



Federal Drinking Water Program Update

Environmental Measurement Symposium

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OVERVIEW

- *PFAS Strategic Roadmap*
- *Analytical Methods*
- *Drinking Water Method Update Rule (MUR)*
- *Unregulated Contaminant Monitoring Rule (UCMR)*
- *EPA's Proposed National Primary Drinking Water Regulation*

EPA's PFAS STRATEGIC ROADMAP: COMMITMENTS TO ACTION 2021-2024

- Actions related to drinking-water include:
 - Improving PFAS drinking-water data through monitoring, toxicity assessments, and health advisories
 - Developing and validating methods to detect and measure PFAS
 - Setting enforceable limits for PFAS in drinking water
- www.epa.gov/pfas

ANALYTICAL METHODS

- Development/improvement of analytical methods for PFAS in drinking water continues to be a priority for EPA (OW and ORD)
- Published methods:
 - EPA Method 533
 - EPA Method 537.1
 - Both rely on SPE, LC-MS/MS
- Ongoing work

Analytical Methods – Ongoing Work on PFAS

- Online SPE LC-MS/MS
 - Automated SPE incorporating the extraction into the analysis
- Direct Injection LC-MS/MS (*draft Method 534[#]*)
 - High throughput method using modern instrumentation that would eliminate the need for SPE
- EPA Method 537.1/533 revisions
 - Optimizing methods for classes of PFAS
 - Increasing target analyte lists based on standard availability or analytical feasibility

Note: Though method numbers are assigned to these draft drinking water methods, they have not been published as method development is on-going.

“Total PFAS” Approaches for Drinking Water

- “Total organo fluorine” method for drinking water has potential as a screening tool to identify PFAS that targeted methods do not address; applicability to drinking water monitoring needs further investigation
- Meaningful quantitation at low levels of interest for DW is very challenging
- Adsorbable Organic Fluorine (AOF) analysis
 - Detection limits on the order of single parts per billion based on 100 mL sample; loss of hydrophilic PFAS from GAC at larger sample volumes
 - Sensitivity significantly impacted by background fluorine, highly variable
- Extractable Organic Fluorine (EOF) analysis
 - Detection limits on the order of hundreds of parts per trillion based on 500 mL sample
 - EOF procedure takes much longer than AOF, nitrogen evaporation of extract may cause loss of some PFAS
- On-going discussions among technical experts to review “total PFAS” prospects

OTHER ANALYTICAL METHOD DEVELOPMENT WORK

- Expanding the application of LC/MS/MS
 - LC/MS/MS Endothall and Glyphosate
draft Method 561 #
 - LC/MS/MS Paraquat and Diquat
draft Method TBD
- GC/MS urethane and methyl-2-pyrrolidone
draft Method 558 #

Note: Though method numbers are assigned to these draft drinking water methods, they have not been published as method development is on-going.

DRINKING WATER METHOD UPDATE RULE (DW MUR)

- Action Development Process (ADP) tiering completed
Tier 3 - consistent with recent CWA WW MURs
- EPA Regulatory Development Work Group formed including representation from OW, ORD, OLEM, OGC and EPA Regions.
- Timeline:
Proposed MUR by mid-2024, Final MUR by late 2026
- Goals:
 - 1) Transfer methods approved under the Expedited Method Approval process from 40 CFR Part 141, Appendix A to Subpart C, to the appropriate regulatory method tables within the referenced regulation;
 - 2) Remove methods that are obsolete or do not meet the technological or quality standards of more recent compliance monitoring analytical methodology
 - 3) Clarify and correct language and tables in 40 CFR Part 141 that are associated with drinking water analytical methodology or the analysis of drinking water contaminants and water quality parameters

UNREGULATED CONTAMINANT MONITORING RULE

- Objective is to collect nationally-representative occurrence data for unregulated contaminants that may warrant regulation under SDWA.
- <https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule>

EPA's 5th Unregulated Contaminant Monitoring Rule (UCMR 5)

- Safe Drinking Water Act (SDWA) Section 1445(a)(2), as amended in 1996 and 2018, established requirements for the UCMR Program:
 - Issue a list of up to 30 priority unregulated contaminants in drinking water, once every 5 years
 - Require monitoring by all large PWSs (serving a population > 10,000) *and, subject to availability of appropriations and sufficient lab capacity, all PWSs serving 3,300 to 10,000*
 - Require monitoring for a nationally-representative sample of small PWSs serving ≤ 3,300
 - Make analytical results publicly available
 - EPA funds all shipping and analytical costs for small PWSs.

