WATER FIRST
WATERCON 2025

Got PFAS? Doesn't Matter, You Still Have Things To Do

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American Water Works Association
Illinois Section

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IEPA # 21591

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Got PFAS?

Doesn't Matter, You Still Have Things To Do

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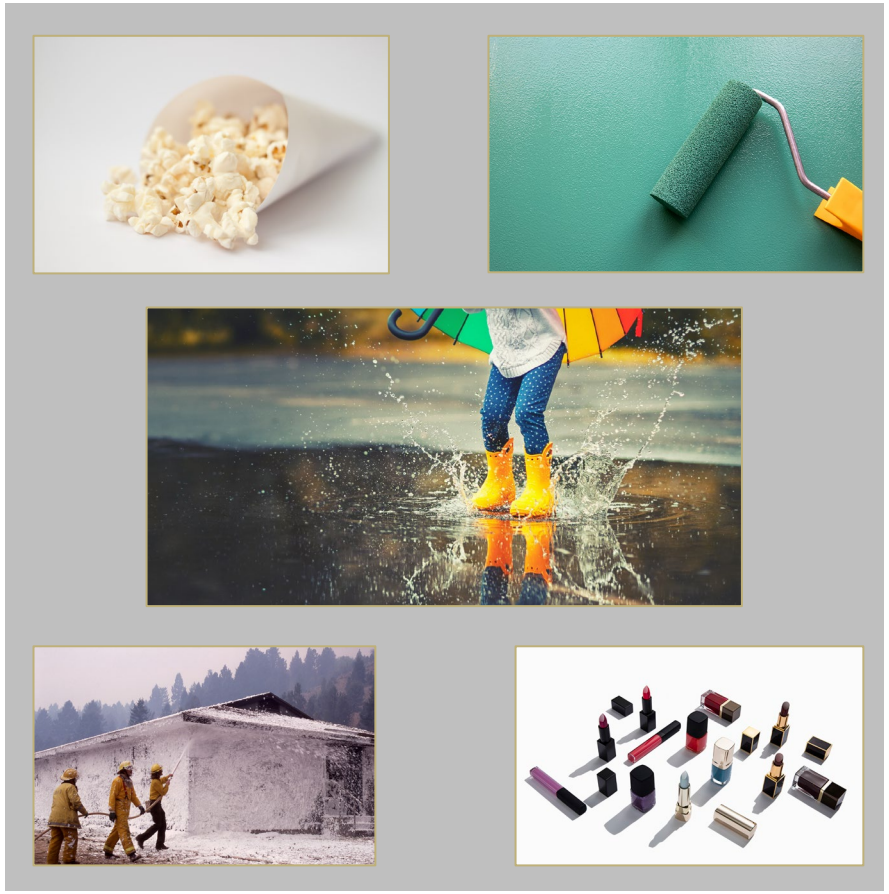
Agenda

1. PFAS In Your System
2. Regulations
3. What Things Do I Have To Do?
4. Mild Impacts
5. Medium Concern
6. Getting Spicy
7. Conclusion

