



August Mack

ENVIRONMENTAL

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PFAS 101 & RULEMAKING UPDATES

OCTOBER 2023

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AGENDA

- What are PFAS/Concerns
- Sources in the Environment
- PFAS Sampling & Analysis
- Regulatory Status
- Bipartisan Infrastructure Law
- Conclusion & Questions

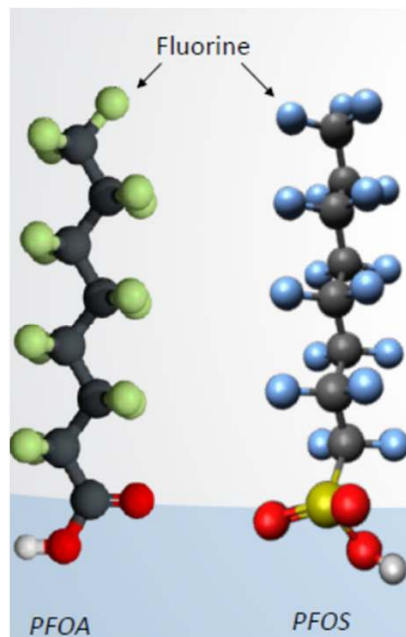




PFAS: WHAT IS IT?

WHAT ARE PFAS

- Poly- and perfluoroalkyl substance (PFAS).
 - Fluorinated aliphatic (carbon chain) substances; non-aromatic (i.e., do not contain aromatic substances (C-ring)).
 - Thousands of PFAS compounds; best studied are PFOA and PFOS.



A class of man-made chemicals

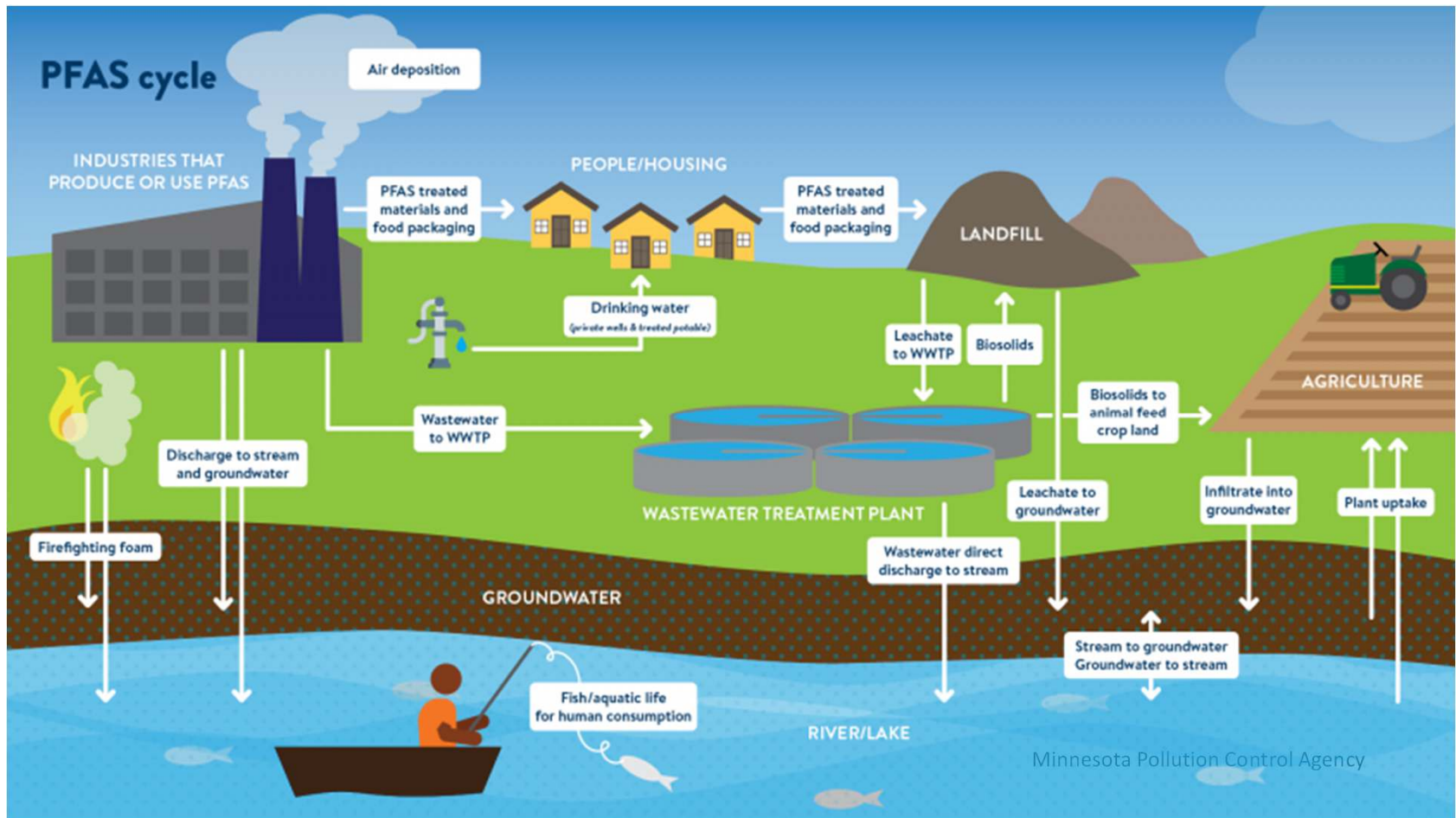
- **Chains** of carbon (C) atoms surrounded by fluorine (F) atoms, with different endings
- **Complicated chemistry** – thousands of different variations exist in commerce
- **Widely used** in industrial processes and in consumer products
- **Some** PFAS are known to be **PBT**:
 - **Persistent** in the environment
 - **Bioaccumulative** in organisms
 - **Toxic** at relatively low (ppt) levels

