



Ramifications of Current and Proposed PFAS Regulations on Port Operations

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Federal regulations



Safe Drinking Water Act – Maximum contaminant levels (MCLs) for drinking water

Chemical	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFHxS	10 ppt	10 ppt
HFPO-DA (GenX chemicals)	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
Mixture of two or more: PFHxS, PFNA, HFPO-DA, and PFBS	Hazard Index of 1	Hazard Index of 1

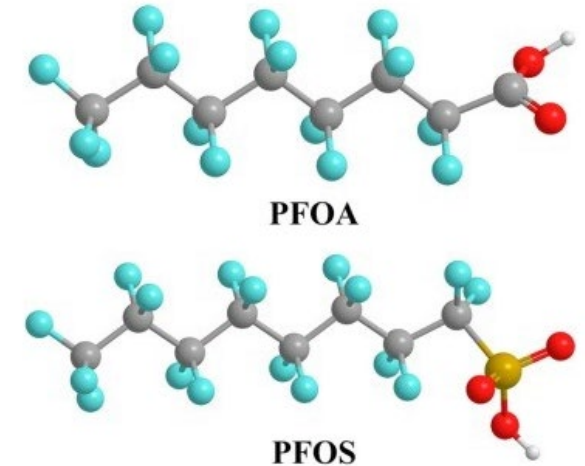
*Compliance is determined by running annual averages at the sampling point ppt = parts per trillion or nanograms per liter (ng/L)

$$HI\ MCL = \left(\frac{[HFPO-DA_{water}]}{[10\ ppt]} \right) + \left(\frac{[PFBS_{water}]}{[2000\ ppt]} \right) + \left(\frac{[PFNA_{water}]}{[10\ ppt]} \right) + \left(\frac{[PFHxS_{water}]}{[10\ ppt]} \right) = 1$$

- MCLs become Applicable or Relevant and Appropriate Requirement under CERCLA

CERCLA – PFOA and PFOS designated as hazardous substances

- **Effective 8 July 2024**
- **“In-scope”** for EPA’s all appropriate inquiry (AAI) rule/ASTM E1527 Phase I standard
 - CERCLA liability protection would require due diligence take into account these chemicals
- New PFAS CERCLA/Superfund sites; Implications to existing **litigation and settlements**
- EPA or other agencies could seek **cost recovery** from PRPs for PFOA/PFOS at contaminated sites; stated focus on manufacturing sources
- **Reopeners** or prolonged site actions – EPA must consider and address at 5-year reviews
- More detailed information can be found [here](#)



CERCLA reporting

- The rule requires entities to **immediately report releases** of PFOA and PFOS that meet or exceed the **reportable quantity (one pound)** to appropriate governing bodies
 - 3M ceased PFOS production in 2002
 - PFOA phased out in 2015 under PFOA Stewardship Program
- Entities do not need to report **past releases of PFOA or PFOS** following the requirements of CERCLA section 103 and 111(g) or EPCRA section 304 if they are not continuing as of the effective date of the rule.
 - Releases from foam systems may or may not trigger reporting
 - State-specific reporting may still be required (i.e. WA MTCA, CA OES spill reports)

CERCLA proposed actions

- EPA requested public input re: potential future listing of 7 additional PFAS on 13 April 2023¹ – No tentative finalization date
 - Hexafluoropropylene oxide dimer acid (HFPO-DA)
 - Perfluorobutanoic acid (PFBA)
 - Perfluorobutanesulfonic acid (PFBS)
 - Perfluorodecanoic acid (PFDA)
 - Perfluorohexanoic acid (PFHxA)
 - Perfluorohexanesulfonic acid (PFHxS)
 - Perfluorononanoic acid (PFNA)
- Independently listed as hazardous by Alaska, Massachusetts, New Jersey, New York, and Vermont²

¹ <https://www.epa.gov/newsreleases/epa-takes-important-step-advance-pfas-strategic-roadmap-requests-public-input-and-data>

² <<https://pfas-1.itrcweb.org/fact-sheets/>> assessed 3 April 2023

Existing CERCLA NPL sites with PFAS impacts



- Reopeners or significant actions at:
 - Moyer Landfill, PA: 5th 5-Year Review
 - Valmont TCE, PA: ROD in 2011
- Does not include sites on state superfund lists

As of 2019, 180 NPL sites were known to have PFAS contamination.

