFAS compounds are viewed as increasing the risk for adverse health effects in humans including kidney and liver cancers, immunodeficiencies, thyroid disease, high cholesterol, and other diseases at low (parts per trillion) concentrations in drinking water. As a result of possible effects at these low concentrations, ultra-low analytical detection techniques and special considerations are required including the use of restricted materials when conducting PFAS sampling. Combined with a limited selection of EPA approved analytical methodologies and absent, undeveloped, or developing regulatory criteria from EPA and states, uncertainty and fear is common for industrial and municipal entities that may seek to, or be required to, investigate for potential PFAS sources. Remediation challenges exist given the physical and chemical properties of these persistent PFAS compounds and research is ongoing for cost-effective solutions for mitigation (often the use of Granular Activated Carbon) and endpoint resulting destructive technologies.

### **What is Wisconsin Doing About PFAS?**

On February 1, 2018, the Wisconsin Department of Natural Resources (WDNR) Remediation and Redevelopment (RR) Program released an update (<https://rr-report.blogs.govdelivery.com/2018/02/01/wisconsin-dnrs-remediation-and-redevelopment-program-has-authority-to-regulate-emerging-contaminants-including-pfas-compounds/>) stating that PFAS meets the definition of a hazardous substance. Discharges of PFAS to the environment are subject to regulation under Wis. Stat. 292 and requires the immediate notification, investigation, and remediation under Wis. Admin. Code chs. NR 700-754. Soil residual contaminant levels (RCLs) have been established using the U.S. EPA's Regional Screening Level (RSL) web calculator for determining non-industrial and industrial direct contact RCLs for three individual PFAS compounds [perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS)]. Wisconsin has not promulgated drinking water, groundwater, or surface water standards for PFAS. However, the WDNR states they have the authority to establish site specific clean-up standards for PFAS of additional contaminated media in accordance with Wis. Admin. Code NR 722.09. The WDNR formally sent a request in March of 2018 to the Department of Health Services (DHS) to recommend health based groundwater quality standards for 16 substances, including ranking PFOS and PFOA as high priorities. This is a required step in a lengthy process of establishing groundwater standards under NR 140 that typically takes 24-36 months.

In September of 2018, the WDNR addressed the historical usage of PFAS at open Voluntary Party Liability Exemption (VPLE) sites by requesting a survey to be completed and now new VPLE sites must address historical PFAS usage. Early in 2019, the Bureau for Remediation and Redevelopment Tracking System (BRRTS) (<https://dnr.wi.gov/botw/SetUpBasicSearchForm.do>) was updated to include PFAS as a substance and the WDNR launched a PFAS website: <https://dnr.wi.gov/topic/Contaminants/PFAS.html> that will be a continually updated resource. The RR Program has convened a PFAS technical advisory group (<https://dnr.wi.gov/topic/Contaminants/PFASGroup.html>) that is open for public attendance and will meet quarterly with the first meeting being held on February 22<sup>nd</sup>. Emerging Contaminants, of which PFAS is one group of chemicals to consider, are also being taken into consideration in the current drafting of updates in the NR 700-754 rule change process: <https://dnr.wi.gov/topic/Contaminants/PFASGroup.html>

### **What are Other States Doing About PFAS?**

Wisconsin is neighbored by two states, Michigan and Minnesota, that are amongst the leading states in regulating and investigating PFAS. Michigan conducted a PFAS surface water study and investigation of major waterbodies in 2016 and subsequently required all 95 Industrial Pretreatment Programs (IPPs) to conduct a PFAS source identification and elimination program to identify and eliminate PFAS sources from their industrial users. Concurrently, the Michigan Department of Environmental Quality (MDEQ) and the Michigan Department of Health and Human Services (MDHHS) sampled all schools and public drinking water sources. This analysis resulted in the sampling of over 1,800 samples, representing the drinking water for 75% of Michigan's residences. The results of each of these studies will be completed in 2019 and the MDEQ is continuing to investigate

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potential impacts to drinking water from known or suspected PFAS sites including Department of Defense (DoD) Air Force Bases (AFBs) and chrome plating operations. The Michigan PFAS Action Response Team (MPART) (<https://www.michigan.gov/pfasresponse/>), a multi-agency task force, lists 43 PFAS sites that are being actively investigated in Michigan at the time this article was written.