ITEMS CONTAINING PFAS

- Used globally the last 60+ years.
- Used in thousands of household products, industrial products, manufacturing, and firefighting
- PFAS/Teflon Manufacturing
- Fire Fighting Foam (Aqueous Film-Forming Foam = AFFF) – military significant user
- Electronics Manufacturing
- Chrome Plating
- Oil and Gas Industry
- Performance Chemicals
- Lubricants
- Surfactants

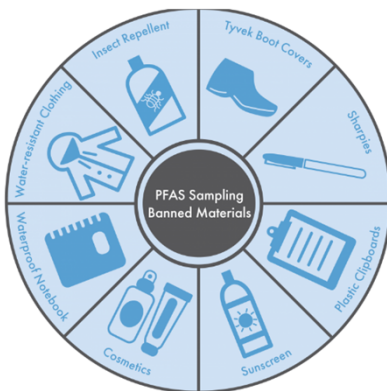


PFAS IN THE ENVIRONMENT



PFAS SAMPLING & ANALYSIS

- Sampling Best Practices
 - Wash Hands, New Gloves, Well Washed Natural Fiber clothing, PFAS free paper/writing equipment, PFAS free sunscreen and bug repellents
 - Dedicated sample containers that don't absorb or desorb PFAS
 - Robust Field QC program
 - Field Blanks, Equipment Blanks, Trip Blanks
 - Stringent Decontamination Protocols



