

## FAST NEWS ON PFAS NEWSLETTER

In the fast-paced news cycle of PFAS, discerning priorities can be a challenge. Weston's PFAS newsletter takes you out of the minutia and into the big picture. We have assembled key regulatory highlights, expert input, and state-of-the-science facts, and distilled them to the essentials of what you need to know, why it matters, and how it could impact you. Make this quick quarterly newsletter your starting point to understanding the latest information on PFAS.

### In this issue:

- Final PFAS National Primary Drinking Water Regulations
- Interim Guidance on the Destruction and Disposal of PFAS
- EPA proposes to list nine PFAS as hazardous constituents under RCRA
- EPA proposes amending the definition of hazardous waste under RCRA
- EPA and ASTM PFAS analytical methods summary
- Spotlight: Environmental Security Technology Certification Program (ESTCP) funds Weston proposal to develop an interactive regulatory map

**Author's Note:** While we were finalizing this issue of the Newsletter, we knew that EPA could release their final Maximum Contaminant Levels any day. When that happened, we made the decision to hold the Newsletter back to include the important and time-critical information. However, we also felt that the content already prepared is no less important and informational. As a result, this Newsletter is longer than normal. We hope you enjoy the slightly longer read and get the same high-quality information as you have come to expect.

## FINAL PFAS NATIONAL PRIMARY DRINKING WATER REGULATIONS

On April 10, 2024, the U.S. Environmental Protection Agency (EPA) announced their long awaited final National Primary Drinking Water Regulations (NPDWR) establishing Maximum Contaminant Levels (MCLs) for six PFAS, including PFOA, PFOS, PFNA, PFHxS, HFPO-DA (a/k/a GenX chemicals), and PFBS (US EPA, 2024e). In addition, EPA finalized health-based Maximum Contaminant Level Goals (MCLGs) for the same six PFAS. In their announcement of the final values, EPA also noted that \$1 billion in funding is available to states and territories through the Bipartisan Infrastructure Law (BIL). The funding supports testing and treatment at public water supply systems and helps homeowners of private wells address PFAS contamination.

► **What you need to know:** Finalization of the NPDWR results in the establishment of MCLs that are the legally enforceable values. Conversely, MCLGs are non-enforceable, health-based values (HBVs). The final MCLs and MCLGs are presented in the table below.

The Hazard Index (HI) formula uses HBVs for the four compounds. These values are: 10 parts per trillion (ppt) for HFPO-DA, PFNA, and PFHxS and 2,000 ppt for PFBS. The formula on the right demonstrates how to calculate the HI, which is primarily meant to address PFBS alone at or greater than 2,000 ppt, or mixtures of two or more of the listed compounds. For example, if PFNA and PFHxS were each detected at 5 ppt, that would exceed the MCL HI of 1.0.

COMPOUND	FINAL MCLG	FINAL MCL (enforceable levels)
PFOA	Zero	4.0 parts per trillion (ppt)
PFOS	Zero	4.0 ppt
PFHxS	10ppt	10 ppt
PFNA	10ppt	10 ppt
HFPO-DA	10ppt	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index	1 (unitless) Hazard Index

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

While the NPDWR typically go into effect for public water supplies 3 years after finalization, EPA extended this timeline. Instead, water utilities have 3 years to complete initial testing (by 2027) and 5 years to implement any solutions required to achieve compliance (by 2029). By 2029, any public water systems that have detected exceedances of the MCLs will be required to take action to mitigate the concentrations of PFAS in their water and must provide public notification of the violation of MCLs. Finally, billions of dollars are being made available from the BIL, the BIL State Revolving Fund Emerging Contaminants Program, and in grant funding to states, tribes, and territories through the new Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) Grant Program.

Small, disadvantaged, and tribal communities can access the funding to address emerging contaminants at the following two websites: <https://www.epa.gov/dwcapacity/emerging-contaminants-ec-small-or-disadvantaged-communities-grant-sdc> and <https://www.epa.gov/tribaldrinkingwater/epas-tribal-drinking-water-funding-programs>.

