

## Meeting summary

The Water Protection Program (WPP) hosted the second PFAS Workgroup meeting on January 30 via WebEx and in person. The agenda is attached.

The website for this workgroup is <https://dnr.mo.gov/about-us/forums-stakeholder-groups/per-and-polyfluoroalkyl-substances-pfas-workgroup>

I do not see the slide decks on the website. Almost every speaker used a PowerPoint presentation.

The primary purpose of this meeting was to hear from US EPA on PFAS topics.

### **1. Todd Phillips, Standards and WQ Branch, US EPA R7 also the PFAS Coordinator**

- a. EPA Strategic Roadmap came out Oct. 2021
- b. They also do an annual report. It came out Nov. 22
- c. See [www.epa.gov/pfas](http://www.epa.gov/pfas) for a lot of up to the day information

### **2. Amanda Jarvis, Ecological Risk Assessment Branch, EPA R7 on Aquatic Life Criteria for PFAS**

- a. Aquatic Life Criteria (ALC) is the maximum concentration at which a compound does not have a negative impact on aquatic life
- b. ALC apply to fish, amphibians, planktonic crustacean, benthic crustacean, insects, annelids, mollusks, and more.
- c. They are designed to protect 95% of the genera. There is a duration and frequency for every ALC.
- d. They use surrogates to protect species for which there are no data.
- e. Their starting data source is ECOTOX. See [cfpub.epa.gov/ecotox/](http://cfpub.epa.gov/ecotox/) They review and screen the data before they use it for ALC.
- f. ALC for PFOA and PFOS underwent external review in Summer of 2021. An extended public comment period ended in July, 2022. These ALCs are being revised right now based on those comments. Final rule: late March, 2023. See the table at the bottom of the slide for the numbers as they exist right now.

## 2021 DRAFT PFOA AND PFOS ALC AND BENCHMARKS

- All of the recommended criteria (acute and chronic water column and tissue criteria) are intended to be protective of aquatic life.
  - We recommend states and tribes adopt all of the criteria.
  - The criteria are intended to be independently applicable; no one criterion takes primacy.
- The draft aquatic life benchmarks for PFOA and PFOS are recommendations for states and tribes to consider in their water quality protection programs, and are not regulations or part of a rulemaking.
- These draft criteria are being revised considering public comments and integrating additional toxicity data, including sensitive insect data.

**Table 2. Draft Recommended Freshwater Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS) Aquatic Life Ambient Water Quality Criteria and Benchmark Magnitudes.**

Chemical	Freshwater					Saltwater
	Acute Water Column (CMC) <sup>1</sup>	Chronic Water Column (CCC) <sup>2</sup>	Invertebrate Whole-Body <sup>3</sup>	Fish Whole-Body <sup>3</sup>	Fish Muscle <sup>3</sup>	Acute Water Column Benchmark <sup>1</sup>
PFOA	49 mg/L	0.094 mg/L	1.11 mg/kg ww	6.10 mg/kg ww	0.125 mg/kg ww	7.0 mg/L
PFOS	3.0 mg/L	0.0084 mg/L	0.937 mg/kg ww	6.75 mg/kg ww	2.91 mg/kg ww	0.55 mg/L

<sup>1</sup> Duration = 1-hour average and Frequency = Once in three years

<sup>2</sup> Duration = 4-day average and Frequency = Once in three years

<sup>3</sup> Duration = Instantaneous and Frequency = Once in ten years

ww = wet weight

12

g. Due to limited data, there is only one saltwater criterion.

h. A stakeholder asked if you don't have an approved test method for ambient water and for fish tissue, how do arrive at ALC? The response was that they just use the data they have and clearly report the test methods that were used.

i. A stakeholder commented that some states have human health criteria. Does EPA intend to do human health criteria based on fish tissue? The response was that they don't know. This group works exclusively on ecological issues.

