

Every five years, the Safe Drinking Water Act (SDWA) requires EPA to issue a list of priority unregulated contaminants to be monitored by certain public water systems serving between 3,300 and 10,000 people across States, Tribes, and Territories. These contaminants may be present in drinking water but are not yet subject to EPA drinking water standards. Under the Unregulated Contaminant Monitoring Rule (UCMR), EPA collects nationally representative drinking water occurrence data to support EPA’s future regulatory determinations and assist in the development of national primary drinking water regulations (NPDWRs) as needed. For each UCMR cycle, EPA establishes a new list of contaminants for monitoring, specifies which systems are required to monitor, identifies the sampling locations, and defines the analytical methods to be used.

In December of 2021, the EPA published a revision of the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems. This monitoring cycle includes preparations in 2022, sample collection from 2023 - 2025, and completion of data reporting in 2026.

Which water systems will participate in UCMR 5?

Size Category (Number of People Served)	Monitoring Design (CWSs and NTNCWSs) ²	Total # of Systems per Size Category
Small Systems¹ (fewer than 3,300)	Nationally representative sample	800
Small Systems¹ (3,300-10,000)	All systems, if confirmed by EPA	5,147 ³

1. *This requirement is based on the availability of appropriations and sufficient laboratory capacity*
2. *Community Water Systems (CWSs), Non-Transient Non-Community Water Systems (NTNCWSs)*
3. *Counts are approximate*



What resources can help optimize UCMR 5 analysis workflow?

Regulatory entities have developed methods specifically for the determination of PFAS. These workflows use different sample preparation methods, followed by liquid chromatography-tandem mass spectrometry (LC-MS/MS) technologies to detect low concentrations of PFAS compounds in the low ng/L range. However, due to its complexity, laboratories continue face challenges in obtaining comprehensive quality data when conducting PFAS analyses.

One of the challenges of PFAS analysis occurs at calibration. Certified Reference Materials in a salt form at different concentrations require time-consuming error-prone calculations resulting in calibration errors.

Phenomenex has recently launched Phenova CRMs that contain all the mix's analytes in acid form and at the same concentration for easy calculation and dilution. Laboratories using Phenova PFAS CRM reported 50% or higher in time savings during PFAS calibration preparation. You can find out more about CRMs and other PFAS workflow tools at www.phenomenex.com/pfas

What PFAS compounds need to be reported for UCMR 5?

UCMR 5 specifies monitoring for 29 per- and polyfluoroalkyl substances (PFAS). Below is the complete list according to the EPA UCMR 5 Fact Sheet.

PFAS Analysis Workflow: Are you ready to take on UCMR 5 demand?

Contaminant	CASRN ¹	MRL ² (µg/L)	Additional Information
25 PFAS: EPA Method 533			
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	0.005	PFAS are a group of synthetic chemicals used in a wide range of consumer products and industrial applications including: non-stick cookware, water-repellent clothing, stain-resistant fabrics and carpets, cosmetics, firefighting foams, electroplating, and products that resist grease, water, and oil. PFAS are found in the blood of people and animals and in water, air, fish, and soil at locations across the United States and the world.
1H,1H, 2H, 2H-perfluorodecane sulfonic acid (8:2FTS)	39108-34-4	0.005	
1H,1H, 2H, 2H-perfluorohexane sulfonic acid (4:2FTS)	757124-72-4	0.003	
1H,1H, 2H, 2H-perfluorooctane sulfonic acid (6:2FTS)	27619-97-2	0.005	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.003	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	0.002	
hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	0.005	
nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	0.02	
perfluoro (2-ethoxyethane) sulfonic acid (PFEE5A)	113507-82-7	0.003	
perfluoro-3-methoxypropanoic acid (PFMPA)	377-73-1	0.004	
perfluoro-4-methoxybutanoic acid (PFMBA)	863090-89-5	0.003	
perfluorobutanesulfonic acid (PFBS)	375-73-5	0.003	
perfluorobutanoic acid (PFBA)	375-22-4	0.005	
perfluorodecanoic acid (PFDA)	335-76-2	0.003	
perfluorododecanoic acid (PFDoA)	307-55-1	0.003	
perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.003	
perfluoroheptanoic acid (PFHpA)	375-85-9	0.003	
perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.003	
perfluorohexanoic acid (PFHxA)	307-24-4	0.003	
perfluorononanoic acid (PFNA)	375-95-1	0.004	
perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.004	
perfluorooctanoic acid (PFOA)	335-67-1	0.004	
perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.004	
perfluoropentanoic acid (PFPeA)	2706-90-3	0.003	
perfluoroundecanoic acid (PFUnA)	2058-94-8	0.002	
4 PFAS: EPA Method 537.1			
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.005	See above for PFAS information.
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.006	
perfluorotetradecanoic acid (PFTA)	376-06-7	0.008	
perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.007	

1. CASRN - Chemical Abstracts Service Registry Number
2. MRL - Minimum Reporting Level

What is UCMR 5 sampling frequency and timing?

Water systems will be required to collect samples based on the typical UCMR sampling frequency and timeframe.

Water Source	Timeframe	Sampling Frequency
Surface water, ground water under the direct influence of surface water, or mixed sources systems	Year-Round	Systems must monitor 4 times during a consecutive 12-month monitoring period. Sample events must occur 3 months apart.
Ground water systems	Year-Round	Systems must monitor 2 times during a consecutive 12-month monitoring period. Sample events must occur 5-7 months apart.

More PFAS Resources

PFAS Testing Guide EPA 533 and 537.1

PFAS in Food and Food Packaging

PFAS Guide to Wastewater, soils, and sediments.

References

- **UCMR Website** for information on current and past UCMRs, occurrence data, and public meetings
- **EPA Ground Water and Drinking Water Website** for information on source water protection, drinking water regulations, monitoring requirements for States and systems, SDWA on Tribal lands, and laboratory certification
- **EPA PFAS Website** for information on the Agency's actions to address PFAS

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