► **Impact:** The promulgation of PFAS MCLs is both long anticipated and highly impactful. In their PFAS NPDWR Fact Sheet, EPA states simply, “People will live longer, healthier lives because of this action, and the benefits justify the costs.” Although a large amount of funding is being made available for water utilities and others to address PFAS, the question remains whether it provides enough funding. Further, directing funds to small and disadvantaged communities is critical to bridging the gap of reduced exposures to PFAS through drinking water.

The table on the right summarizes the cost benefit analysis presented by EPA.

COST BENEFIT ANALYSIS		
CONSIDERATIONS	COST	BENEFIT
Reduce PFAS exposure for 100 million Americans	\$1.5B (annual)	
Fewer incidences of cancer, liver disease, fetal exposure, heart attacks and strokes, reduced birth complications.		\$1.5B+ (annual)
BIL Funding specific to PFAS		\$9B
BIL Funding not specific to PFAS		\$12B

\*Estimated costs for public water systems include water system monitoring, communicating with customers, and installing treatment technologies.

### INTERIM GUIDANCE ON THE DESTRUCTION AND DISPOSAL OF PFAS

On April 8, 2024, EPA released updated Interim Guidance on the Destruction and Disposal of PFAS. The updated guidance focuses on technologies that are viewed as most protective with a lower potential for release of PFAS to the environment for the six types of PFAS-containing materials listed in Section 7361 of the FY 2020 National Defense Authorization Act, including aqueous film-forming foam, soils and biosolids, textiles and other consumer goods, spent filters and treatment media, landfill leachate, and solid/liquid/gas waste streams.

The three destruction and disposal (D&D) technologies with the lowest potential for release to the environment and, therefore, are most protective include:

- (1) underground injection
- (2) landfilling
- (3) thermal treatment including incineration

Although neither a destruction nor a disposal technology, EPA also included interim storage as a beneficial option depending on the type of material and pending more demonstrated D&D technologies. Furthermore, EPA remained neutral on other available technologies and pointed readers to EPA’s PFAS Innovative Treatment Team (PITT) Research Briefs.

► **What you need to know:** Although EPA listed four approaches to store, destroy, or dispose of PFAS-laden materials, they specifically noted that (1) the recommendations do not preclude any new technologies, and (2) real-world performance and testing data on any existing or new technology could result in changes to the recommended guidance. EPA called attention to the promise of these technologies and the need for additional information, including the outputs (i.e., byproducts) and their ability to work on a wider variety of PFAS-containing materials. The Interim Guidance document lists additional prioritized research needs.

EPA’s PITT prepared Research Briefs on four technologies including (1) mechanochemical degradation (e.g., ball-milling), (2) electrochemical oxidation, (3) gasification and pyrolysis, and (4) supercritical water oxidation (US EPA, 2023a). PITT indicated that these technologies had potential but needed further characterization of the outputs of these technologies.

EPA remains neutral on emerging technologies and suggests the use of a technology evaluation framework.

EPA updates this guidance every 3 years at a minimum.

► **Impact:** While the 2024 Interim Guidance retains the same focus as the 2020 document (underground injection, landfilling, and thermal treatment), EPA highlights the need for publicly available data on real-world application of various technologies to validate their suitability. Although significant amounts of research are being conducted, EPA highlighted high-priority data gaps that need to be addressed.

Importantly, the 2024 Interim Guidance document includes a new technology evaluation framework that can be implemented by technology developers to assess D&D methods. The framework would prioritize and consider different information as part of a multiple-lines-of-evidence approach. In the absence of the perfect D&D solution, in some instances, proper on-site storage and management might provide the best relief option until more definitive guidance on demonstrated technologies becomes available.

EPA PROPOSES TO LIST NINE PFAS AS HAZARDOUS CONSTITUENTS UNDER RCRA

On February 8, 2024, the EPA published a Proposed Rule in the Federal Register to amend its regulation under the Resource Conservation and Recovery Act (RCRA) by adding nine PFAS to its list of hazardous constituents due to toxic, carcinogenic, mutagenic, or teratogenic effects on humans and other life forms (US EPA, 2024c).

