



# EPA's PFAS Strategic Roadmap: Commitments to Action 2021-2024

Update for ACWA  
August 22, 2024

# Overview

- EPA's Goals in the PFAS Strategic Roadmap
- Key Roadmap Progress – Agency-wide Actions
- Office of Water Actions and Upcoming Actions

# EPA's Goals in the Strategic Roadmap

## RESTRICT

Pursue a comprehensive approach to proactively prevent PFAS from entering air, land, and water at levels that can adversely impact human health and the environment.

## REMEDiate

Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

## RESEARCH

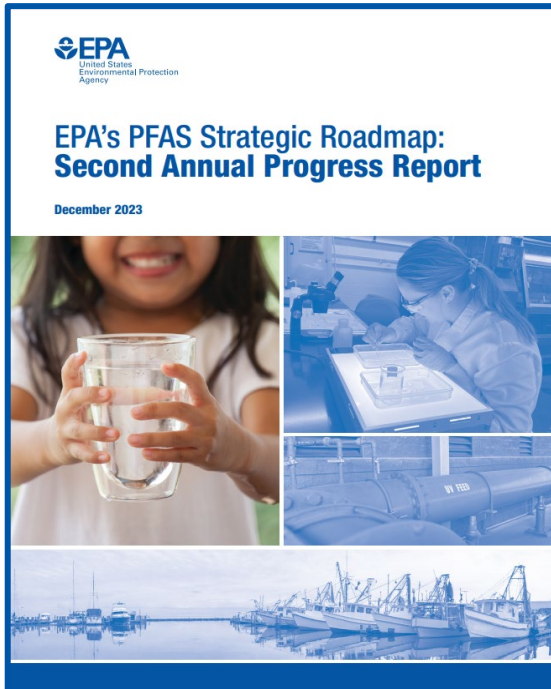
Invest in research, development, and innovation to increase understanding of

- Methods for measuring PFAS in the environment
- Assessing human health and environmental risks
- Evaluating and developing technologies for reducing PFAS

# Key PFAS Roadmap Accomplishments

**April 2024  
Final Rules:**

**First-ever nationwide, legally enforceable drinking water standards  
CERCLA hazardous substance designation for PFOA & PFOS**



- **Making PFAS use safer** through robust chemical reviews and improving data
- **Holding polluters accountable** through enforcement and compliance and hazardous-substance designations
- **Protecting America's drinking water** through national standards and nationwide monitoring
- **Deploying Bipartisan Infrastructure Law funding** to address PFAS in water
- **Turning off the tap for industrial polluters** using Clean Water Act authorities
- **Advancing the science** of PFAS toxicity, exposures, and methods
- **Incorporating equity and environmental justice** through analyses, funding, data, and tools
- **Listening to and learning from communities**

# Key Roadmap Actions: Protecting our Water

Set enforceable limits for PFAS in drinking water

RESTRICT

Improve PFAS drinking-water data through **monitoring**, **toxicity assessments**, and health advisories

RESEARCH

Address PFAS in Clean Water Act permitting, **water quality criteria**, **analytical methods**, and **fish tissue monitoring**

RESEARCH

RESTRICT

Develop technology-based PFAS limits for industrial dischargers

RESTRICT

Evaluate risks of PFAS in biosolids

RESEARCH

# PFAS National Primary Drinking Water Regulation (NPDWR)

- On April 10, 2024, EPA announced the final PFAS NPDWR for six PFAS.
  - **Individual MCLs:** PFOA, PFOS, PFHxS, PFNA, and HFPO-DA
  - **Hazard Index MCL:** Two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.
- Will reduce PFAS exposure for approximately 100 million people, prevent thousands of deaths, and reduce tens of thousands of serious illnesses.

# PFAS National Primary Drinking Water Regulation (NPDWR)

Chemical	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)
<b>PFOA</b>	0	4.0 ppt
<b>PFOS</b>	0	4.0 ppt
<b>PFHxS</b>	10 ppt	10 ppt
<b>HFPO-DA (GenX chemicals)</b>	10 ppt	10 ppt
<b>PFNA</b>	10 ppt	10 ppt
<b>Mixture of two or more: PFHxS, PFNA, HFPO-DA, and PFBS</b>	Hazard Index of 1	Hazard Index of 1

\*Compliance is determined by running annual averages at the sampling point

# Final Toxicity Assessments for PFOA and PFOS

- Noncancer toxicity values indicate that multiple adverse effects are observed at low doses in humans.
- Cancer toxicity values indicate that PFOA and PFOS are likely potent carcinogens.
- Since PFOA and PFOS were each classified as “Likely to be Carcinogenic to Humans,” their MCLGs were set to zero, consistent with SDWA definition of a MCLG and with past precedent.
- OW applications for the final toxicity values (beyond NPDWR): National recommended human health criteria, biosolids risk assessments.