Implications for due diligence

- PFAS onsite does not in and of itself constitute a REC
- The ASTM standard defines a REC as:
 - (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment;
 - (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or
 - (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.
- Determine whether there is evidence (observations, records review, interviews) of a release, potential release or conditions that could contribute to the likelihood of a future release

RCRA -

Proposed rule announced 8 February 2024³

- Perfluorooctanoic acid. (PFOA)
- Perfluorooctanesulfonic acid. (PFOS)
- Perfluorobutanesulfonic acid. (PFBS)
- Hexafluoropropylene oxide-dimer acid. (HFPO-DA)
- Perfluorononanoic acid. (PFNA)
- Perfluorohexanesulfonic acid. (PFHxS)
- Perfluorodecanoic acid. (PFDA)
- Perfluorohexanoic acid. (PFHxA)
- Perfluorobutanoic acid. (PFBA)

Public comment period ended 8 April 2024

Additional proposed amendment to definition of “Hazardous Waste” applicable to corrective action⁴ – tentatively scheduled to finalize December 2024

List tentatively scheduled to finalize July 2025

³<https://www.federalregister.gov/d/2024-02324>

⁴<https://www.federalregister.gov/d/2024-02328>

Washington Department of Ecology (Ecology)

- Ecology announces legal authority to regulate “PFAS Compounds” as a defined hazardous substance under Model Toxics Control Act (MTCA) (October 2021)
- Ecology’s Release reporting applies
 - “...discovering a release of a hazardous substance to the environment that may pose a threat to human health or the environment, an owner or operator must report the release to ecology.”
- *Guidance for Investigating and Remediating PFAS Contamination in Washington State* (Ecology Publication 22-09-058: Last updated June 2023)
- Ecology’s Cleanup Levels and Risk Calculation (CLARC) Tables present July 2024 EPA MCLs and MTCA Method B Cleanup Levels for Soil and Groundwater
 - Updated levels published [here](#)

Washington-specific regulations

- General stormwater permit now includes PFAS monitoring requirements
- Stormwater and wastewater permit renewals may require addition of PFAS as monitoring parameter
 - Incorporate into QAPP/SAP
 - Plan for potential screening criteria relative to receiving water use
 - Including sanitary sewers (POTW)
- Waste disposal
 - Dangerous Waste designation if total fluorine content is >100 ppm using Total Organofluorine method
 - Impacts planning and execution of
 - AFFF system transitions and concentrate disposal
 - IDW disposal for traditional site investigation activities

Implications for site characterization

- Determine specific goals prior to sample collection
 - Data without context is not helpful and may be detrimental
- May be requested by regulators during other sampling activities
 - Informed discussion with regulator regarding screening criteria
- Requires comparison against site-specific background
 - Offsite sources
 - Atmospheric deposition
- Sampling programs for other analytes not necessarily suitable for PFAS
 - Greater mobility = deeper soil profiles, more lateral spread

Implications for selection of remedial technologies

- Media selection
- Media testing – before AND after use
 - Trace PFAS in equipment, drilling fluids, make-up water, etc.
 - PFAS profiling of imported fill material
 - Post-treatment waste profiling of GAC or ion exchange resin
- Permits
 - Discharge – groundwater, surface water, and/or sewer
 - Air – Soil Vapor Extraction system effluent?
- Compatibility of remedial strategy with PFAS
 - Precursor transformation?
 - Fate and transport?

Lessons learned

- Litigation may be greater driver than regulation
- PFAS data quality is highly sensitive to poor field methods
- Expect LONG turn-around-times
- Regulators may not be well informed on technical concepts
- Remedial options may be limited by dangerous/hazardous waste designation
- Remediation includes infrastructure – not just environmental media
- Conventional remedial technologies have unintended consequences for PFAS (see above)