PFAS Drinking Water Rule
Implementation

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Kentucky Division of Water

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Final PFAS Drinking Water Rule

- Announced April 10, 2024; published April 25, 2024; **effective June 25, 2024**
- Applies to all Community and Non-Community Non-Transient PWSs
  - Purchasing (consecutive) systems **are not** required to sample!
    - PN & CCR requirements apply beginning April 27, 2027.
- Requirements include:
  1. Monitor for PFAS at each EPTDS
  2. Inform the public of PFAS levels and if an MCL is exceeded
  3. Reduce PFAS if levels exceed the MCLs

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Final MCLGs and MCLs

Compound	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)	Trigger Level (1/2 MCL)
PFOA	0	4.0 ppt	2.0 ppt
PFOS	0	4.0 ppt	2.0 ppt
PFHxS	10 ppt	10 ppt	5 ppt
PFNA	10 ppt	10 ppt	5 ppt
HFPO-DA (GenX)	10 ppt	10 ppt	5 ppt
PFBS	N/A	N/A	N/A
Mixture of <u>two or more</u>: PFHxS, PFNA, HFPO-DA and PFBS.	Hazard Index of 1 (unitless)	Hazard Index of 1 (unitless)	0.5 (unitless)

ppt=parts per trillion=ng/L

Beginning April 26, 2029, MCL compliance will be determined by the running annual average (RAA) for EPTDS's on quarterly monitoring.

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Hazard Index (HI)

- An approach that accounts for potential risk when exposure involves a **mixture (two or more)** of chemicals.

- Calculated by adding the ratio of the water sample concentration to a Health-Based Water Concentration.

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

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Significant Figures

Analyte	MCLs	# of Sig Figs	MCL Exceedance before rounding	MCL Exceedance after rounding
PFOA & PFOS	4.0 ppt	2	4.05	4.1 ppt
PFNA, PFHxS, & HFPO-DA	10 ppt	1	15 ppt	20 ppt
Hazard Index (unitless)	1	1	1.5 ppt	2

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Key Dates

April 26, 2027	Milestone 1 Initial Monitoring Deadline
2027-2029	Milestone 2 Compliance Monitoring period
April 26, 2029	Milestone 3 Compliance with MCLs begins

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Initial Monitoring

- Two years until data must be reported to DOW.
- Applies to all CWSs and NTNCWSs
- Results will determine sampling frequency at the start of Compliance Monitoring, either quarterly or triennial
- Results will inform of existing PFAS conditions to evaluate the need for implementing new treatment technologies or source water change.

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Checklist for Initial Monitoring

- ✓ Type: UCMR 5, DOW, sample collected by PWS, or other approved type.
- ✓ Frequency is satisfied. The most recent samples must be used.
  - 4 quarters collected 2-4 months apart within 12 months (all SW and large GW systems)
  - 2 semi-annual samples collected 5-7 months apart (small GW systems)

	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
UCMR5 Samples	3/25/2023	6/6/2024		12/12/2023 & 10/11/23
DOW Samples		4/25/23		
PWS Samples				

Need an August or September sample.

- ✓ All 6 regulated PFAS analyzed.
- ✓ Sample collected after January 1, 2019. Samples collected after June 25, 2024 must be analyzed by a State or EPA certified lab.
- ✓ Analyzed with EPA Method 533 or 537.1 (version 1 or 2)
- ✓ Sample collected at EPTDS.
- ✓ Submitted to DOW by the April 26, 2027, deadline.

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Checklist for Reduced Monitoring Eligibility

- ✓ All PFAS analytes, in all samples, have Limits of Detections (LODs) below the trigger levels.
- ✓ All PFAS analytes, in all samples, have results below the trigger levels (less than ½ the MCL).

Reduced Monitoring: PWS is eligible for triennial monitoring (once every three years) at the start of compliance monitoring

If an analyte exceeds the trigger level or the reporting level is not below the trigger level, then the system will not be eligible for reduced monitoring and will have to sample quarterly at the start of compliance monitoring.

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UCMR5 & Initial Monitoring

UCMR5 data may not meet the requirements of initial monitoring or reduced monitoring eligibility. (units, sample site code, facility ID, method code, HI calculation, analyte code, significant figures, detection limits, and data format)

DOW encourages large systems serving greater than 10,000 to contact their UCMR5 lab to discuss report adjustment and data reprocessing options. Questions to consider include:

- What system is in place to support UCMR5 reporting adjustment and data reprocessing for the purposes of PFAS rule initial monitoring?
- What is the cost of data reprocessing per sample? What is the cost of report republishing with required adjustments and correct EDD formatting?
- If currently sampling for UCMR5, can newly collected UCMR5 samples be reported down to the PFAS rule trigger levels? Or will that data also need reprocessing?
- Will the lab submit the EDD file, with the hazard index, to the primacy agency on our behalf?