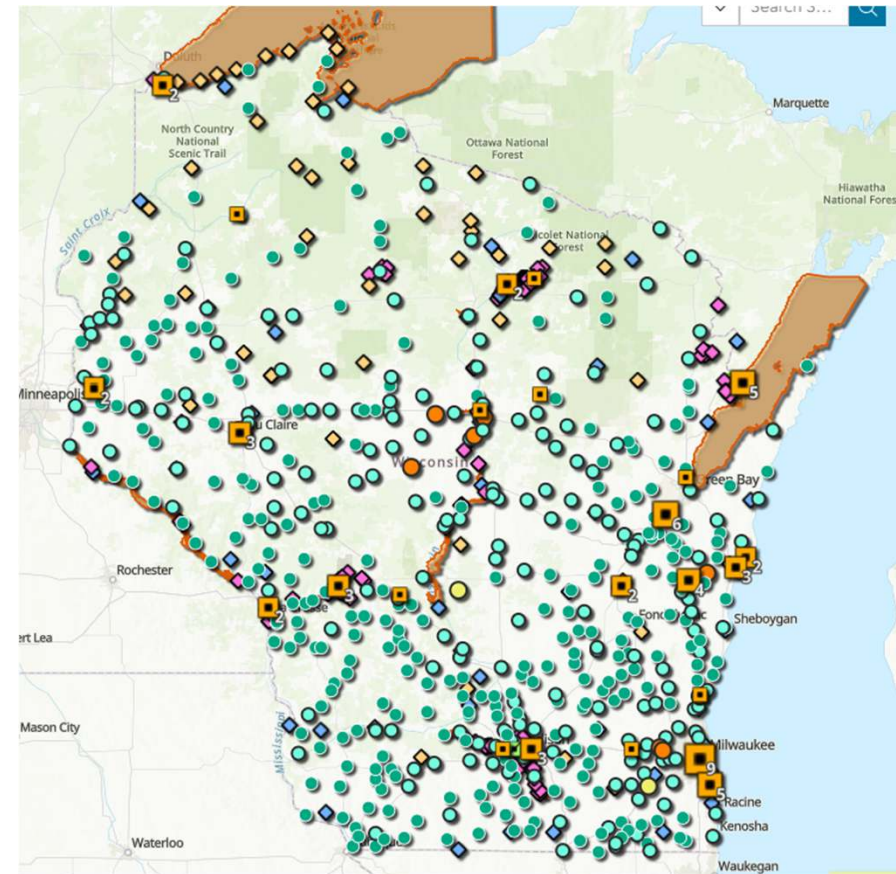


PFAS REGULATIONS

WISCONSIN & U.S. EPA

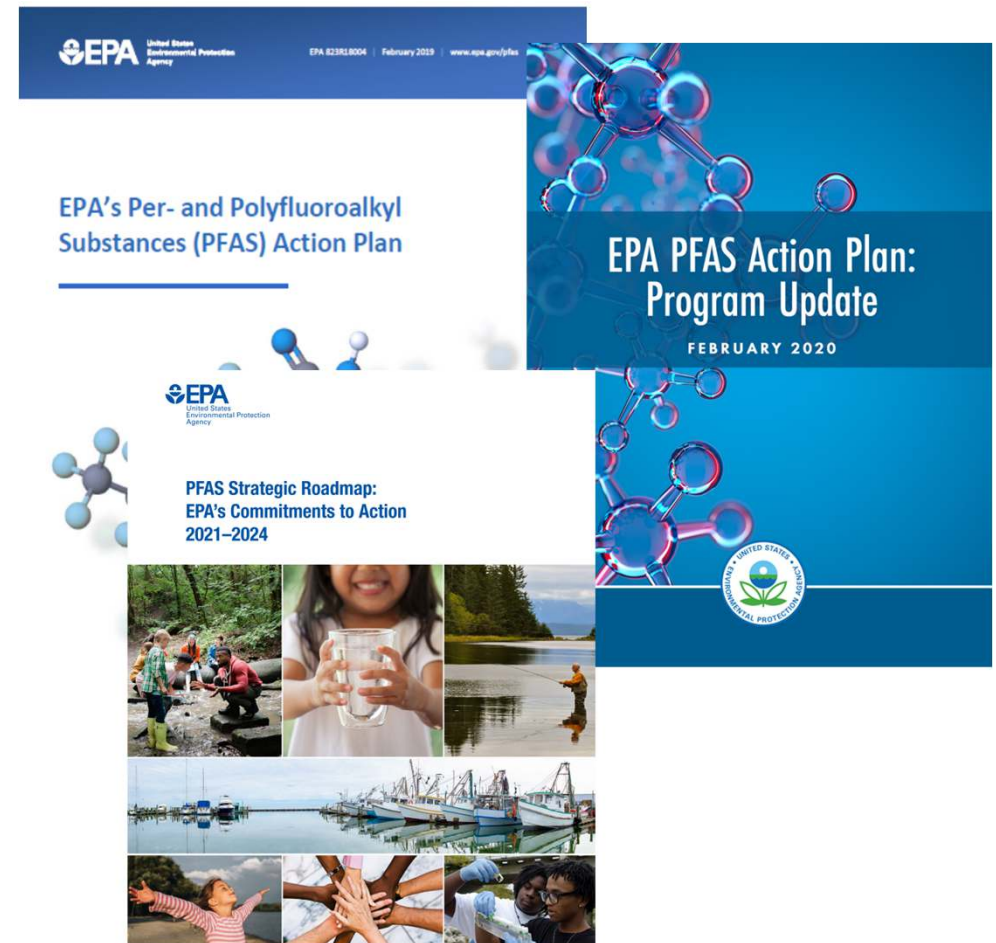
WISCONSIN - PFAS

- WI PFAS Action Council (WisPAC)
- PFAS Action Plan (Dec 2020) - WDNR
 - Standards, testing, pollution prevention, engagement, education, research, phase-out, future investment
 - Identify and address historic discharges
- Rules for drinking water, surface water, and AFFF.
 - Drinking water – 70 ppt (PFOA and PFOS combined or individual)
 - Surface water – 8 ng/L PFOS and 20 ng/L PFOA for drinking water sources (95 ng/L for other waters)
 - Prohibits use of AFFF fire fighting foams for training; prohibits use except in emergencies and testing as long as it is properly managed and DNR is notified.



U.S. EPA ACTION PLAN - FEB 14, 2019

- Propose MCLs
- List PFOA and PFOS as “Hazardous Substances” under CERCLA
- Toxicological studies
- Expand PFAS COCs
- PFAS in GW Methods
- Sampling methods and cleanup criteria
- **UPDATE** - Feb 2020
- **PFAS Strategic Roadmap** – October 18, 2021
- **PFAS Strategic Roadmap Update** – November 2022



U.S. EPA SDWA PFAS RULE

- Proposed Rule published on March 29, 2023.
 - Public comments closed May 30, 2023.
 - 121,977 public comments received.
 - Final rule expected in early 2024.
- Proposes National Primary Drinking Water Regulation (NPDWR) and health based maximum contaminant level goals (MCLGs).
- Will require PWS to:
 - Monitor for PFAS;
 - Notify the public of PFAS levels; and
 - Treat drinking water to achieve MCLs.