The nine PFAS proposed for inclusion are:

- Perfluorobutanoic acid (PFBA)
- Perfluorononanoic acid (PFNA)
- Perfluorohexanesulfonic acid (PFHxS)
- Perfluorohexanoic acid (PFHxA)
- Perfluorodecanoic acid (PFDA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluorobutanesulfonic acid (PFBS)
- Hexafluoropropylene oxide-dimer acid (HFPO-DA, or GenX)

- **What you need to know:** When this Proposed Rule is finalized and corrective action requirements are imposed on a facility, the presence of these PFAS would need to be considered under RCRA facility assessments and cleanup through the RCRA corrective action process at RCRA treatment, storage, and disposal facilities (TSDFs). This might impact TSDFs with solid waste management units (SWMUs) and includes 1,740 entities. EPA identified only 831 of the 1,740 entities that would have a high chance of handling PFAS with the two most likely to be waste management/remediation services and chemical manufacturing. Public comments on the Proposed Rule were due April 8, 2024.
- **Impact:** It is expected that this rule will be approved before the summer of 2024 and would expand the cleanup responsibilities at existing sites managed under RCRA corrective action orders. The amended rule would also provide the EPA with authority to issue new corrective action orders to address these nine PFAS.

EPA PROPOSES AMENDING THE DEFINITION OF HAZARDOUS WASTE UNDER RCRA

On February 9, 2024, EPA published a Proposed Rule (“the Rule”) to amend the definition of “hazardous waste” applicable to corrective action for releases from SWMUs at RCRA-permitted TSDFs (US EPA, 2024d). The Rule is intended to provide EPA with authority to require corrective actions to address not only listed hazardous substances, but also any substances that meet the statutory definition of a hazardous waste.

- **What you need to know:** EPA stated that the proposed regulatory provisions, although new, are consistent with EPA’s long-standing interpretation of the RCRA statute. This modification would ensure that EPA’s regulations clearly reflect EPA’s and local states’ authority to require cleanup of the full universe of substances that RCRA intended, including emerging contaminants that may present considerable hazards at permitted facilities. Public comments were due on March 11, 2024. As of that date, 54 comments had been received.
- **Impact:** The proposed amendment would be applicable on the Rule’s effective date in all states. RCRA Authorized States are required to modify their programs when EPA promulgates more stringent regulations than those of the state (US EPA, 2023b). EPA expects that the Rule will result in an increase in corrective actions to address releases of PFAS and that the Rule, in addition to a companion Proposed Rule to list nine PFAS as hazardous constituents under RCRA, will support that increase.

EPA AND ASTM PFAS ANALYTICAL METHODS SUMMARY

In January 2024, EPA finalized laboratory PFAS analytical Methods 1621 and 1633 for the analysis of PFAS in multiple types of environmental media. Method 1621 is used to quantify adsorbable organic fluorine (AOF) in aqueous samples using combustion ion chromatography (US EPA, 2024a). This method is designed to measure the total concentration of organic compounds that contain a carbon-fluorine bond at detection limits in the parts per billion. Since this method employs a combustion pretreatment, it will measure both PFAS and non-PFAS fluorinated compounds such as pesticides and pharmaceuticals.

EPA Method 1633 was developed to quantify 40 target PFAS in aqueous (non-drinking water), solid, biosolid, and tissue matrices (US EPA, 2024b). This method analyzes samples by liquid chromatography and tandem mass spectrometry and achieves results in the single-digit ppt.