Small systems serving 10,000 or less will be provided adjusted reports and reprocessed data by EPA.

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Compliance Monitoring

Systems will start on either quarterly or triennial monitoring beginning April 27, 2027.

- After one year of quarterly monitoring, a system may move to annual monitoring if all results are consistently below the MCLs.
  - A system will stay on annual monitoring as long as all results are between the MCLs and trigger levels.
  - A system will return to quarterly monitoring if a sample result is ≥ the MCL.
- After three years of annual monitoring, a system may move to triennial monitoring if all annual samples are less than the trigger levels.
  - A system will remain on triennial monitoring as long as results are below the trigger levels.
  - A system will return to quarterly monitoring if sample results are ≥ the trigger levels.
  - A result greater the MCL is not considered a violation.
    - Must complete one year of quarterly monitoring to calculate the RAA for compliance determination.

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MCL Compliance

- Running Annual Average (RAA)
  - Calculated with results from the past 4 quarters
  - Divide the sum of the quarterly concentrations for each analyte by the number of quarters collected.
  - Significant figure rounding does not occur until the end of the calculation.
  - If RAA exceeds the MCL, the system is not in compliance with the MCL requirements = MCL Violation
  - A system would be in compliance if the RAA ≤ MCL.

- Practical Quantitation Level (PQL)
  - The PQL is the lowest concentration that can be reliably measured with precision and accuracy.
  - If a sample result is less than the PQL, ZERO is used to calculate the RAA.

Compound	MCL (ppt)	PQL (ppt)
PFOA	4.0	4.0
PFOS	4.0	4.0
PFHxS	10	3.0
PFNA	10	4.0
HFPO-DA (GenX Chemicals)	10	5.0
PFBS	N/A	3.0
HI mixture of two or more: PFHxS, PFNA, HFPO-DA & PFBS	1 (unitless)	N/A

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MCL Compliance Calculation: PFOA

PQL=4.0 ppt; MCL 4.0 ppt

1. Replace any value below PQL with zero

2. Add 4 quarters; divide by 4

3. Round to two significant figures

Q1=2.0 → Q2=1.5 → Q3=5.0 → Q4=1.5

$$\frac{Q1\ 0 + Q2\ 0 + Q3\ 5.0 + Q4\ 0}{4} = 1.3\ ppt\ RAA$$

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Division of Water Ongoing Activities

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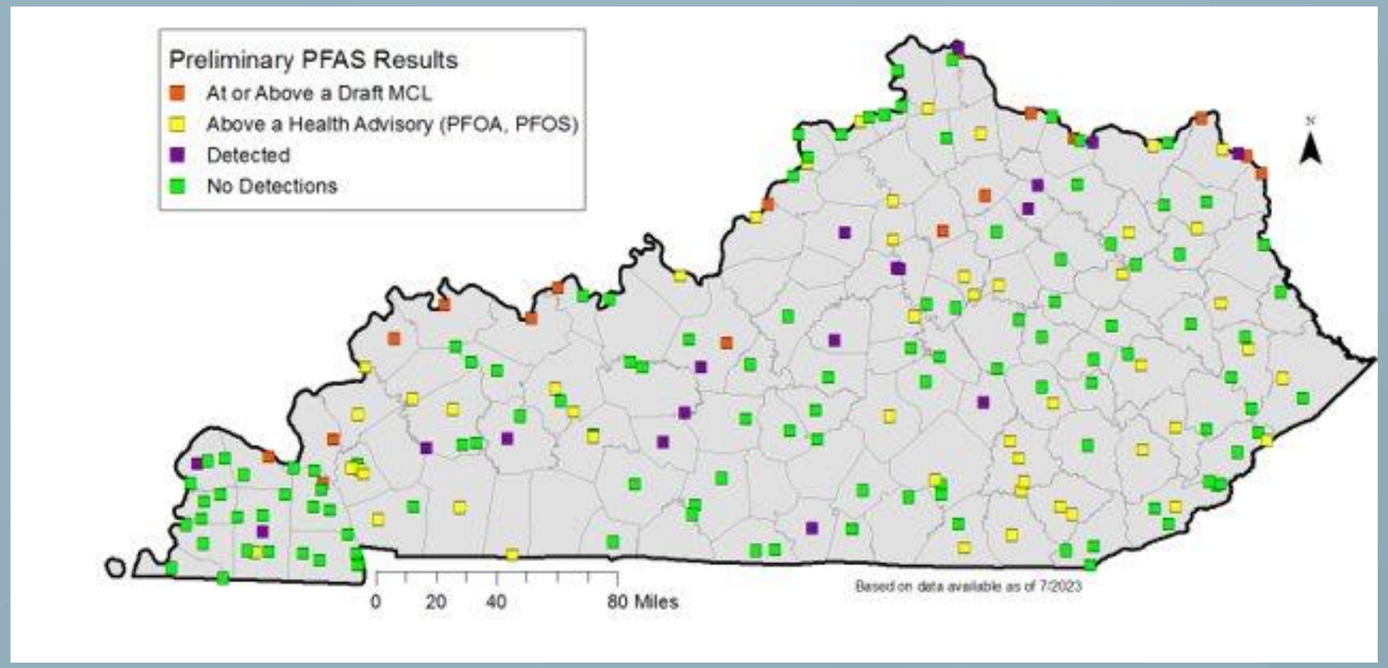
Kentucky PFAS Drinking Water Data