18638	Federal Register / Vol. 88, No. 60 / Wednesday, March 29, 2023 / Proposed Rules
<p>ENVIRONMENTAL PROTECTION AGENCY</p> <p>40 CFR Parts 141 and 142</p> <p>[EPA-HQ-OW-2022-0114; FRL 8543-01-OW]</p> <p>RIN 2040-AG18</p> <p>PFAS National Primary Drinking Water Regulation Rulemaking</p> <p>AGENCY: Environmental Protection Agency (EPA).</p> <p>ACTION: Preliminary regulatory determination and proposed rule; request for public comment; notice of public hearing.</p> <p>SUMMARY: The Environmental Protection Agency (EPA) is committed to using and advancing the best available science to tackle per- and polyfluoroalkyl substances (PFAS) pollution, protect public health, and harmonize policies that strengthen public health protections with infrastructure funding to help communities, especially disadvantaged communities, deliver safe drinking water. In March 2021, EPA issued a final regulatory determination to regulate perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) as contaminants under Safe Drinking Water Act (SDWA). In this notice, EPA is issuing a preliminary regulatory determination to regulate perfluorohexane sulfonic acid (PFHxS), hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (also known as a GenX chemicals), perfluorononanoic acid (PFNA), and perfluorobutane sulfonic acid (PFBS), and mixtures of these PFAS as contaminants under SDWA. Through this action, EPA is also proposing a National Primary Drinking Water Regulation (NPDWR) and health-based Maximum Contaminant Level Goals (MCLG) for these four PFAS and their mixtures as well as for PFOA and PFOS. EPA is proposing to set the health-based value, the MCLG, for PFOA and PFOS at zero. Considering feasibility, including currently available analytical methods to measure and treat these chemicals in drinking water, EPA is proposing individual MCLs of 4.0 nanograms per liter (ng/L) or parts per trillion (ppt) for PFOA and PFOS. EPA is proposing to use a Hazard Index (HI) approach to protecting public health from mixtures of PFHxS, HFPO-DA and its ammonium salt, PFNA, and PFBS because of their known and additive toxic effects and occurrence and likely co-occurrence in drinking water. EPA is proposing an HI of 1.0 as the MCLGs for these four PFAS and any mixture</p>	<p>containing one or more of them because it represents a level at which no known or anticipated adverse effects on the health of persons is expected to occur and which allows for an adequate margin of safety. EPA has determined it is also feasible to set the MCLs for these four PFAS and for a mixture containing one or more of PFHxS, HFPO-DA and its ammonium salt, PFNA, PFBS as an HI of unitless 1.0. The Agency is requesting comment on this action, including this proposed NPDWR and MCLGs, and have identified specific areas where public input will be helpful for EPA in developing the final rule. In addition to seeking written input, the EPA will be holding a public hearing on May 4, 2023.</p> <p>DATES: Comments must be received on or before May 30, 2023. Comments on the information collection provisions submitted to the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA) are best assured of consideration by OMB if OMB receives a copy of your comments on or before April 28, 2023. Public hearing: EPA will hold a virtual public hearing on May 4, 2023, at https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas. Please refer to the SUPPLEMENTARY INFORMATION section for additional information on the public hearing.</p> <p>ADDRESSES: You may send comments, identified by Docket ID No. EPA-HQ-OW-2022-0114 by any of the following methods:</p> <ul style="list-style-type: none"> • <i>Federal eRulemaking Portal:</i> https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments. • <i>Mail:</i> U.S. Environmental Protection Agency, EPA Docket Center, Office of Ground Water and Drinking Water Docket, Mail Code 2822TF, 1200 Pennsylvania Avenue NW, Washington, DC 20460. • <i>Hand Delivery or Courier:</i> EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. to 4:30 p.m., Monday through Friday (except Federal Holidays). <p><i>Instructions:</i> All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the "Public Participation" heading of the SUPPLEMENTARY INFORMATION section of this document.</p>
	<p>FOR FURTHER INFORMATION CONTACT: Alexis Lan, Office of Ground Water and Drinking Water, Standards and Risk Management Division (Mail Code 4607M), Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number 202-564-0841; email address: PFASNPDWR@epa.gov</p> <p>SUPPLEMENTARY INFORMATION:</p> <p>Executive Summary</p> <p>In March 2021, EPA issued a final regulatory determination to regulate perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) as contaminants under Safe Drinking Water Act (SDWA). EPA is issuing a preliminary regulatory determination to regulate perfluorohexane sulfonic acid (PFHxS), hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (also known as a GenX chemicals), perfluorononanoic acid (PFNA), and perfluorobutane sulfonic acid (PFBS), and mixtures of these PFAS as contaminants under SDWA (see section III of this preamble for additional discussion on EPA's preliminary regulatory determination). Through this action, EPA is also proposing a National Primary Drinking Water Regulation (NPDWR) and health-based Maximum Contaminant Level Goals (MCLG) for these four PFAS and their mixtures as well as for PFOA and PFOS. Exposure to these PFAS may cause adverse health effects, and all are likely to occur in drinking water.</p> <p>PFAS are a large family of synthetic chemicals that have been in use since the 1940s. Many of these compounds have unique physical and chemical properties that make them highly stable and resistant to degradation in the environment—colloquially termed "forever chemicals." People can be exposed to PFAS through certain consumer products, occupational contact, and/or by consuming food and drinking water that contain PFAS (see section I.C of this preamble for additional discussion on PFAS chemistry, production, and uses). Current scientific evidence indicates that consuming water containing the PFAS covered in this proposed regulation above certain levels can result in harmful health effects. Depending on the individual PFAS, health effects can include negative impacts on fetal growth after exposure during pregnancy, on other aspects of development, reproduction, liver, thyroid, immune function, and/or the nervous system; and increased risk of cardiovascular and/or certain types of cancers, and other health impacts (see</p>