	Critical Effect(s)	Toxicity Value
<b><u>PFOA</u></b>		
<b>Noncancer Reference Dose</b>	Co-critical effects: decreased serum anti-tetanus and anti-diphtheria antibody concentration in children; decreased birth weight in infants; increased serum total cholesterol in adults	$3 \times 10^{-8}$ mg/kg/day
<b>Cancer Slope Factor</b>	Renal cell carcinoma in male and female adults	29,300 (mg/kg/day) <sup>-1</sup>
<b><u>PFOS</u></b>		
<b>Noncancer Reference Dose</b>	Co-critical effects: decreased birth weight in infants; increased serum total cholesterol in adults	$1 \times 10^{-7}$ (mg/kg/day)
<b>Cancer Slope Factor</b>	Combined hepatocellular adenomas and carcinomas in female rats	39.5 (mg/kg/day) <sup>-1</sup>



# National Recommended **Human Health** Ambient Water Quality Criteria

- EPA is currently developing human health criteria for PFOA, PFOS, HFPO-DA, and PFBS.
  - Based on Final EPA toxicity assessments
  - Bioaccumulation factors derived from peer reviewed literature
  - Expected release for public comment – Fall 2024
- Next steps
  - Human health criteria will be developed for additional PFAS as scientific information needed for input parameters is completed

# PFAS Toxicity Value Status

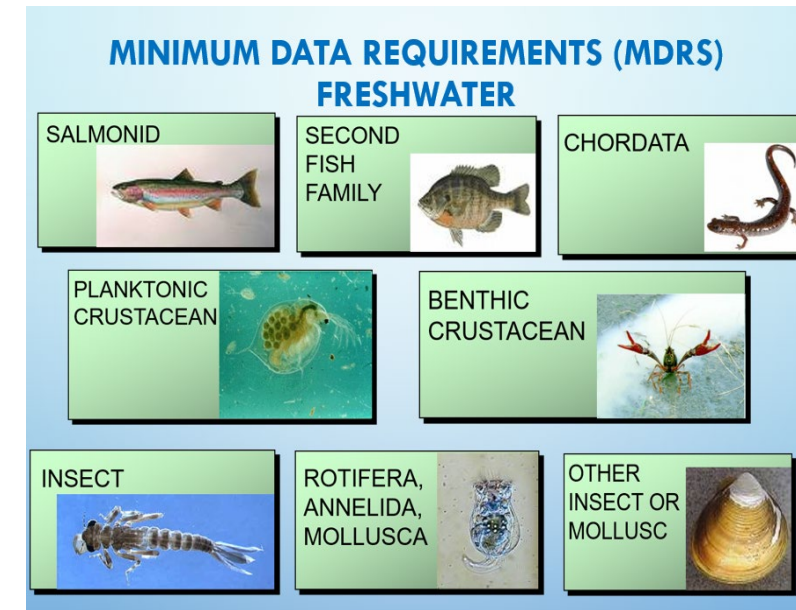
PFAS	Status of Toxicity Values
PFOA	✓ Final Value (US EPA, 2024)*
PFOS	✓ Final Value (US EPA, 2024)*
HFPO-DA (GenX)	✓ Final Value (US EPA, 2021)*
PFBS	✓ Final Value (US EPA, 2021)*
PFBA	✓ Final Value (US EPA, 2022)
PFHxA	✓ Final Value (US EPA, 2023)
HQ-115	✓ Final Value (US EPA, 2023)
PFPrA	✓ Final Value (US EPA, 2023)
PFDA	✓ Final Value (US EPA, 2024)
PFNA	In process (EPA IRIS)
PFHxS	In process (EPA IRIS)

\*Draft human health criteria expected to be released for public comment Fall 2024.

# National Recommended **Aquatic Life** Ambient Water Quality Criteria

- Hierarchy of aquatic life protective values based on data availability and quality of data:

- **Criteria** – Most certainty. High quality data are available, all or most Minimum Data Requirements met. Issued under CWA Section 304(a)(1).
- **Benchmarks** – Some uncertainty. High quality data are available, but there are some data gaps. Data gaps may be filled using New Approach Methods (NAMs). Issued under CWA 304(a)(2).



- States are **not** required to adopt criteria or benchmarks.

# National Recommended **Aquatic Life** Ambient Water Quality Criteria

## To be released soon

- Final Aquatic Life **Criteria** for PFOA and PFOS in freshwater
  - Acute and chronic freshwater concentrations
  - Chronic tissue criteria for Fish Whole Body, Fish Muscle, and Invertebrates Whole Body
- Final **Acute Benchmarks** for PFOA and PFOS in saltwater
- Final **Acute Benchmarks** for 8 data-limited PFAS in freshwater
  - PFBA, PFHxA, PFNA, PFDA, PFBS, PFHxS, 8:2 FTUCA, and 7:3 FTCA



Mayfly



Cladoceran

# Final PFAS Analytical Methods — 1633 and 1621

Published January 31, 2024

## Final EPA Method 1633

Analytical method for measuring up to 40 specific PFAS analytes in 8 environmental matrices, including **wastewater**, surface water, ground water, **biosolids**, sediments, **landfill leachate**, soil, and **fish tissue**.