PFAS IN YOUR SYSTEM

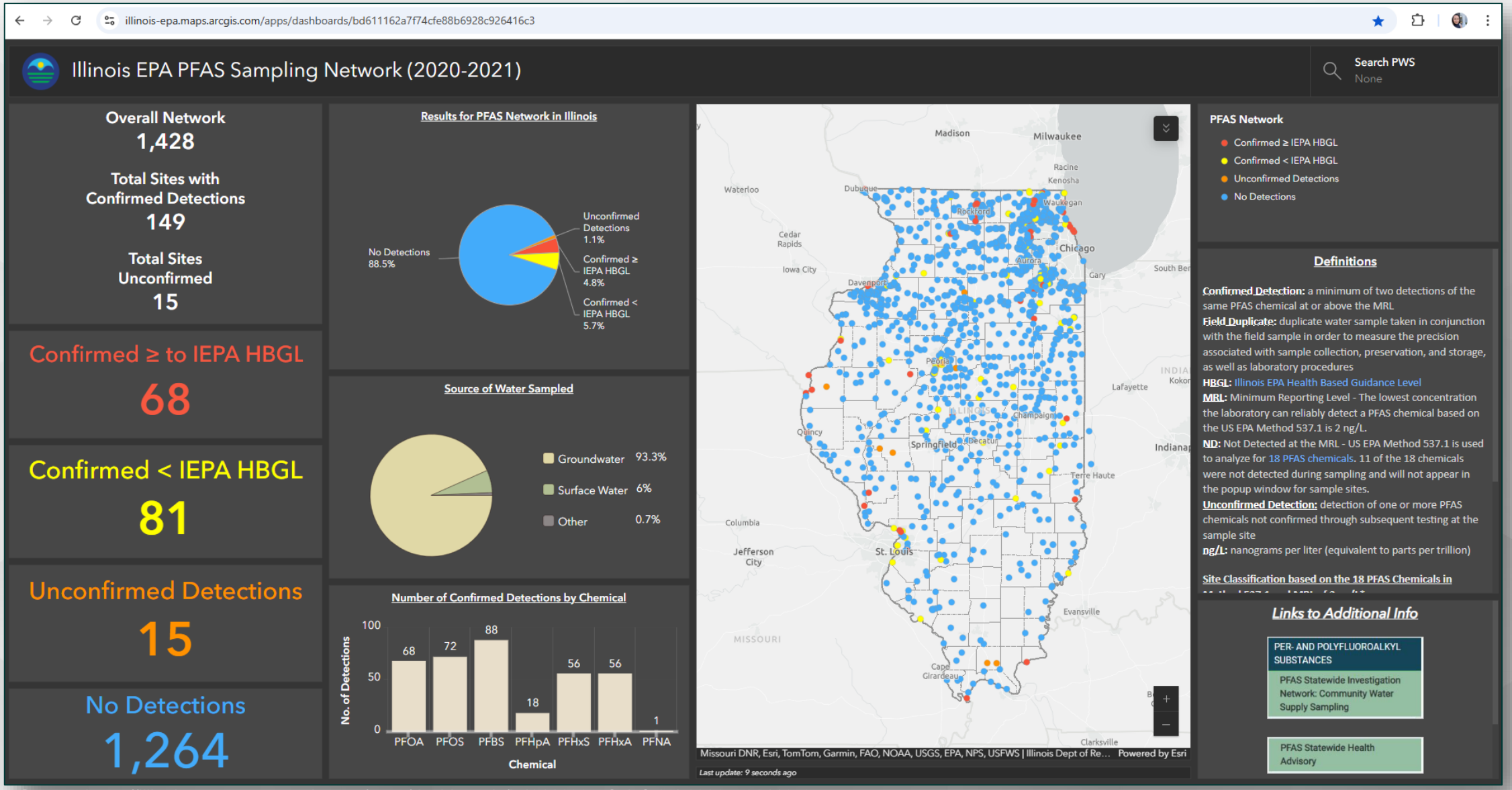
PFAS PREFACE



Images 1, 2, 3, 5 source: Microsoft Stock Images
Image 4 source: https://en.wikipedia.org/wiki/Firefighting_foam

- What are PFAS?
  - Quick overview
- Who must act in response to national PFAS regulations?
  - All CWSs
- What about POTWs?
  - Not yet, likely soon

PFAS PREVALENCE



Source: https://illinois-epa.maps.arcgis.com/apps/dashboards/bd611162a7f74cfe88b6928c926416c3