U.S. EPA PFAS UPDATES - MCL

Proposed MCLs

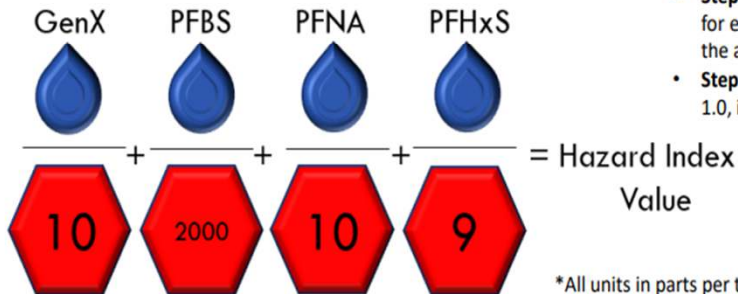
- PFOA - 4 ng/L (ppt)
- PFOS – 4 ng/L (ppt)
- Hazard Index = 1 for GenX, PFBS, PFNA, PFHxS
- HI = Additivity calculation for chemical mixtures due to dose additivity

How do I calculate the Hazard Index?

The HI is used to understand health risks. For the PFAS NPDWR proposal, the HI considers the combined toxicity of PFNA, GenX Chemicals, PFHxS, and PFBS in drinking water.

What is a Hazard Index?

The HI is made up of a sum of fractions. Each fraction compares the level of each PFAS measured in the water to the level determined not to cause health effects (i.e., HBWC).



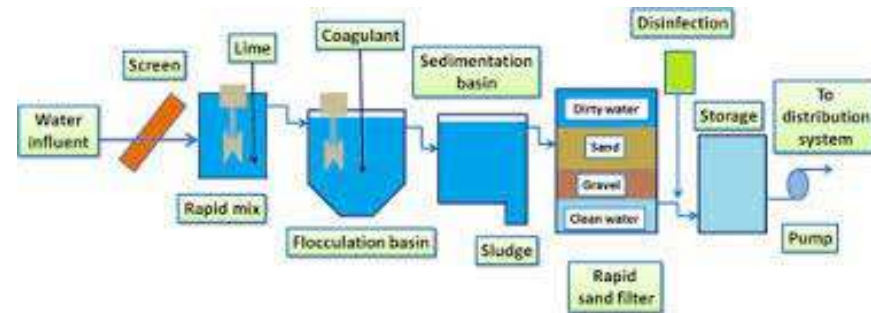
Steps:

- **Step 1:** Divide the measured concentration of **GenX** by the health-based value of **10 ppt***
- **Step 2:** Divide the measured concentration of **PFBS** by the health-based value of **2000 ppt**
- **Step 3:** Divide the measured concentration of **PFNA** by the health-based value of **10 ppt**
- **Step 4:** Divide the measured concentration of **PFHxS** by the health-based value of **9.0 ppt**
- **Step 5:** Add the ratios from steps 1, 2, 3, and 4 together
- **Step 6:** To determine HI compliance, repeat steps 1-5 for each sample collected in the past year and calculate the average HI for all the samples taken in the past year
- **Step 7:** If the running annual average HI greater than 1.0, it is a violation of the proposed HI MCL

U.S. EPA PFAS UPDATES - MCL

Impact of MCLs

- Estimated **66,000 Water Utilities** will be subject to this rule
- EPA estimates **2,400 – 6,300** utilities will NOT MEET these criteria
- EPA Cost Estimate – \$772 Million to \$1.2 Billion – capital and initial O&M
 - Treatment – GAC, Reverse Osmosis, Nanofiltration, Anion Exchange
 - Alternative sources
- Additional \$30-60M annual cost if EPA requires that PFAS treatment residues be managed as Hazardous Waste