## Final EPA Method 1621

Analytical method for measuring adsorbable organic fluorine (AOF) in **wastewater** — a surrogate for measuring total amount of PFAS

## Next Step

Propose Methods in 40 CFR Part 136 — **Winter 2024**

# Updated Contaminant Recommendations for Fish and Shellfish Advisory Programs to Monitor

Released July 11, 2024

These newly added contaminants can accumulate in fish to levels that could be problematic for human health.

Contaminant Group	Monitor for Advisories List: Contaminant	Monitor to Watch List: Contaminant	
Cyanotoxins	Microcystins	BMAA DABA	
Flame retardants	BDE-47		
Metals	Lead		
PFAS	PFDA PFHxS PFNA PFOA PFOS	PFDS PFDoA PFHpS PFOSA	PFTeDA PFTrDA PFUnDA
Pharmaceuticals	Amphetamine		

# EFFLUENT LIMITATIONS GUIDELINES (ELGs)

ELG Plan 15 Published January 2023

Rulemakings

- **PFAS Manufacturers**
- **Metal Finishing/Electroplating**
- **Landfills**

Studies

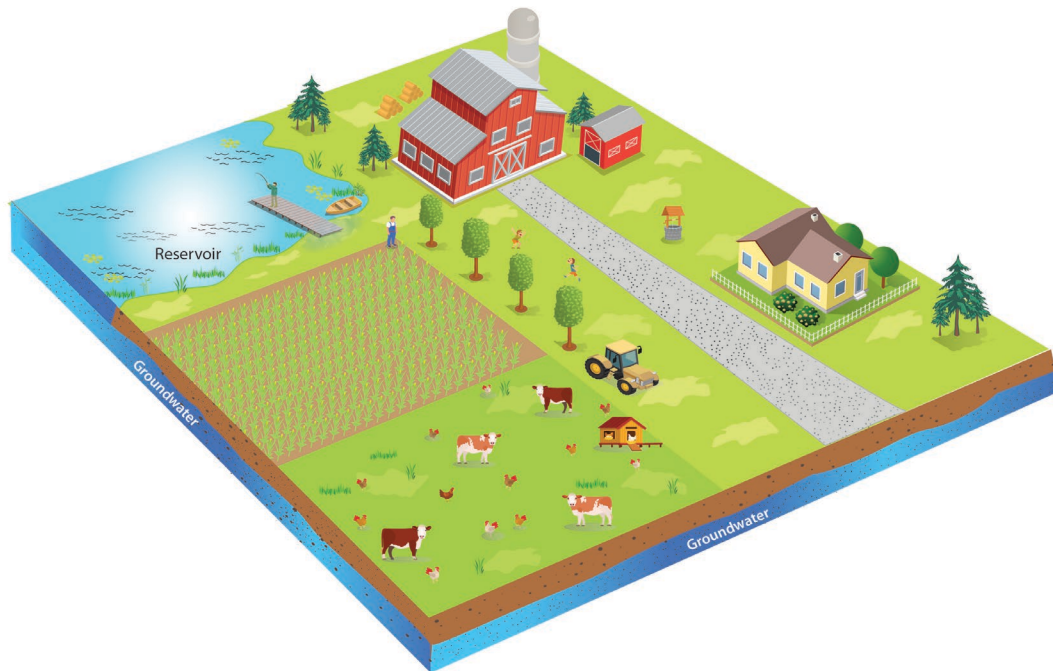
- **Textile Manufacturing**
- **POTW influent PFAS study**

**Expect Preliminary ELG Plan 16 this Fall for Public Comment**

# Biosolids Risk Assessment for PFOA & PFOS

## Agriculture Use Scenario Diagram

- CWA Section 405 requires EPA to assess potential human health and ecological risks posed by contaminants found in sewage sludge.
- Focus is on human exposures from land application of biosolids at a small farm.
- External peer review completed Summer 2024; [expect to release for public comment this fall.](#)



- **Human exposure:**
  - Drinking water:
    - Aquifer and reservoir
  - Diet:
    - Eating fruits and vegetables
    - Drinking milk and eating beef from dairy cows
    - Eating eggs and chicken meat from hens
    - Eating fish caught from reservoir
  - Incidental soil ingestion





# PFAS Strategic Roadmap:

## EPA's Commitments to Action 2021-2024

[epa.gov/pfas](https://epa.gov/pfas)