SUMMARY OF MEDIA-SPECIFIC EPA AND ASTM PFAS ANALYTICAL METHODS								
METHOD	TYPE	MATRIX				CALIBRATION TYPE		NO. OF PFAS
		DW	NPW	SOLID	AIR	EXTERNAL	ID	
EPA 533	Target							25
EPA 537.1	Target							18
EPA 1633	Target							40
EPA 8327	Target							24
OTM 45	Target							50
OTM 50	Target							30
ASTM 7968	Target							21-31
ASTM 7979	Target							21-31
ASTM 8421	Target							44
ASTM 8535	Target							44
EPA 1621	Total							—

Table definitions: DW=drinking water; NPW=non-potable water; ID=isotope dilution



- **What you need to know:** EPA's development of Method 1621 will provide an approved method for qualifying "total PFAS," a term that has become popular in scientific discussions. Total PFAS methods provide a holistic picture of the total mass of PFAS present in the environment, while targeted analyses (i.e., Methods 533, 537.1, 1633, etc.) are limited to a fraction of identifiable PFAS. Development and finalization of EPA Method 1633 will allow for consistency in laboratory analysis of PFAS in multiple matrices. Until now, most have relied on laboratory-specific versions of Method 537.1 that has resulted in an inconsistent list of PFAS that are reported. However, until this method is adopted in the Code of Federal Regulations, it is not required under the Clean Water Act. The formal promulgation process will include a public comment period, although the EPA has not provided an estimated timeline for the completion of this rulemaking process. EPA stated that while Method 1633 is not required for Clean Water Act compliance monitoring for now, it is the recommended analytical method.
- **Impact:** Development of a standard EPA method for non-drinking water matrices is an important milestone to having consistent data sets. However, not all laboratories are certified for EPA Methods 1621 and 1633. Laboratories that were certified for draft versions of 1633 will have to recertify for the final method. This delay will result in additional constraints on an already tight laboratory capacity in the industry. Unless required, laboratory-specific modifications to Method 537.1 might be a logical route to take until EPA Method 1633 completes the promulgation process. Modified versions of Method 537.1 can provide lower reporting limits for certain PFAS, be run at slightly faster turnaround times due to less stringent quality control requirements, and have a lower per sample cost.

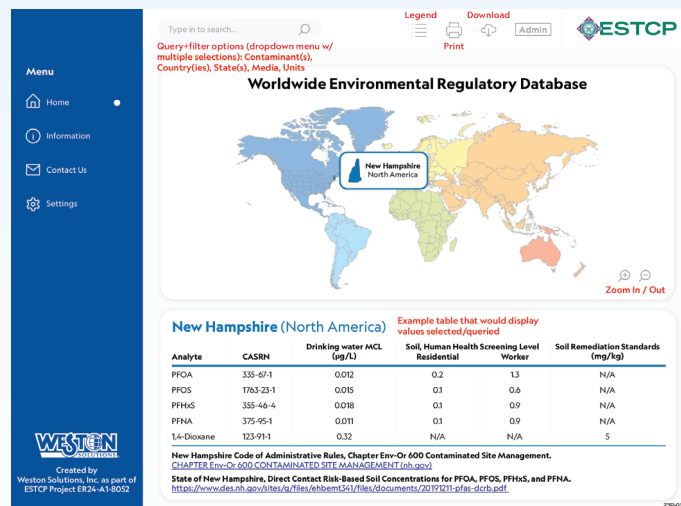
## SPOTLIGHT: ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP) FUNDS WESTON PROPOSAL TO DEVELOP AN INTERACTIVE REGULATORY MAP

The U.S. Department of Defense (DoD) operates in numerous locations within and outside the continental United States and is subject to environmental regulations at every location. Considering the variety of environmental regulations within the United States alone, Weston identified the need for a centralized hub that would facilitate the understanding of such regulations and ensure that the current regulations can be easily obtained. In creating a centralized hub, more effective communications between the DoD, regulatory agencies, engineering firms, and the public can be anticipated.

To respond to this urgent need, Weston proposed to ESTCP to develop an automated method to populate a database with regulatory values for contaminants of interest to DoD. That database would serve as the brain behind an interactive, user-friendly map that will facilitate access to applicable environmental regulatory criteria in locations where DoD operates. Once developed and tested, this tool will be available to the public free of charge.