U.S. EPA PFAS UPDATES - MCL

Impact of MCLs

- Potential impact to NPDES permits
 - MCLs are typically the default position for many permits
 - Pre-treatment requirements for upstream sources (MI – IPP)
 - EPA Memo – Dec 5, 2022
- Will filter down to due diligence activities, active site cleanups and future cleanups.
 - For example: PA enacted its MCLs, which are also the Statewide Health Standards for groundwater in its cleanup program (Act 2)



U.S. EPA PFAS UPDATES - CERCLA



PFOA and PFOS - CERCLA Hazardous Substances

- September 2022 – EPA proposed in the Federal Register to designate PFOA and PFOS hazardous substances.
- April 2023 – EPA proposed adding 7 additional PFAS, including GenX, to the Haz Substances list.
- Currently undergoing rulemaking
 - EPA has posted the listening sessions
 - Enforcement first/Polluter pays policy
 - *“EPA intends to focus on manufacturers, federal facilities, and industrial parties whose actions result in the releases of significant amount of PFAS”.*
 - EPA will use its **“enforcement discretion”** and does not intend on pursuing under CERCLA – community water utilities, POTWs, publicly owned landfills, farms, certain airports and fire depts.



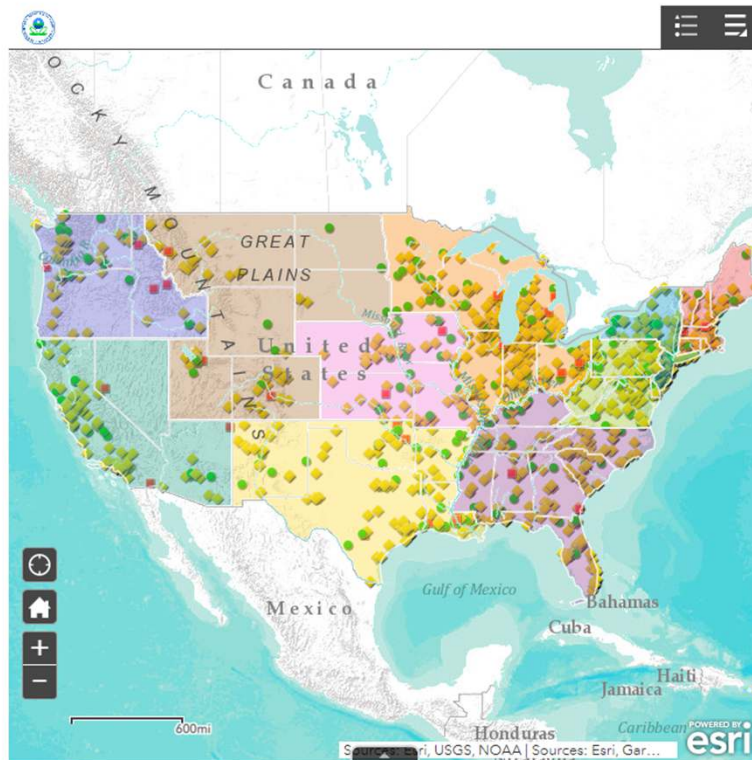
U.S. EPA PFAS UPDATES – CERCLA

Many comments from Industry/Municipalities/Public

- Water treatment plants/POTWs –even with enforcement discretion, they could get pulled into 3rd party liability under CERCLA – would like an express exemption
- Substantial cost burden on utilities
- How will EPA implement its “enforcement discretion”
- Will NPDES have its own discharge values
- No CERCLA liability protections to most of the larger, non-public landfills in the country
- Discretionary authority needs to protect farmers
- Potential lawsuits to contractors using/installing PFAS materials

U.S. EPA PFAS UPDATES

Superfund National Priorities List (NPL) Where You Live Map



Potential Impact of Rule

- Regulatory reporting, spills, etc. – 1 lb over a 24 hr period of PFOA or PFOS
- CERCLA authority to investigate, cleanup and cost-recovery authority
- CERCLA site re-opener; RCRA and other sites
- Impact to Phase I ESA; property transactions; brownfields
- Increased litigation
- According to EPA, the focus is on polluters, but EPA will have discretionary authority to enforce