PFAS PERSISTENCE

PFAS IN = PFAS OUT

Traditional WTP

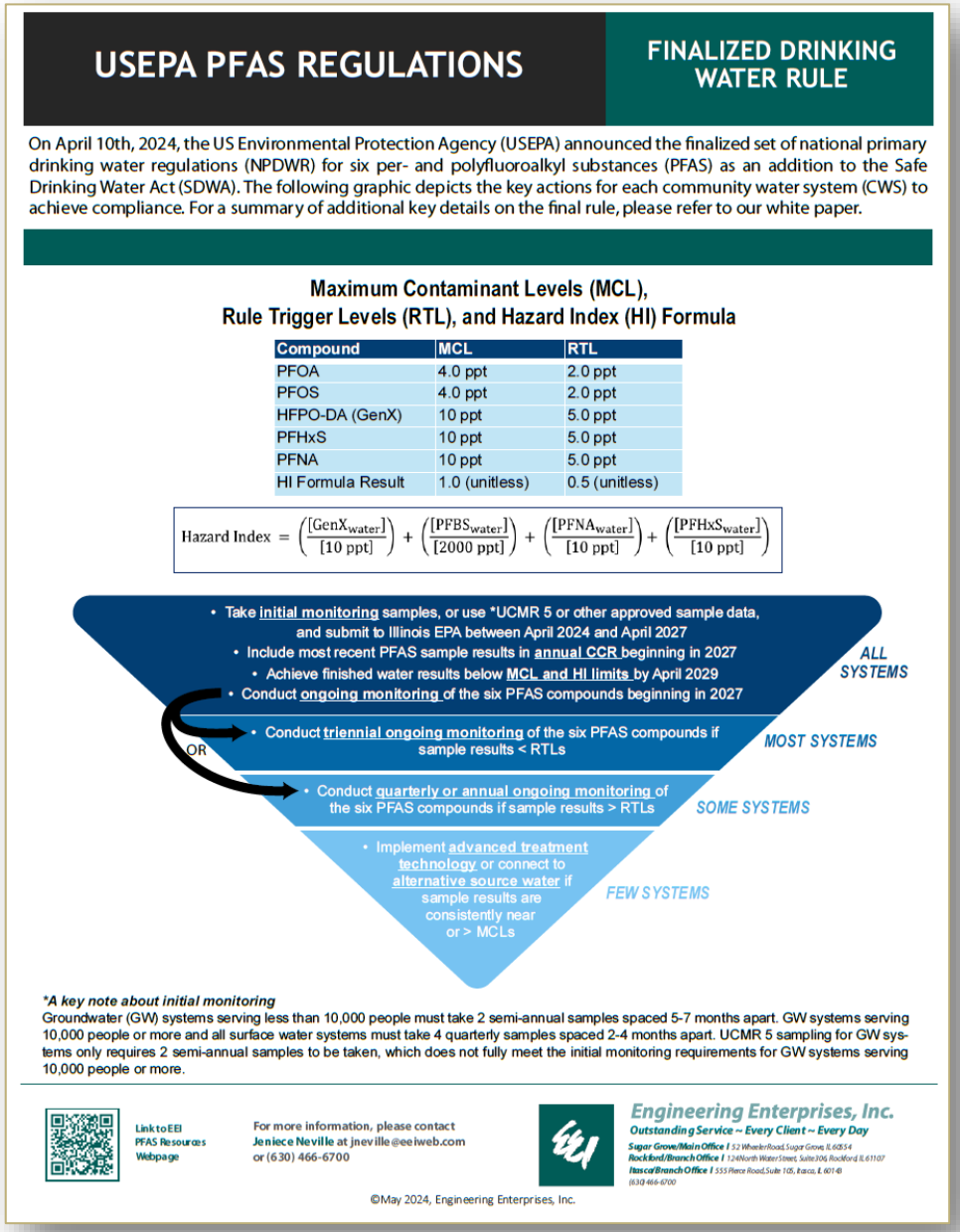
PFOA Molecule Source: https://www.home-water-purifiers-and-filters.com/pfoa-in-water.php

REGULATIONS

Image source: https://usaguidedtours.com/blog/things-to-do-in-dc/

KEY REGULATIONS

- **USEPA's Updates to the National Primary Drinking Water Regulations (NPDWR)**
  - Promulgated April 2024
  - Sample by 2027
  - Comply by 2029
- **Consumer Confidence Rule (CCR) Updates**
  - Report PFAS by 2027
  - Release every 6 months if serving >10,000 customers



USEPA PFAS REGULATIONS

FINALIZED DRINKING WATER RULE

On April 10th, 2024, the US Environmental Protection Agency (USEPA) announced the finalized set of national primary drinking water regulations (NPDWR) for six per- and polyfluoroalkyl substances (PFAS) as an addition to the Safe Drinking Water Act (SDWA). The following graphic depicts the key actions for each community water system (CWS) to achieve compliance. For a summary of additional key details on the final rule, please refer to our white paper.

Maximum Contaminant Levels (MCL), Rule Trigger Levels (RTL), and Hazard Index (HI) Formula

Compound	MCL	RTL
PFOA	4.0 ppt	2.0 ppt
PFOS	4.0 ppt	2.0 ppt
HFPO-DA (GenX)	10 ppt	5.0 ppt
PFHxS	10 ppt	5.0 ppt
PFNA	10 ppt	5.0 ppt
HI Formula Result	1.0 (unitless)	0.5 (unitless)

$$\text{Hazard Index} = \left(\frac{[\text{GenX}_{\text{water}}]}{[10\text{ ppt}]}\right) + \left(\frac{[\text{PFBS}_{\text{water}}]}{[2000\text{ ppt}]}\right) + \left(\frac{[\text{PFNA}_{\text{water}}]}{[10\text{ ppt}]}\right) + \left(\frac{[\text{PFHxS}_{\text{water}}]}{[10\text{ ppt}]}\right)$$

- Take initial monitoring samples, or use *UCMR 5 or other approved sample data, and submit to Illinois EPA between April 2024 and April 2027
- Include most recent PFAS sample results in annual CCR beginning in 2027
- Achieve finished water results below MCL and HI limits by April 2029
- Conduct ongoing monitoring of the six PFAS compounds beginning in 2027

ALL SYSTEMS

OR

- Conduct triennial ongoing monitoring of the six PFAS compounds if sample results < RTLs

MOST SYSTEMS

- Conduct quarterly or annual ongoing monitoring of the six PFAS compounds if sample results > RTLs

SOME SYSTEMS

- Implement advanced treatment technology or connect to alternative source water if sample results are consistently near or > MCLs

FEW SYSTEMS

A key note about initial monitoring

Groundwater (GW) systems serving less than 10,000 people must take 2 semi-annual samples spaced 5-7 months apart. GW systems serving 10,000 people or more and all surface water systems must take 4 quarterly samples spaced 2-4 months apart. UCMR 5 sampling for GW systems only requires 2 semi-annual samples to be taken, which does not fully meet the initial monitoring requirements for GW systems serving 10,000 people or more.