EPA's 5th Unregulated Contaminant Monitoring Rule (UCMR 5)

- EPA manages the program in partnership with States, Tribes, and Territories that volunteer to assist.
- Final Rule was published December 27, 2021.
- PWSs will collect samples 2023-2025.

UCMR 5 Contaminants

- The National Defense Authorization Act (NDAA) for Fiscal Year 2020 required EPA to include in UCMR 5 all per- and polyfluoroalkyl substances (PFAS) for which a drinking water method has been validated by the Administrator and that are not subject to regulation.
- UCMR 5 addresses the following:
 - 29 PFAS (using EPA Methods 533 and 537.1)
 - 6 of the 29 were also part of UCMR 3
 - Lithium (using EPA Method 200.7, SM 3120 B, or ASTM D1976-20)

UCMR 5 Sample Analysis and Reporting

- UCMR 5 samples must be analyzed by an EPA-Approved laboratory (i.e., vetted via EPA's UCMR 5 Laboratory Approval Program)
- Web-based data system used by PWSs and EPA-approved UCMR 5 laboratories to report results using a secure access portal
- Laboratories must post results within 90 days of sample collection (60 days for small-system laboratories under contract to EPA)
- Large PWSs have up to 30 days to review posted results before they become available to EPA and states; EPA reviews draft results for small PWSs

Public Access to UCMR 5 Results from Small and Large PWSs

- EPA will soon update the Agency's webpage with the first set of UCMR 5 results and publish a "Data Summary," which will then be updated approximately quarterly.
- The Data Summary will include the results at a national level (e.g., the number of PWSs with results above the MRL and above health-based reference concentrations).

National occurrence data are publicly available at:

<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>

UCMR 5 Web Resources

- UCMR Main Page: <https://www.epa.gov/dwucmr>
- Occurrence Data: <https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>
- Meetings and Materials: <https://www.epa.gov/dwucmr/unregulated-contaminant-monitoring-rule-ucmr-meetings-and-materials>
- Laboratory Approval: <https://www.epa.gov/dwucmr/laboratory-approval-program-unregulated-contaminant-monitoring-rule-ucmr-5>
- Reporting: <https://www.epa.gov/dwucmr/reporting-requirements-unregulated-contaminant-monitoring-rule-ucmr-5>
- Other UCMR 5 details: <https://www.epa.gov/dwucmr/fifth-unregulated-contaminant-monitoring-rule>

EPA's PROPOSED PFAS NPDWR

- EPA has proposed a National Primary Drinking Water Regulation (NPDWR) to establish legally enforceable levels for six PFAS in drinking water.
 - PFOA and PFOS as individual contaminants, and
 - PFHxS, PFNA, PFBS, and HFPO-DA (commonly referred to as GenX chemicals) as a PFAS mixture
- EPA has also proposed health-based, non-enforceable Maximum Contaminant Level Goals for these six PFAS.
 - MCLGs are the maximum level of a contaminant in drinking water where there are no known or anticipated negative health effects, allowing for a margin of safety.
- <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>

EPA's Proposed Action for the PFAS NPDWR

Compound	Proposed MCLG	Proposed MCL (enforceable levels)
PFOA	zero	4.0 ppt*
PFOS	zero	4.0 ppt*
PFNA		
PFHxS	1.0 (unitless)	1.0 (unitless)
PFBS	Hazard Index	Hazard Index
HFPO-DA (commonly referred to as GenX Chemicals)		

The Hazard Index is a tool used to evaluate potential health risks from exposure to chemical mixtures.

*ppt = parts per trillion (also expressed as ng/L)

How do I calculate the HI?