Weston will begin the project by completing extensive user experience research. Interested parties may inquire about participating in this portion of the project by emailing Principal Investigator Lisa Kammer at [lisa.kammer@westonsolutions.com](mailto:lisa.kammer@westonsolutions.com).

Weston Project ER24-8052 was selected for funding in the Fall of 2023 and kicks off this April (SERDP-ESTCP, 2024). Weston is excited to begin work and thanks the DoD for the opportunity to support them. Once the tool is launched and available to the public, Weston will conduct multiple training webinars to familiarize users with the product and its application to project work.



**Conceptualized Rendering of the User Interface Developed as Part of ER24-8052.**

## LET'S MEET UP!



**2024 Joint Engineer  
Training Conference**



**Battelle Chlorinated  
Conference**



**Remediation Innovation  
Technology Summit by NAVFAC**

## RECENT EVENTS!



**New England Waste  
Management Officials Association  
Science of PFAS Conference**



**Interstate Technology and  
Regulatory Council 2024  
Spring Meeting**



**Remediation Innovation  
Technology Summit by NAVFAC**

### About:

Subscriptions and topic ideas may be submitted to: [pfas@westonsolutions.com](mailto:pfas@westonsolutions.com)

### Authors:

Lisa Kammer, P.G. ([lisa.kammer@westonsolutions.com](mailto:lisa.kammer@westonsolutions.com)); Nasim Pica, PhD ([nasim.pica@westonsolutions.com](mailto:nasim.pica@westonsolutions.com))

### Contributors:

Leslie Lassi, Elizabeth Wessling, Laura Holmes, Jonathan McDonald, and Brianna Scally.

*Fast News on PFAS* published quarterly by Weston Solutions, Inc. 2024 per legal. All rights reserved. Contents of *Fast News on PFAS* created by Weston Solutions, Inc. No contents may be reproduced, copied, or transmitted without written consent of Weston Solutions, Inc. Visit <https://www.westonsolutions.com/privacy-policy/> or [click here](#) to view our full Privacy Policy. This Newsletter was sent via email subscription list. To unsubscribe, please email [pfas@westonsolutions.com](mailto:pfas@westonsolutions.com) with "UNSUBSCRIBE" as the subject line.

## REFERENCES CITED

40 CFR 705.3. (2023, December 19). Retrieved from Code of Federal Regulations: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-R/part-705/section-705.3>

EPA. (2022). TRI Toxics Tracker. Retrieved from EPA: <https://edap.epa.gov/public/extensions/TRIToxicsTracker/TRIToxicsTracker.html#continue>

EPA. (2023a, October 20). *Office of Chemical Safety and Pollution Prevention*. Retrieved from EPA: <https://www.epa.gov/newsreleases/epa-finalizes-rule-require-enhanced-pfas-reporting-toxics-release-inventory>

EPA. (2023b, June 23). Toxic Release Inventory (TRI) Program. Retrieved from EPA: <https://www.epa.gov/tri/PFAS>

EPA. (2023c, September 2023). *Office of Chemical Safety and Pollution Prevention*. Retrieved from EPA: <https://www.epa.gov/newsreleases/epa-finalizes-rule-require-reporting-pfas-data-better-protect-communities-forever>

EPA. (2023d, December 14). EPA PFAS Strategic Roadmap. Retrieved from EPA: <https://www.epa.gov/system/files/documents/2023-12/epas-pfas-strategic-roadmap-dec-2023508v2.pdf>

Kammer, L. and N. Pica. (2023a, July 5). Papers and Publications. Retrieved from Weston Solutions: <https://www.westonsolutions.com/wp-content/uploads/2023/07/PFAS-Newsletter-V1-Issue-2-Links.pdf>

Kammer, L. and N. Pica. (2023b, March 28). Papers and Publications. Retrieved from Weston Solutions: <https://www.westonsolutions.com/news/fast-news-on-pfas-newsletter-volume-i/>

White House. (2022). Environmental Justice, Justice40. Retrieved from White House: <https://www.whitehouse.gov/environmentaljustice/justice40/>