Link to EEI PFAS Resources Webpage

For more information, please contact Jeniece Neville at jneville@eeiweb.com or (630) 466-6700

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Source: eeiweb.com/resources/pfas-resources/

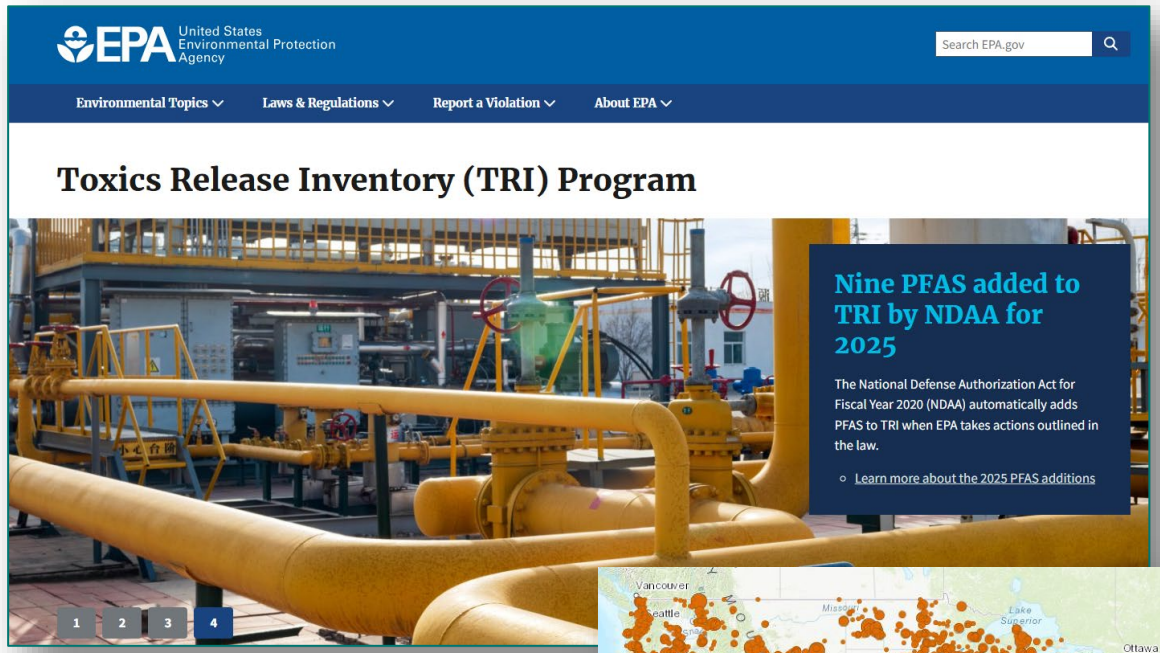
MINOR REGULATIONS (AT PRESENT)

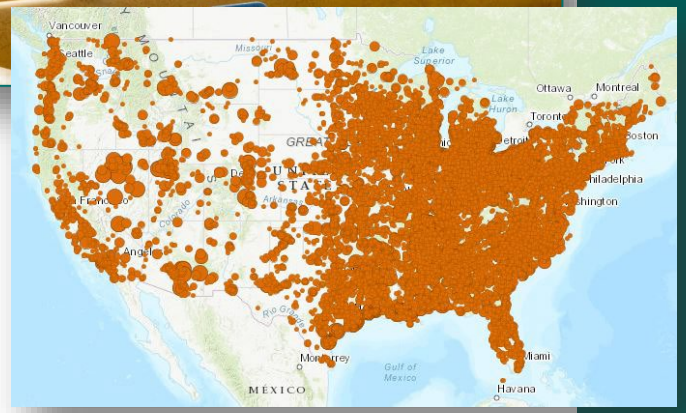
Image source: https://west.arizona.edu/news/help-save-land-application-biosolids

- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**
  - Finalized April 2024
- **National Pollutant Discharge Elimination System (NPDES)**
  - In draft form for Major POTWs in Illinois
- **USEPA Biosolids Risk Assessment**
  - Released January 2025

PERIPHERAL REGULATIONS

(As it relates to water and wastewater)





- **Toxic Release Inventory (TRI)**
  - Amended May 2024
- **Resource Conservation and Recovery Act (RCRA)**
  - Proposed February 2024
- **Toxic Substances Control Act (TSCA)**
  - Finalized October 2023

Image sources: https://www.epa.gov/toxics-release-inventory-tri-program
https://www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory

WHAT THINGS DO I HAVE TO DO?