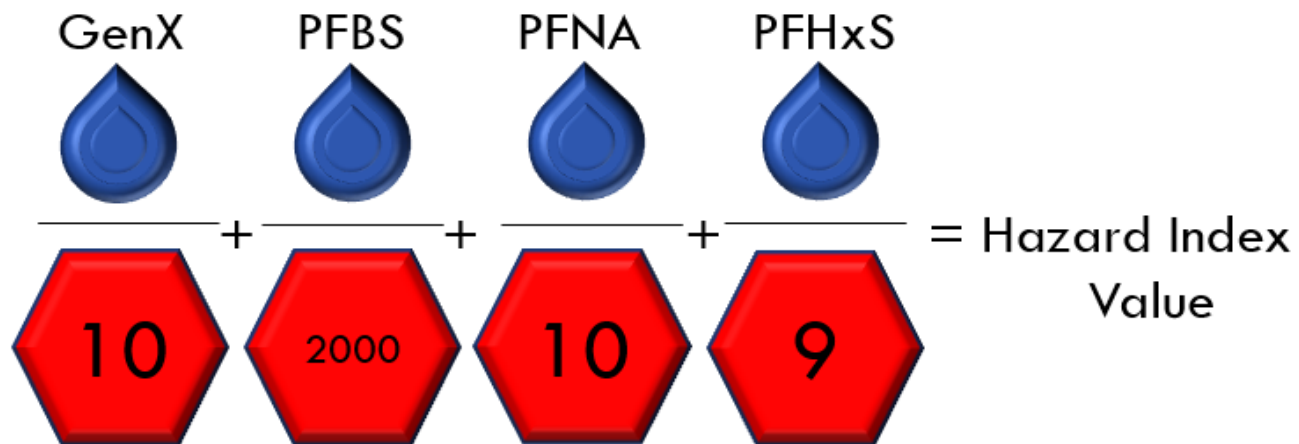
The Hazard Index (HI) is used to understand health risks. For the PFAS NPDWR Proposal, the HI considers the combined toxicity of PFNA, GenX Chemicals, PFHxS, and PFBS in drinking water.

What is a Hazard Index?

The Hazard Index 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.

Steps:

- **Step 1:** Divide the measured concentrations of **GenX, PFBS, PFNA, and PFHxS** by their respective health-based values (**10 ppt, 2000 ppt, 10 ppt, and 9 ppt**)
- **Step 2:** Sum the ratios from Step 1
- **Step 3:** To determine HI compliance, calculate the average HI for all results from the past year
- **Step 4:** Determine whether the annual average HI is ≤ 1.0 , the proposed HI MCL

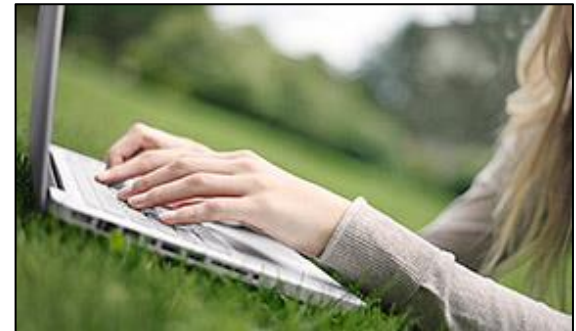


EPA's Proposed Action for the PFAS NPDWR

- The proposed rule would require public water systems to:
 - Monitor for these PFAS;
 - Notify the public of the levels of these PFAS; and
 - Reduce the levels of these PFAS in drinking water if they exceed the proposed standards.
- This action is not final and does not require any actions until after EPA considers public input and finalizes the regulation.
- EPA anticipates that if fully implemented the rule will prevent tens of thousands of serious PFAS-attributable illnesses or deaths.

Public Docket

- The public was invited to review the proposal, submit comments and provide supporting information through the public docket.
- The public docket can be accessed at: www.regulations.gov under Docket ID: EPA-HQ-OW-2022-0114.



PFAS Web Resources

- Drinking Water Health Advisories for PFAS Fact Sheet for Communities (<https://www.epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-communities.pdf>)
- Drinking Water Health Advisories for PFAS Fact Sheet for Public Water Systems (<https://www.epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-water-system.pdf>)
- Questions and Answers: Drinking Water Health Advisories for PFOA, PFOS, GenX Chemicals and PFBS (<https://www.epa.gov/sdwa/questions-and-answers-drinking-water-health-advisories-pfoa-pfos-genx-chemicals-and-pfbs>)
- Technical Fact Sheet: Drinking Water Health Advisories for Four PFAS (PFOA, PFOS, GenX chemicals, and PFBS) (<https://www.epa.gov/system/files/documents/2022-06/technical-factsheet-four-PFAS.pdf>)
- PFAS Explained: <https://www.epa.gov/pfas/pfas-explained>
- PFAS NPDWR Consultations and Stakeholder Engagements: <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>

Questions?