Change is Always Different: Calibrating the PFAS Regulatory Crystal Ball

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PFAS Regulatory Crystal Ball

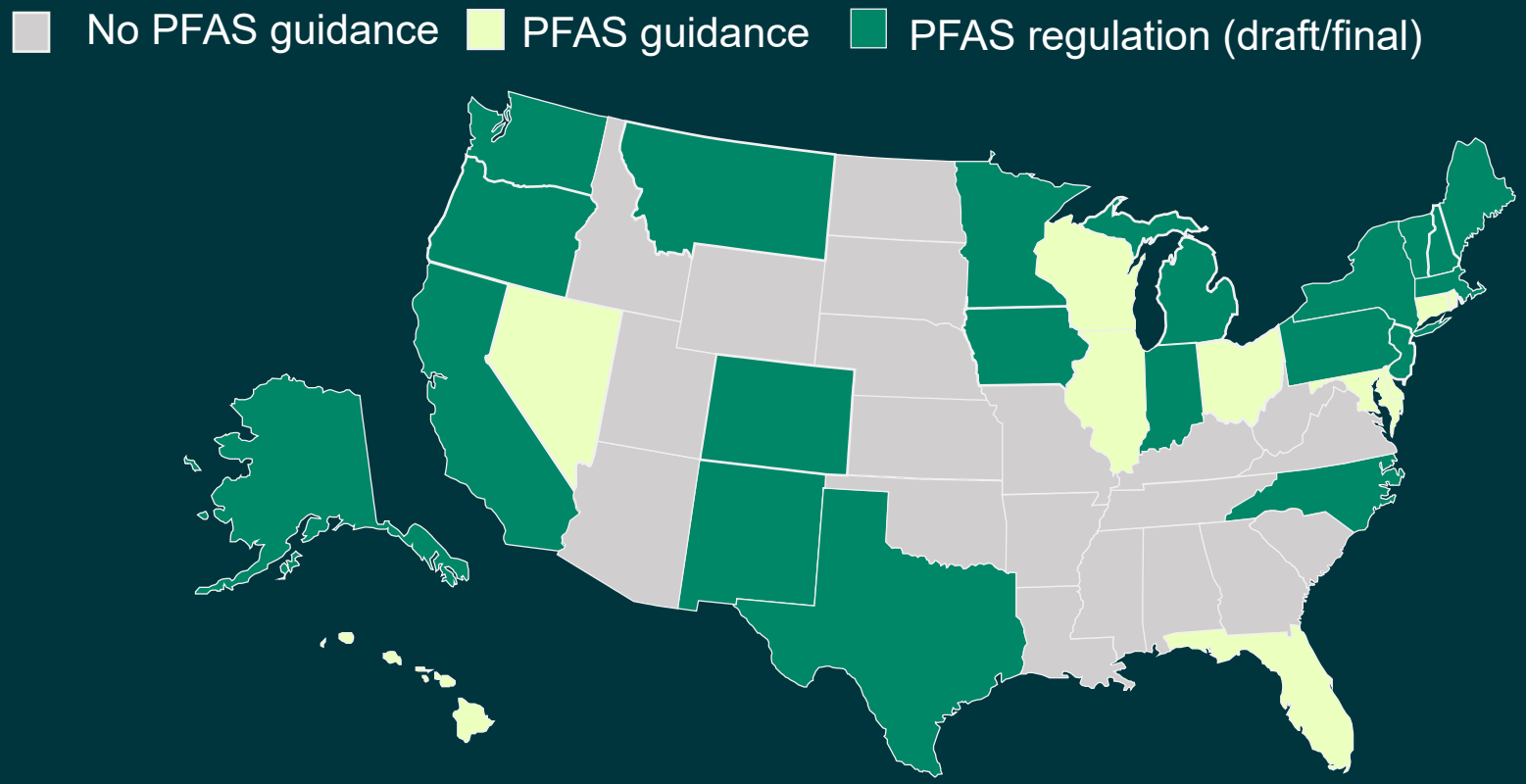
US Regulations for PFAS

Key Federal Regulations to Watch Closely

Where does this leave us?