Image source: Microsoft Stock Images

RESPONDING TO REGULATIONS

- **Affects all Community Water Systems (CWSs)**

EPA United States Environmental Protection Agency

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Per- and Polyfluoroalkyl Substances (PFAS)

Final PFAS National Primary Drinking Water Regulation

- Summary
- Supporting Materials
  - General Information
  - Communications Toolkit
  - Technical Information for States, Tribes and Water Systems
  - Español
- Regulatory Information and Supporting Documents
- Webinars
- Background

Source: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

EPA United States Environmental Protection Agency

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Home / Consumer Confidence Reports (CCR)

Consumer Confidence Reports (CCR)

- CCR Compliance Help
- PSAs & Communication
- Electronic Delivery of CCR
- Consumer Basic Information
- CCR Implementation Guidance

Contact Us About Consumer Confidence Reports

Consumer Confidence Report Rule Revisions

On May 15, 2024, the EPA announced the final Consumer Confidence Report Rule Revisions to make annual drinking water quality reports more understandable and accessible to the public. These reports are an important tool that drinking water systems use to inform residents about water quality and any contaminants that have been found in the water. Starting in 2027, the final rule will ensure that these reports are easier to read and support access to translations in appropriate languages while enhancing information about lead in drinking water. EPA is also taking steps to streamline the delivery of reports by encouraging electronic methods.

Source: https://www.epa.gov/ccr/consumer-confidence-report-rule-revisions

LEVELS OF COMPLIANCE

- **Basic Sampling**
- **Frequent Sampling**
- **Full Remediation**

- **Mild**

- **Medium**

- **Spicy**

Image 1 source: https://www.wholefoodsmarket.com/product/produce-poblano-pepper-b07fz9277p
Image 2 source: https://www.walmart.com/ip/Fresh-Jalapeno-Pepper-Approx-3-5-per-0-25-Pound/44391018
Image 3 source: https://ethicalinc.com/2022/11/11/what-are-the-health-benefits-of-serrano-peppers/

MILD IMPACTS

Source: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

COMPLYING IN A POST-UCMR 5 WORLD

- UCMR 5 data collection through end of 2025
- Provides initial diagnostic of PFAS presence in CWS
- Results can count towards part or all of Initial Sampling NPDWR requirement
- Determines frequency of Ongoing Monitoring sampling

Source: https://www.epa.gov/system/files/documents/2022-02/ucmr5-factsheet.pdf

What contaminants are in UCMR 5?

UCMR 5 specifies monitoring for 29 per- and polyfluoroalkyl substances (PFAS) and lithium listed in the table below.

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,
1*H*,1*H*, 2*H*, 2*H*-perfluorodecane sulfonic acid (8:2FTS)	39108-34-4	0.005	
1*H*,1*H*, 2*H*, 2*H*-perfluorohexane sulfonic acid (4:2FTS)	757124-72-4	0.003	
1*H*,1*H*, 2*H*, 2*H*-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 (PFEESA)	113507-82-7	0.003	
perfluoro-3-methoxypropanoic acid (PFMPA)			
perfluoro-4-methoxybutanoic acid (PFMBA)			
perfluorobutanesulfonic acid (PFBS)			
perfluorobutanoic acid (PFBA)			
perfluorodecanoic acid (PFDA)			
perfluorododecanoic acid (PFDoA)			
perfluoroheptanesulfonic acid (PFHpS)			
perfluoroheptanoic acid (PFHpA)			
perfluorohexanesulfonic acid (PFHxS)			
perfluorohexanoic acid (PFHxA)			
perfluorononanoic acid (PFNA)			
perfluorooctanesulfonic acid (PFOS)			
perfluorooctanoic acid (PFOA)			
perfluoropentanesulfonic acid (PFPeS)			
perfluoropentanoic acid (PFPeA)			
perfluoroundecanoic acid (PFUnA)			
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	
Metal/Pharmaceutical: EPA Method 200.7; SM[3] 3120 B (2017); SM[3] 3120 B-99 (1999); ASTM[4] D1976-20			
lithium	7439-93-2	9	Naturally occurring metal that may concentrate in brine waters; lithium salts are used as pharmaceuticals, used in electrochemical cells, batteries, and in organic syntheses.