BIPARTISAN INFRASTRUCTURE LAW

GOVERNMENT ASSISTANCE

The Bipartisan Infrastructure Law (BIL)



- Signed by President Biden on November 15, 2021.
- Historic investment in key programs and initiatives implemented by the U.S. Environmental Protection Agency to build safer, healthier, cleaner communities.
- Includes \$50 billion to the EPA to strengthen the nation's drinking water and wastewater systems – the single largest investment in water that the federal government has ever made.
- More than \$30 billion of this funding through the DWSRF.
- Approximately half of this funding is required to be provided as additional subsidy to DACs.

GOVERNMENT ASSISTANCE

Available DWSRF Funding in the BIL



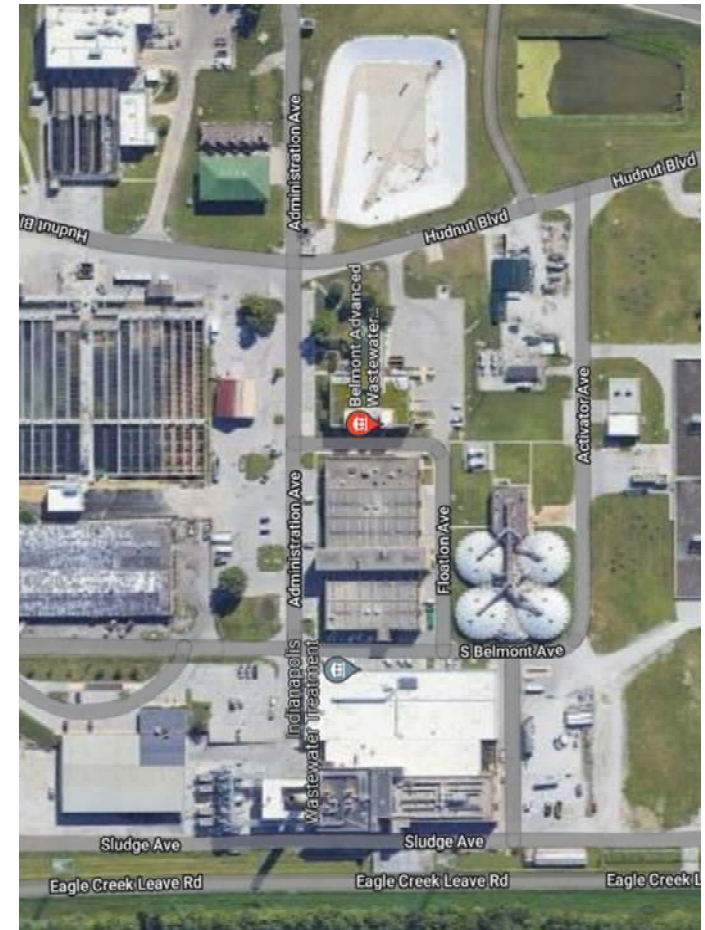
Appropriation	FY 2022 (\$)	FY 2023 (\$)	FY 2024 (\$)	FY 2025 (\$)	FY 2026 (\$)	Five Year Total (\$)
DWSRF General Supplemental	1,902,000,000	2,202,000,000	2,403,000,000	2,603,000,000	2,603,000,000	11,713,000,000
DWSRF Emerging Contaminants	800,000,000	800,000,000	800,000,000	800,000,000	800,000,000	4,000,000,000
DWSRF Lead Service Line Replacement	3,000,000,000	3,000,000,000	3,000,000,000	3,000,000,000	3,000,000,000	15,000,000,000



RECOMMENDATIONS

RECOMMENDATIONS

- Proactive planning and assessment to mitigate risks
- Perform desktop Study: PFAS lifecycle analysis and risk assessment
 - Baseline evaluation of current and past operations to identify potential sources of PFAS
 - Investigating where these compounds may be entering the system Identify areas of greatest risk for the utility
- Internal and external communications plan
- Consider role for outside counsel and consultants



QUESTIONS

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