US PFAS Drinking Water Regulations: States All Over the Map

State PFAS Drinking Water Regulations (2023)



- 20 states have fully promulgated drinking water criteria
- Concentration limits vary by state/compound
- Many states manage more than 2 PFAS
- New York and Massachusetts manage 6 PFAS
- Texas regulates 16 PFAS
- California notification levels for PFOA (5.1 ppt), PFOS (6.4 ppt) and PFHxS (3 ppt) are the current lowest state standards

Source: https://pfas-1.itrcweb.org/ **Jan2023**

(Library of up-to-date regulatory values in US)

At last, some direction! USEPA's Strategic PFAS Roadmap

Restrict

Prevent PFAS from entering the environment to reduce exposure and potential future risks

- Restrict production
- Restrict use to essential needs
- Record usage
- Control discharges

Research

Invest in research to identify which additional PFAS may pose human health and ecological risks and to develop methods to test, measure, remove, and destroy them

- Evaluate prevalence
- Measure with confidence
- Understand toxicity
- Learn about fate in the environment

Remediate

Hold responsible parties accountable for remediation
Ensure underserved communities have equitable access

- Maximum Contamination Level
- Ambient Water Level Criteria
- Hazardous Substance designation
- Research clean-up technologies

Source: USEPA *PFAS Strategic Roadmap 2021,* https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf

US Federal Actions - Past

2002
USEPA called for phase-out of PFOS

2006
US EPA created 2010 (95%)/15 (100%) PFOA Stewardship Program

2009
USEPA Provisional **Health Advisories (HAs)** for Drinking Water

PFOA < 400 ppt
PFOS < 200 ppt

2013-2015
USEPA Unregulated Contaminant Monitoring Rule (**UCMR3**) screened drinking water supplies serving >10,000 for:

- PFOS
- PFOA
- PFHpA
- PFNA
- PFBS
- PFHxS

2016
USEPA lowered drinking water HAs
PFOS < 70 ppt
PFOA < 70 ppt
PFOS+PFOA < 70 ppt

2019
USEPA **Regional Screening Levels (RSLs)** set at **40 ppt** in tapwater for PFOS and PFOA

2020
USEPA **draft Regulatory Determination** for PFOS and PFOA

Toxic Release Inventory for handling >100 pounds for 175 PFAS

2021
USEPA releases ***PFAS Strategic Roadmap***

Draft **Effluent Limitations Guidelines (ELGs)** for metal finishing and electroplating

2022
USEPA revised drinking water HAs:

PFOA	0.004 ppt (interim HA)
PFOS	0.02 ppt (interim HA)
PFBS	2,000 ppt (Final HA)
GenX*	10 ppt (Final HA)

USEPA **RSLs** set screening levels for **6 PFAS** acids and their anions

2022
USEPA released draft Proposed Rule designating PFOS and PFOA as **hazardous substances**

Draft **ELGs** for pulp and paper

Draft **aquatic life criteria** for PFOA/PFOS

ppt = part per trillion

*GenX is a trademark name for hexafluoropropylene oxide dimer acid (HFPO-DA), and informally refers to the chemicals that produce GenX

US Federal Actions – Past and Future

2023

Proposed draft drinking water regulation **Maximum Contaminant Level (MCL)** for PFOS and PFOA as well as an MCL for any mixture of GenX, PFBS, PFNA, and PFHxS

Advanced Notice of Proposed Rulemaking to list **7 additional PFAS as Hazardous Substance**

2023

UCMR 5 sampling begins
Monitors **29 PFAS** in public drinking water utilities serving > 3,300 + many smaller utilities

2023-2024

Improve reporting on commercial use of PFAS through **Safety Data Reporting** and **Significant New Use Rule**