1. CASRN – Chemical Abstracts Service Registry Number
2. MRL – Minimum Reporting Level
3. SM – Standard Methods
4. ASTM – ASTM International

Size Category (Number of People Served)	Monitoring Design (CWSs and NTNCWSs)[2]	Total # of Systems per Size Category
Small Systems[1] (fewer than 3,300)	Nationally representative sample	800
Small Systems[1] (3,300-10,000)	All systems, if confirmed by EPA	5,147[3]
Large Systems (10,001 and over)	All systems	4,364[3]
Total		10,311

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

INITIAL SAMPLING

- Prior to April 2027

Groundwater Systems

Serving less than 10,000

Groundwater Systems

Serving 10,000 or more

Surface Water and Mixed Water Systems

All sizes

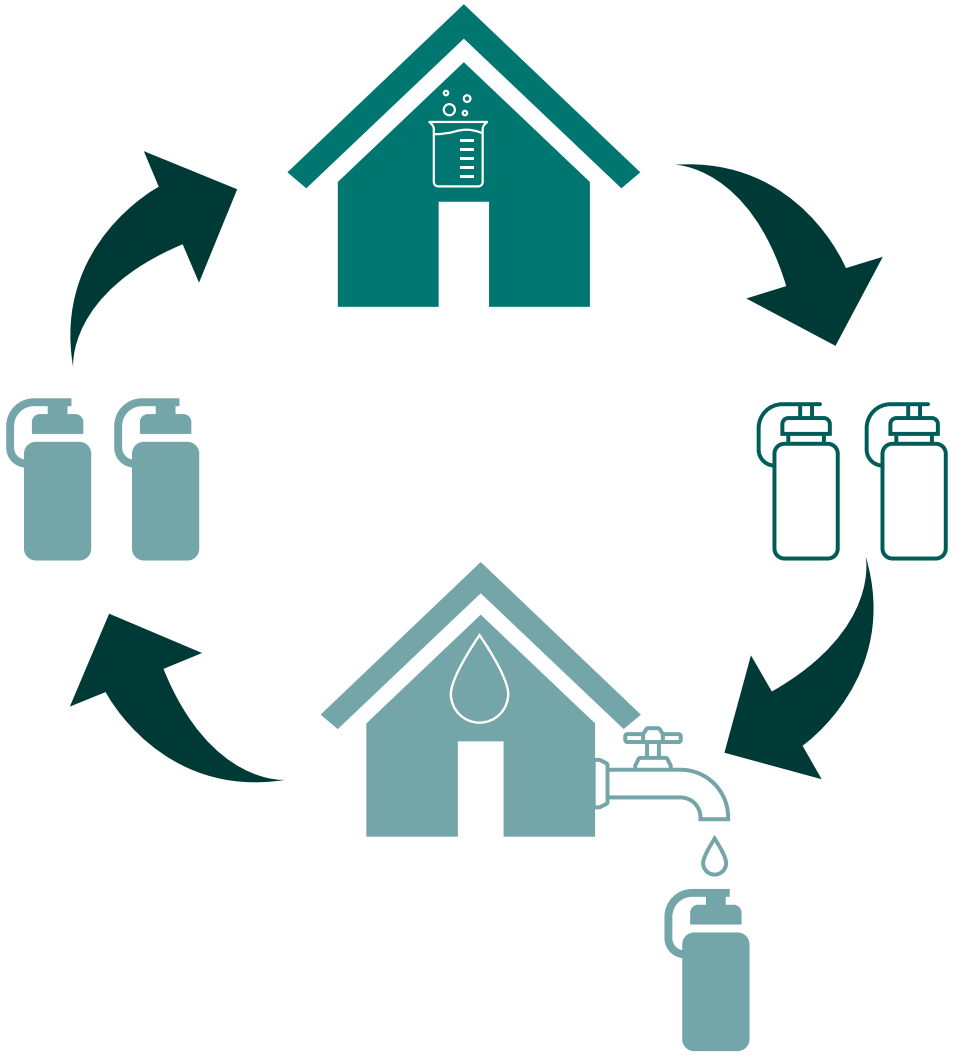
ONGOING MONITORING

- From April 2027 and onwards

Below Rule Trigger Level

Above Rule Trigger Level

SAMPLING LOGISTICS



1. **Locate** a lab with 533 or 537.1 capabilities
2. **Receive** sampling bottles from lab
3. **Take samples at all EPTDS**
   a) Take field reagent blanks (req.)
   b) Take equipment blanks (not req.)
4. **Ship** to lab
5. **Receive** results
6. **Report** concentrations as required
7. **Repeat** as required

SAMPLING PROCEDURES

- Use **HDPE bottles** sent by lab
  - Bottles contain preservatives
- Sample at each EPTDS, **no mixing**
- **Field reagent blanks are required** for each EPTDS sample
  - Water is sent by lab
- **Equipment blanks** to test materials used in sampling, not required
  - More common for POTW samples (Method 1633)

Image 1 source: https://www.haleyaldrich.com/resources/publications/pfas-technical-update-avoiding-costly-errors-in-pfas-sampling/

EPTDS Sample

Corresponding Field Blank Sample

Image 2 source: https://www.amazon.com/Othmro-Plastic-Bottles-1000mL-Translucent/dp/B082NP7GCY