Minnesota is home to one of the largest chemical manufacturers of PFAS, 3M, and the Minnesota Pollution Control Agency (MPCA) has been actively addressing PFAS for over twelve years. The Minnesota Department of Health (MDH) issued updates to their advisory health-based values (HBV) (<https://www.health.state.mn.us/news/pressrel/2017/water052317.html>) for PFOS and PFOA in May of 2017. MDH also issued HBVs for two additional PFAS compounds: PFBS and perfluorobutanoate (PFBA). The MPCA is conducting ongoing drinking water monitoring, landfill monitoring, sediment sampling and fish sampling required in the settlement with 3M (<https://3msettlement.state.mn.us/>) in areas such as Cottage Grove, MN that were directly exposed to PFAS releases. The MPCA is also conducting a search of likely PFAS industrial sources by compiling a NAICS code search of active industries in the state. Both the MPCA and MDEQ have been in contact with the WDNR about their PFAS programs. Other states that are actively addressing PFAS include New York, New Jersey, North Carolina, Massachusetts, and Pennsylvania and 16 states have finalized a regulation for either surface water, drinking water, or groundwater concerning PFAS at the time of this article. The rapidly evolving regulation of PFAS varies from state to state and individual contaminants of concern can depend on the likelihood of exposure to different PFAS compounds that differ between states. For example, New Jersey has promulgated a drinking and groundwater standard for perfluorononanoic acid (PFNA) and North Carolina has a health goal drinking water guidance for GenX, a PFOA replacement compound, as each of these states have major chemical manufacturing facilities for each of these particular compounds.

### **What is the EPA Doing About PFAS?**

Currently, the EPA has a lifetime Health Advisory Level (HAL) 70 ng/L (parts per trillion) for PFOS and PFOA individually or combined. A HAL is not an enforceable drinking water standard but rather a guidance level established on peer-reviewed science and life-time exposure. Many states have used the HAL as a benchmark concentration to determine contaminated drinking water or groundwater sources.

On February 14, 2019, acting USEPA administrator, Andrew Wheeler, released the EPA's PFAS Action Plan: <https://www.epa.gov/pfas/epas-pfas-action-plan>. The plan includes both short-term solutions and long-term strategies focused on providing states, tribes, and local communities with the tools necessary to provide clean and safe drinking water to their residents and to address PFAS sources. Key elements of this plan include:

- **Drinking water:** EPA is moving forward with the maximum contaminant level (MCL) process outlined in the Safe Drinking Water Act for PFOA and PFOS—two of the most well-known and prevalent PFAS chemicals. By the end of this year, EPA will propose a regulatory determination, which is the next step in the Safe Drinking Water Act process for establishing an MCL.
- **Clean up:** EPA has already begun the regulatory development process for listing PFOA and PFOS as hazardous substances and will issue interim groundwater cleanup recommendations for sites contaminated with PFOA and PFOS. This important work will provide additional tools to help states and communities address existing contamination and enhance the ability to hold responsible parties accountable.
- **Enforcement:** EPA will use available enforcement tools to address PFAS exposure in the environment and assist states in enforcement activities.
- **Monitoring:** EPA will propose to include PFAS in nationwide drinking water monitoring under the next Unregulated Contaminant Monitoring Program. The agency will also consider PFAS chemicals for listing in the Toxics Release Inventory to help the agency identify where these chemicals are being released.
- **Research:** EPA will develop new analytical methods so that more PFAS chemicals can be detected in drinking water, in soil, and in groundwater. These efforts will improve our ability to monitor and assess potential risks. EPA's research efforts also include developing new technologies and treatment options to remove PFAS from drinking water at contaminated sites.
- **Risk Communications:** EPA will work across the agency—and the federal government—to develop a PFAS risk communication toolbox that includes materials that states, tribes, and local partners can use to effectively communicate with the public.



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### **What does this mean for FET Members?**

Based on past and current activities at the state and federal level, PFAS do not appear to be a passing fad and the regulation of these compounds in various abiotic (e.g. soil, water) and biotic (fish, wildlife) media is rapidly evolving. Industries and operations such as chemical manufacturers, combined waste treatment facilities, POTWs, landfills, airports, oil and gas, chrome platers, and pulp and paper manufacturers have already been targeted by various state regulatory agencies due to their historical and current significance as producers, users, and accumulators of PFAS. Other industries such as wire coaters and etchers, paint and coating manufacturers, consumer goods manufacturers, semiconductor manufacturers, aerospace and automotive manufacturers, and textile manufacturers are also gaining increased regulatory attention as probable PFAS sources due to potential historical, current, and continued usage of PFAS in their processes, emissions, and waste.

A clear understanding of all of the ramifications concerning PFAS is unknown, at this time, due to a variety of factors that have not yet been fully addressed. The ramifications of complex circumstances like the establishment of environmental standards and guidance values for air, water, soil, sediment, biosolids/ sludge, and biota for PFAS compounds beyond just PFOS and PFOA remain to be seen. Even questions concerning the capacity and/or ability of the WDNR, EPA or other regulatory bodies to enforce PFAS investigations and, if necessary, require the clean-up of past and current operating facilities and sites remain to be answered.

Peer reviewed research and technical publications on PFAS are produced almost everyday, but with the rapid development of the state of the practice and science of PFAS, many inaccurate and sometimes misleading materials also are being generated. It is important to gain knowledge from reputable industry sources like the Interstate Technology Regulatory Council (ITRC) PFAS Fact Sheets: <https://pfas-1.itrcweb.org/>, the Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Perfluoroalkyls draft report (<https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>), trade organizations like FET, and from experienced technical and legal professionals to guide decisions when concerning PFAS.

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