### 3. David Pratt, US EPA R7, Water Division

a. They have published the 3rd draft (December, 2022) of the Test Method 1633. This version includes QC and otherwise has not changed much from the previous draft. It applies to 40 PFAS chemicals. EPA is

recommending that states put this test method in the permits they issue (for those that have the authority).

b. There is another draft method 1621 for adsorbable organic fluoride. It only indicates presence/absence, not quantity. Can be used for screening.

c. EPA released December 5, 2022 memo. These are the applicable industries they are looking at:

- organic chemicals, plastics and synthetic fibers (OCPSF) - 40 CFR 414
- metal finishing and electroplating - 40 CFR 322 and 413
- electric and electronic components - 40 CFR 469
- Landfills - 40 CFR 445
- pulp, paper and paperboard - 40 CFR 430
- leather tanning & finishing - 40 CFR 425
- plastics molding & forming - 40 CFR 463
- textile mills - 40 CFR 410
- paint formulating - 40 CFR 446
- airports - 40 CFR 449

d. For direct industrial dischargers, EPA is requesting quarterly monitoring of effluent using draft method 1633 for 40 PFAS chemicals

e. Ultimately they will ask for permit language that gives time to develop a reduction plan, then more time to implement the plan, followed by quarterly reporting.

f. The memo includes a discussion of BMPs for firefighting foam that includes prohibiting PFOA and PFOS discharges in stormwater, then eliminating use of PFOA/PFOS, and the use of structures to prevent releases to the environment.

g. Even though there has been some push back, EPA wants the pre-treatment approach to apply to all POTWs, large and small.

h EPA wants to require influent, effluent and biosolids monitoring using method 163, with quarterly reporting via eDMR.

i. Where the authority exists, EPA wants POTWs to develop BMPs for their indirect dischargers or local limits. These are designed to encourage pollution prevention (remove PFAS from the source).

j. POTWs will have the usual public notice requirements plus an additional requirement to give notice to downstream drinking water facilities.

k. Effluent limitation guidance (ELG) rulemaking is planned for: organic chemicals, plastics and synthetic fibers (OCPSF); metal finishing and electroplating; and landfills

l. Some POTWs commented that they cannot use a test method unless it is "approved by the administrator." Jeff Robichaud of EPA R7 said they would follow up and work with Missouri to "put the State in a place where they can follow these recommendations."

m. A stakeholder asked about whether mixing zones for PFAS would be allowable when developing Water quality based effluent limits (WQBELs), Jeff Robichaud replied that EPA is not there yet. They don't know. The process will need to unfold more so they can get back to the group later.

n. A stakeholder asked for EPA's thoughts on determining a baseline for industries using source water that contains PFAS. The reply was that there are variances allowed: Net gross allowance. Another stakeholder commented that Net Gross Allowances were for categorical industries.

#### **4. Wes March, EPA Region 7 PFAS coordinator for Superfund**

a. He briefly described the Superfund process: discover → investigate → assess → clean up

b. The National Priorities List (NPL) is established based on a scoring system.

c. The EPA Administrator can designate a chemical as a hazardous substance.

d. Two constituents, PFOA and PFOS, were proposed in FR Sept. 9, 2022. 60,000 comments were received. The final actions on these designations are expected in August 2023.

e. ARARS apply. Applicable or Relevant and Appropriate Requirements. This means that non-CERCLA regulations/standards, like those in CWA or SDWA, apply at these sites.

f. A stakeholder from Ft. Leonard Wood asked about 9 sites that were identified under the old screening levels. They are at the decision document or remedy implementation stage. How will EPA handle these sites in this rapidly changing environment? The reply was that these are under Federal Facilities. They will need to go back and review the Federal Facilities agreement for those specific sites.

g. The Superfund Program has agreed to use the most current RSLs.

h. A stakeholder asked if EPA will "go after" POTWs. Presumably, this relates to biosolids containing PFAS that POTWs have applied to land. I think the questioner was asking if the PFAS levels are high enough, will they become Superfund sites and the POTW will be the RP. The reply: We'll cross that bridge when we get there.

i. Referring to the manufacturers of PFAS chemicals, Mr. March said, "once they [PFOA and PFOS] are designated [as hazardous substances], we have the authority to identify PRPs."