Final rule designating certain PFAS as **CERCLA hazardous substances**

2023

Released **PFAS Analytic Tools** for public sharing of PFAS analytical data

Perform **biosolids** research and risk assessment

2023

National Pollution Discharge Elimination System (NPDES) permitters received guidance on **monitoring PFAS discharges**

Plan 15 laid out guides for testing and setting **Effluent Limitations Guidelines (ELGs)**

2024

Finalize MCLs for PFOA and PFOS and mixtures of GenX, PFBS, PFNA, and PFHxS

Finalize risk assessment for PFOA and PFOS in **biosolids**

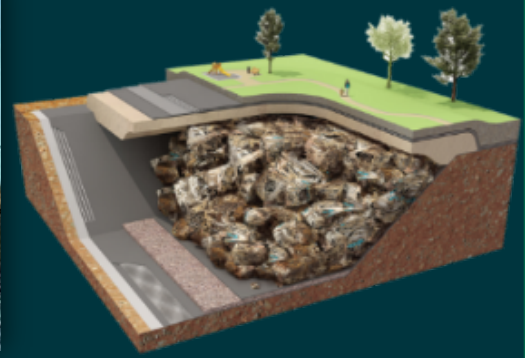
Hazardous Substance Designation

Draft Notification (06SEP2022):

Designates PFOA and PFOS, including their salts and structural isomers, as hazardous substances under CERCLA

Implications:

- Requires notification of any release equal to or greater than one pound or more in a 24-hour period
- Deemed Superfund sites will evaluate (e.g., via a 5-Year Review) and may require cleanup



Advanced Notice of Proposed Rulemaking (13APR2023):

- To add PFBS, PFHxS, PFNA, GenX, PFBA, PFHxA, PFDA
- To add 'precursors to PFOA, PFOS and other PFAS"

Hazardous Waste Designation

USEPA intends to:

- Add PFOA, PFOS, PFBS, and GenX as RCRA hazardous constituents under 40 CFR Part 261 Appendix VIII
- First step toward formal rulemaking to regulate as listed hazardous wastes
- Subject to RCRA corrective action requirements at hazardous waste treatment, storage, and disposal facilities

USEPA elected NOT to list PFAS as a class as a Subtitle C hazardous waste

RCRA hazardous wastes are automatically hazardous substances under the CERCLA

National Primary Drinking Water Regulation – Maximum Contaminant Levels

US Environmental Protection Agency

2023 Draft Maximum Contaminant Levels (MCLs)

Compound	Proposed MCL (ppt)
PFOA	4.0 ppt
PFOS	4.0 ppt
PFNA	Hazard Index (HI) = 1.0 (unitless)
PFHxS	
PFBS	
GenX	

$$HI = \frac{[GenX]}{10\ \text{ppt}} + \frac{[PFBS]}{2000\ \text{ppt}} + \frac{[PFNA]}{10\ ppt} + \frac{[PFHxS]}{9.0\ ppt}$$

Will enforcement fall under CERCLA?

Some states protect water as a future resource

Some groundwater and surface water impacts will consider the MCLs under CERCLA

USEPA does not plan to enforce CERCLA liability on:

- Community water utilities
- Publicly Owned Treatment Works
- Publicly owned/operated solid waste landfills
- Farmers applying biosolids
- State/tribal/municipal airports
- Tribal/local fire departments

Will we see additional PFAS regulations?