- 2019 & 2023-2025: All CWS treatment plants sampled
- < 10% of treatment plants have PFAS *potentially* above MCLs
- All six of the EPA-regulated PFAS were detected
- Detections in both ground water and surface water systems



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Initial Monitoring Assistance

Division of Water Monitoring

- Assisting small community and NTNC systems not participating in UCMR5
  - Goal to complete by the end of 2025 (most collected in 2024)

PWS Progress on the April 26, 2027, Deadline	#	%
Completed the initial monitoring requirements (EPTDS)	138	63%
Expected to finish w/UCMR5 monitoring (2023-2025)	42	19%
DOW is conducting the initial monitoring (2023-2025)	11	5%
NTNC (private businesses & federal facilities) & large PWS with UCMR5 timing issues	28	13%
Total community & NTNC EPTDS under the rule	219	100%

Updated April 1, 2025

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Initial Monitoring Assistance

Currently developing process to receive Initial Monitoring data from water systems.

Guidance is under development for labs and water systems to submit UCMR5 data in an unloadable format.

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Technical Assistance

- Tracking data & Initial Monitoring schedules
  - DOW data
  - UCMR5 data
  - Other data supplied by the system
- One-on-one site visits to work with systems that may need to provide PFAS treatment
  - DOW providing site-specific assistance to some systems, while other systems are working independently
- Best Available Technologies (BATs) identified by EPA:
  - Granular Activated Carbon (GAC)
  - Anion Exchange (AIX)
  - High-Pressure Membranes (Reverse Osmosis (RO) & Nanofiltration (NF))
  - Systems are not limited to these treatment technologies to reduce/remove PFAS
- Powdered Activated Carbon Study

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Technical Assistance

Powdered Activated Carbon (PAC) Project

- PAC may be a treatment option for some systems.
- In most cases, it does not require upfront infrastructure costs.
  - Rather than being an additional treatment unit, PAC is fed into the existing treatment process.
- May be more affordable to operate and maintain than other treatment options, but not always.
- Collaborative effort with EPA ORD ???
  - Seven systems participating
  - EPA will provide jar testing and sampling support.
  - Procedures will be developed based on KY studies and disseminated nationwide.
  - Provided guidance on DIY pilot for GAC, AIX, other adsorptive medias