## 5. Lisa Messigner, US EPA R7, on RCRA

a. There are 2 RCRA rulemakings in progress. They were announced in an Oct. 26, 2022 letter to the Governor of New Mexico (See <https://www.env.nm.gov/wp-content/uploads/2021/10/2021-10-26-Letter-from-EPA-administrator-Michael-Regan-re-PFAS.pdf>)

1. PFOA, PFOS, PFBS, and GenX (aka HFPO-DA) are proposed as "hazardous constituents." This rulemaking is just now being initiated.
2. RCRA regulations will be amended to clarify that EPA has the authority to address PFAS in the corrective action process.

b. Adding the four chemicals to the RSLs will have implications for other programs.

c. A stakeholder asked if there is a timeline for these actions. Reply: none known.

d. Rich Nussbaum reminded everyone that there is an "omnibus provision" in 40 CFR 270.32(b)(2), regarding the terms and conditions of permits. A TSDf permit can be re-opened to add terms and conditions that protect human health and the environment. Authorized states can make this determination on a site-specific basis.

## 6. Samantha Harden, Region 7 on Drinking Water

a. Health Advisories (HAs) are solely based on risk. (Unlike MCLs which can take into account costs and other practicalities.

b. HAs apply to drinking water only.

c. In 2016 the HAs for PFOA & PFAS were each at 70 ppt.

d. Minimum reporting levels are often used to reflect lab detection capabilities.

e. As of 6/15/22 HAs and minimum reporting levels are as follows:

- interim PFOA .004 ppt and 4 ppt

- interim PFOS .02 ppt and 4 ppt
- final GenX 10 ppt and 5 ppt
- final PFBS 2000 and 3 ppt

f. EPA intends to promulgate MCLs by rule by late 2023. The proposed rules coming in a "few weeks". The statutory deadline is March 3, 2023.

g. MCLs are economically and technically feasible. (Even though EPA would not say it, these are the reasons the MCLs PFOA and PFOs are anticipated by most to be higher than the HAs.) A health risk reduction cost analysis (HRRCA) is conducted as a part of the MCL-setting process. This is to assess the costs vs. benefits.

h. Treatment technology requirements are different for large scale facilities and small systems.

## 7. Katrina Ferry on source water protection

a. She encourages the use of previously conducted source water assessments as a way to get a handle on how PFAS chemicals may be in play for a community.

b. Source water protection efforts are eligible for funding through Clean Water SRF and Drinking Water SRF. Bipartisan Infrastructure law funding is also eligible.

c. One stakeholder asked that if source water protection seems primarily focused on NPSs, what is the non-point source of PFAS? Chris Wieberg commented that run off from biosolids could be a NPS of PFAS.

## 8. Marc Mills, PhD, EPA ORD in Cincinnati,

a. Dr. Mills gave an extensive technical presentation on test methods. At this time, the slide deck is not available on the MDNR website. Readers are encouraged to visit <https://oembed-dnr.mo.gov/about-us/forums-stakeholder-groups/per-and-polyfluoroalkyl-substances-pfas-workgroup> for more information. I believe that if you click on past meetings tab, the slide decks will eventually be available.

b. He discussed briefly the evolution of sampling methods

- no teflon; no fluoropolymers
- no contact with clothes
- clean hand vs. dirty hand
- See EPA's sampling website

c. There are 3 broad categories of standard methods: SDWA, CWA, and SW 846 promulgated methods

d. Overview of PFAS test methods:



# PFAS Test Methods - Overview

Table E-2. Analytical Methods

Media	Agency	Method	Validation		Individual PFAS	Total PFAS	Organofluorine Compounds (including, but not limited to PFAS)	Publicly Available	Agency Use Only
			Intra-Lab	Inter-Lab					
Drinking Water	EPA	Method 537 Version 1.1	X	X	X			X	
Drinking Water	EPA	Method 533	X	X	X			X	
Groundwater, Surface Water, Wastewater Effluent	EPA	SW-846 Method 8327	X	X	X			X	
Aqueous (non-Drinking Water), Solids, and Tissue	EPA/DoD	CWA Method 1633	X	Ongoing	X			X	
Aqueous - Wastewater	EPA	CWA Method 1621	X	Ongoing			X	X	
Air	EPA	OTM-45	X		X			X	
Blood Serum	CDC	Method 6304.9	X		X			X	
Food	FDA	C-010.01	X		X			X	
Cattle, Swine, Poultry, Siluriformes muscle and bovine plasma	USDA-FSIS	CLG-PFAS 2.03	X		X			X	
Ground Water, Surface Water, Wastewater Effluent	USGS	LC 9660 (Direct Aqueous Injection)	X		X				
AFFF and AR-AFFF	DoD	DoD AFFF01	X	X				X	

e. In November 2018 Method 537 for drinking water was approved. Use of this method on non-drinking water is the most common "modification" to this method. Caveat emptor: when you use Method 537 on non-drinking water, it is not an approved method.