REPORTING PROCEDURES

Image source: https://water.epa.state.il.us/dww/index.jsp

- Lab analyzes samples
- CWS receives results
- Lab or CWS can submit results to IEPA

Expected turnaround times:	
Method 533	10 days
Method 537.1	10 days
Method 1633/1633A	15 days

MEDIUM CONCERN

REMEDIATION DELIBERATION

MCL = Maximum Contaminant Level

RTL = Rule Trigger Level (½ of MCLs)

ND = Non-Detectable Level

COST CONSIDERATIONS

- **Quarterly Sampling**
  - EPTDS x 4
  - Field blanks x 4
  - Shipping
  - Labor

VS

- **Source Remediation**
  - Abandon wells with PFAS
  - Switch sources
  - Planning and Design

GETTING SPICY

Image source: Microsoft Stock Images

GOT PFAS.

SEEK REMEDIATION.

- Comply with MCLs by 2029
- Options:
  - Advanced Treatment
  - Switch Sources
- Decide wisely
  - Feasibility Analysis
  - Pilot Testing

Source: Hot Ones, Episode 145

SPECIAL CONSIDERATIONS

- **If treating:**
  - Types of PFAS
  - Additional influent water quality parameters
  - Pilot study design
  - Time to implement
- **If switching sources:**
  - Long-term supply availability
  - Time to implement

TREATMENT METHOD CONSIDERATION TABLE

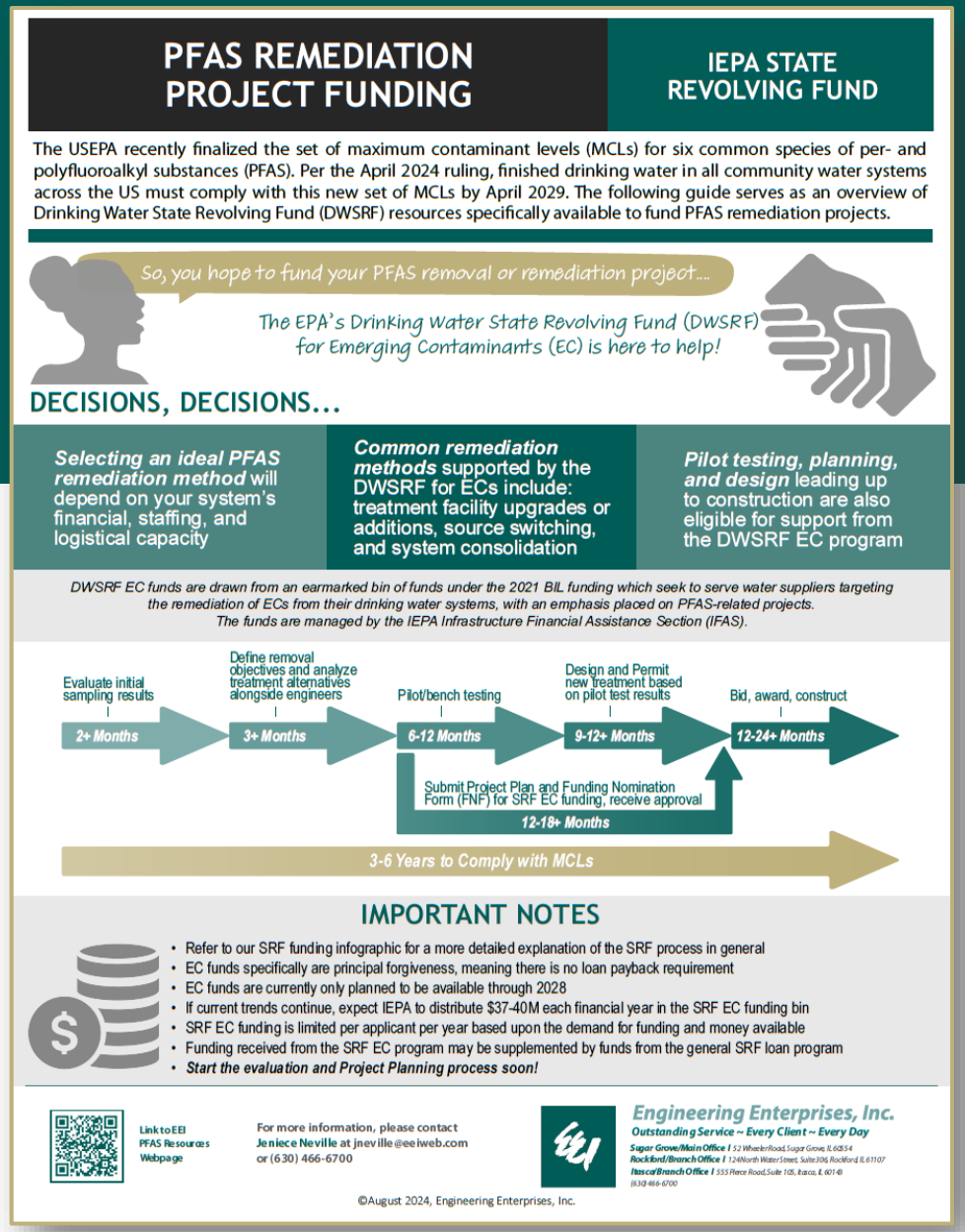
	Granular Activated Carbon	Ion Exchange	High Pressure Membrane System
Removal	89 to 99%	90 to 99%	93 to 99%
	Competitive adsorption with other compounds	Competitive adsorption with other anionic compounds	Most efficient in removing PFAS
	Effective for removal of longer chain PFAS	Effective for a wider range of PFAS	High removal rate of PFAS
Wastewater/ Solid Disposal	Spent media to landfill or regeneration facility	Spent media to landfill or incineration facility	High PFAS concentration in reject water
Operator Certification	Class B	Class B	Class A
Footprint	Larger	Smaller	Smaller
Capital Cost*	$	$	$$
O&M Cost*	$	$	$$