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Challenges

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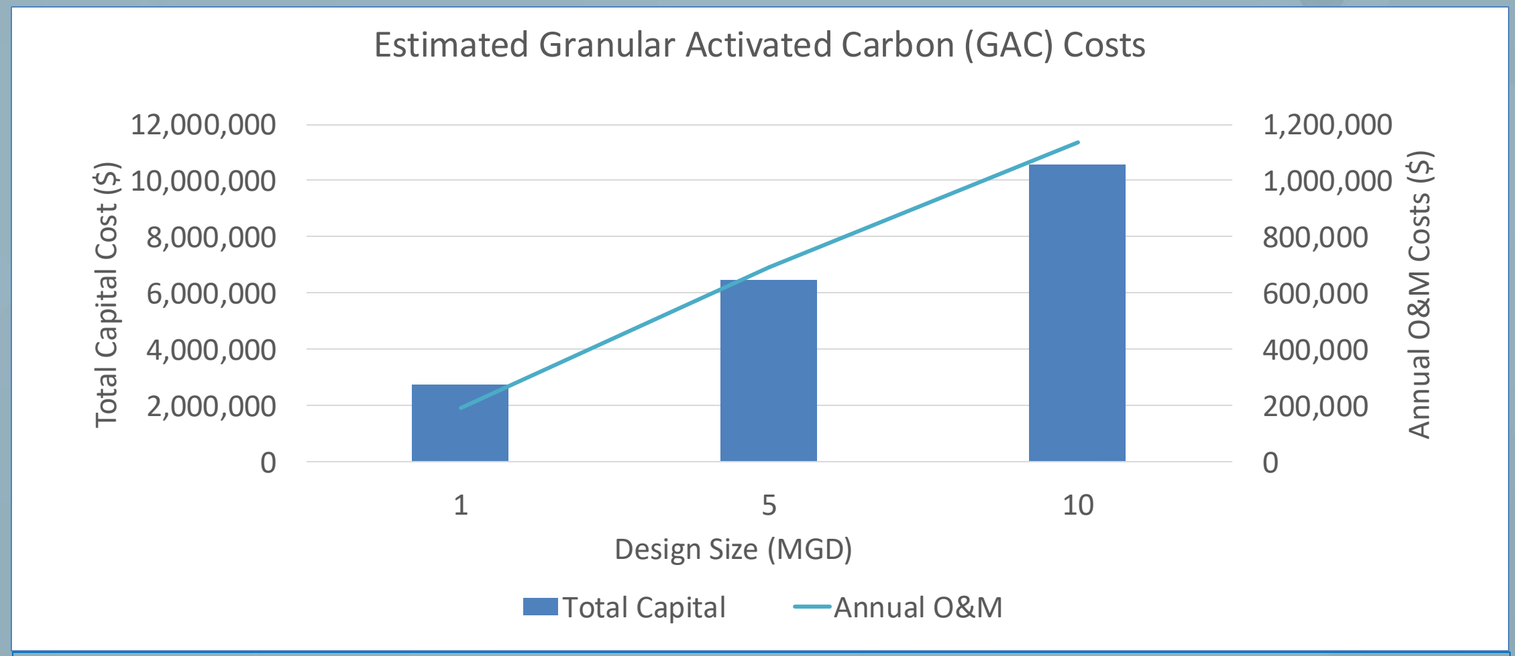
Challenges

- Technology & Cost
  - Treatment technologies that are known to adequately remove PFAS require costly capital expenditures and are expensive to operate and maintain.



Based on EPA Doc 815R24012, which includes 2022 data; Values are estimated.

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Challenges

- Timing – Systems have five years to:
  - Select treatment method
  - Engineer project
  - Obtain funding
  - Obtain approvals
  - Acquire equipment (may have long lead times)
  - Install/construct project
  - Collect four quarters of compliance data to be used for compliance determination in 2029.
- Disposal issues
  - Addressing potential discharge issues, landfarming impacts, CERCLA liability, and landfill disposal challenges
- Personnel
  - Training needs for new treatment technology operations
  - Operator shortage

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Challenges

- Other new/revised regulations
  - Lead and Copper Rule Revisions (LCRR)
  - Lead and Copper Rule Improvements (LCRI)
  - Consumer Confidence Report (CCR) Rule Revisions
  - Water System Restructuring Assessment Rule
  - Microbial and Disinfection Byproduct (MDBP) Rule Revisions Proposal
  - Cyber Incident Reporting for Critical Infrastructure (CIRCIA)
  - AWIA Risk and Resilience Assessment (RRA) updates

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Residuals and Disposal

- Treatment technologies that remove PFAS from drinking water produce PFAS containing materials.
- EPA released an updated version of the PFAS Destruction and Disposal Guidance to include new information about disposal of residuals.
- The final rule to designate PFOA and PFOS as hazardous substances under CERCLA went into effect July 8, 2024.
  - Does not require waste to be treated in any particular fashion.
  - Does not require disposal at any specific type of landfill.
  - Does not intend to pursue actions or costs against community water systems

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KY Water Utilities Advisory Committee: PFAS Subcommittee

- Funding Subgroup
  - Developing a comprehensive list of funding sources to be shared with water systems
- Bench & Pilot Studies Subgroup
  - Will provide review PAC study procedures
  - Developing guidance on Rapid Scale Column Testing that may be used in lieu of pilot testing
  - Save time and money
- Communications Subgroup
  - Will develop communication materials to assist water systems communicate with their customer base.
  - Opportunity for stakeholders to communicate their needs.

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Emerging Contaminants in Small or Disadvantaged Communities Grant

- System must be small OR disadvantaged to be eligible.
- Must address emerging contaminants.
- Eligible projects include sampling, technical assistance, pilot testing, planning and design, treatment, new source exploration/development, consolidation, and public communication.
- Systems that anticipate issues meeting MCLs will be given priority.
- If you have higher levels of PFAS and have not already been in contact with DOW, please reach out for Technical Assistance and funding opportunities—sooner rather than later!

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Questions?

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