f. For non-potable aqueous samples such as groundwater, surface water, and wastewater, a direct injection method, Method 8327, has been validated. It is similar to ASTM D7979.

g. CWA method 1633 is an isotope Dilution method. It has been through single lab validation. It is going through multiple lab validation now with DoD. This method can also be used for fish tissue.

h. He also discussed:

- TOF - total organic fluorine
- PIGE - particle induced gamma emission
- TOP - total oxidizable precursors

i. For emissions measurements, he discussed OTM-45 for stack testing. The covers 49 targeted analytes.

j. Background concentrations are a problem everywhere.

k. Costs are a real issue, as are adequately trained lab personnel.

## 9. Tom Speth, EPA on Destruction Methods

a. Mr. Speth gave an extensive technical presentation on destruction technologies. At this time, the slide deck is not available on the MDNR website. Readers are encouraged to visit <https://oembed-dnr.mo.gov/about-us/forums-stakeholder-groups/per-and-polyfluoroalkyl-substances-pfas-workgroup> for more information. I believe that if you click on past meetings tab, the slide decks will eventually be available.

b. He discussed technologies for removal of PFASs from drinking water:

- anion exchange
- high pressure membrane
- GAC - granular activated carbon
- powdered activated carbon

c. See EPA's treatment database: <https://tdb.epa.gov/tdb/home>

- it addresses 37 different PFAS chemicals
- 35 treatment processes for PFAS are included

d. EPA is also using ETDOT. These are performance models to predict the effectiveness of treatment technologies. Search for EPA ETD OT.

e. EPA cost models are also available for various removal approaches

f. He discussed thermal destruction technologies:

- the chemistry is complex
- field data are lacking
- they don't know yet what the products of incomplete combustion are

g. An EPA thermal treatment technologies data base is available: [pfastt.epa.gov](https://pfastt.epa.gov)

h. The biggest challenge: a change in the goals/requirements. If a facility implements a removal method and then the regulatory target or endpoint changes, they may need to start over again.

## 10. Jaime Gaggero, US EPA R7 Water Division

a. Bipartisan Infrastructure Law funds available nation-wide:

- \$20+B, safe drinking water services
- \$15B, lead service pipes
- \$12+B, clean water for communities
- \$1.8B, regional water

- \$135M, additional improvements

b. A match is required from the States: 10% in year 1. Higher in year two. They are combining year 1 and year 2 funding.

c. See EPA website for about emerging contaminant technical assistance

- [www.epa.gov/water-infrastructure/water-technical-assistance](http://www.epa.gov/water-infrastructure/water-technical-assistance)

d. In R7, Wichita State received the technical assistance grant.

e. In Missouri, MPUA will identify the systems that qualify and need the technical assistance. Wichita State will then provide that assistance.

#### **11. Jeff Robichaud, US EPA R7 Water Division Director on PFAS Policy**

a. The last three presidential administrations have all pointed in the same direction on PFAS.

b. The PFAS Roadmap is absolutely our guide for moving forward. It has 3 primary goals:

- research - focus on science
- restrict - prevent PFAS from entering the environment
- remediate - broaden and accelerate cleanup efforts.

c. PFAS is being addressed with an "All of EPA" approach.

d. In late February or Early March EPA R7 will host a Zoom Regional PFAS Community Engagement Session in the evening, likely 5-8 pm. They anticipate this will be recorded for later playback.

e. Three important guiding principles:

- science is going to lead us
- transparency - you will know what we are doing
- actually taking ACTION

Please let me know if you have any questions.

Kevin

Kevin Perry  
Assistant Director

REGFORM