*Costs are variable and must be evaluated per individual application

FINANCIAL PREPARATION

This is where it gets extra spicy.

- ✓ Capital Improvement Planning
- ✓ Rate Studies
- ✓ SRF Emerging Contaminant Funding



PFAS REMEDIATION PROJECT FUNDING

IEPA STATE REVOLVING FUND

The USEPA recently finalized the set of maximum contaminant levels (MCLs) for six common species of per- and polyfluoroalkyl substances (PFAS). Per the April 2024 ruling, finished drinking water in all community water systems across the US must comply with this new set of MCLs by April 2029. The following guide serves as an overview of Drinking Water State Revolving Fund (DWSRF) resources specifically available to fund PFAS remediation projects.

So, you hope to fund your PFAS removal or remediation project....

The EPA's Drinking Water State Revolving Fund (DWSRF) for Emerging Contaminants (EC) is here to help!

DECISIONS, DECISIONS...

Selecting an ideal PFAS remediation method will depend on your system's financial, staffing, and logistical capacity

Common remediation methods supported by the DWSRF for ECs include: treatment facility upgrades or additions, source switching, and system consolidation

Pilot testing, planning, and design leading up to construction are also eligible for support from the DWSRF EC program

DWSRF EC funds are drawn from an earmarked bin of funds under the 2021 BIL funding which seek to serve water suppliers targeting the remediation of ECs from their drinking water systems, with an emphasis placed on PFAS-related projects. The funds are managed by the IEPA Infrastructure Financial Assistance Section (IFAS).

Evaluate initial sampling results — 2+ Months

Define removal objectives and analyze treatment alternatives alongside engineers — 3+ Months

Pilot/bench testing — 6-12 Months

Design and Permit new treatment based on pilot test results — 9-12+ Months

Bid, award, construct — 12-24+ Months

Submit Project Plan and Funding Nomination Form (FNF) for SRF EC funding, receive approval — 12-18+ Months

3-6 Years to Comply with MCLs

IMPORTANT NOTES

- Refer to our SRF funding infographic for a more detailed explanation of the SRF process in general
- EC funds specifically are principal forgiveness, meaning there is no loan payback requirement
- EC funds are currently only planned to be available through 2028
- If current trends continue, expect IEPA to distribute $37-40M each financial year in the SRF EC funding bin
- SRF EC funding is limited per applicant per year based upon the demand for funding and money available
- Funding received from the SRF EC program may be supplemented by funds from the general SRF loan program
- ***Start the evaluation and Project Planning process soon!***

Link to EEI PFAS Resources Webpage

For more information, please contact Jeniece Neville at jneville@eeiweb.com or (630) 466-6700

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Source: eeiweb.com/resources/pfas-resources/

CONCLUSION

Image source: https://www.chilipeppermadness.com/chili-pepper-recipes/salsas/salsa-verde/

IN CONCLUSION…

You Have Things To Do

- Consumer Confident Reports
- Initial Sampling
- Ongoing Triennial Monitoring

- Ongoing Quarterly Monitoring
- Treatment or Source Switching Consideration

- Ongoing Quarterly Monitoring
- Treatment or Source Switching Implementation

Image 1 source: https://www.wholefoodsmarket.com/product/produce-poblano-pepper-b07fz9277p
Image 2 source: https://www.walmart.com/ip/Fresh-Jalapeno-Pepper-Approx-3-5-per-0-25-Pound/44391018
Image 3 source: https://ethicalinc.com/2022/11/11/what-are-the-health-benefits-of-serrano-peppers/

QUESTIONS OR COMMENTS?

THANK YOU

We value your time and appreciate the opportunity to present on PFAS.

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