Regional Screening Levels – updated May 2023

- Used to screen site constituents for human health risk potential under CERCLA
- Updated semiannually—just added 7 compounds
- Effect of prior update (Nov2022) on one portfolio increased sites by 15%

Additional PFAS toxicity information:

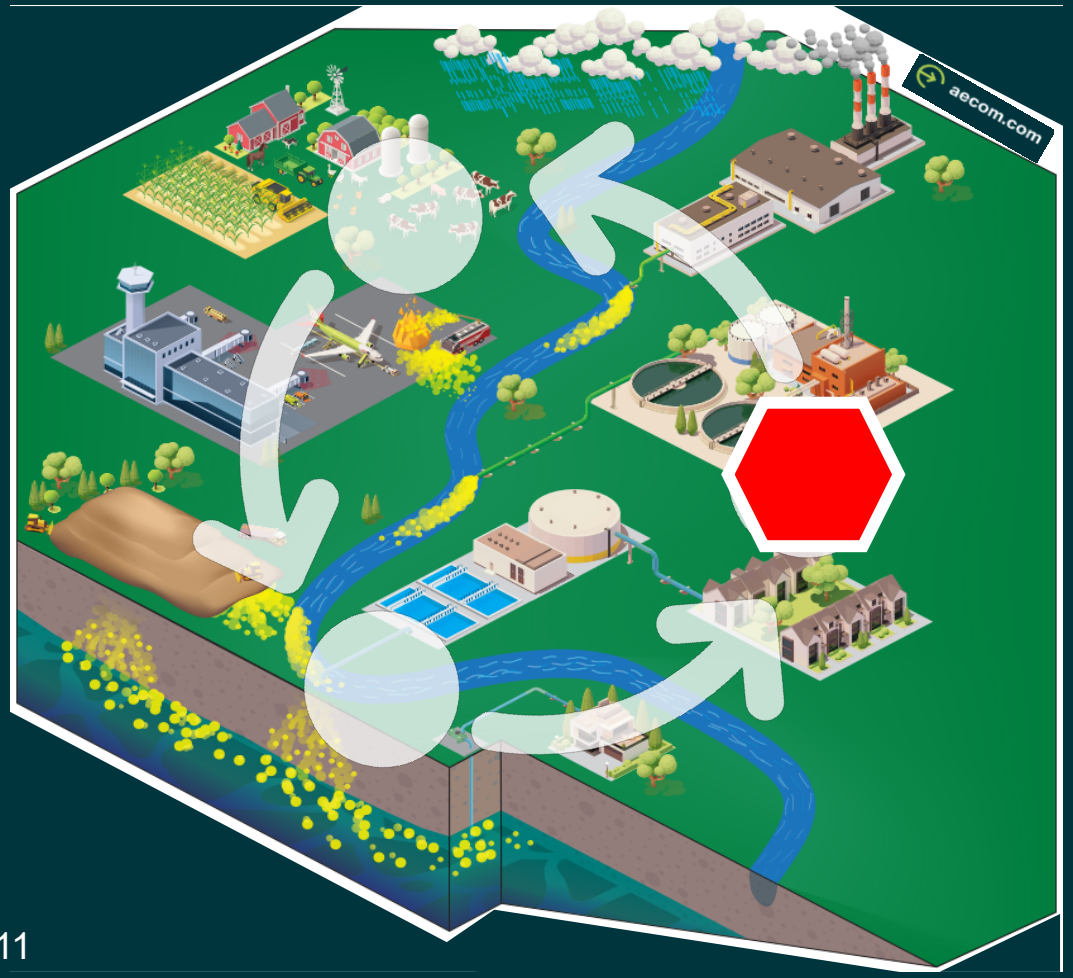
- PFHxA $5x10^{-4}$ - decreased postnatal body weight
- PFDA $4x10^{-10}$ - decreased serum antibody concentrations for diphtheria and tetanus
- Compare to reference dose for PFOA $3x10^{-6}$

Where does this leave us?

Protect drinking water ◆ Protect water resources

Eliminate PFAS from discharges

Separate/ remove ◆ Treat PFAS-laden waste



Estimated >$200B* remediation costs

- Embark on multi-year cleanup programs

Estimate $10-60B to achieving MCLs in supplied water

- Cost covered by consumers or federally funded state grants
- Deliver water clean enough for most at risk populations for all uses

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Questions?

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