



# FSTRAC Newsletter

## FEDERAL-STATE TOXICOLOGY RISK ANALYSIS COMMITTEE

### What Is FSTRAC?

FSTRAC's mission is to strengthen relationships and cooperation among EPA, states and tribes through the exchange of technical information primarily regarding water-related human health and risk assessment and also share information on ecological effects related to water quality criteria. FSTRAC is composed of current representatives from governmental agencies (state, tribal, federal health and environmental agencies, and other regulatory authorities) and representatives from the Association of State Drinking Water Administrators (ASDWA) and the Association of Clean Water Administrators (ACWA). The goal of FSTRAC is to share information that supports the development of well-rounded, integrated approaches to effects assessment, risk assessment, risk management, risk communication, and standard-setting for drinking water, groundwater, and surface water contaminants. Specific objectives of FSTRAC include:

- To foster cooperation, consistency, and an understanding of goals and problems in human health and ecological risk assessment for contaminants in water.
- To allow the exchange of technical information, including toxicity/exposure data and analysis, and methodologies and assumptions related to the development and implementation of regulations, criteria, advisories, and other toxicity values under the Safe Drinking Water Act and the Clean Water Act, and other state and tribal rules and policies as applicable.
- To allow the exchange of information on research priorities and results.
- To share science policy concerns regarding water-related human health and ecological risk assessment.

### Recent Webinars

FSTRAC holds several webinars each year to share information through presentations and discussions regarding human health risk analysis and water quality issues.

#### Fall 2023

##### **Health and Ecological Criteria Division Priorities in FY24 (presented by Colleen Flaherty, HECD/OST/OW/EPA).**

Ms. Flaherty described the priorities of EPA's Office of Science and Technology, Health and Ecological Criteria Division (OST/HECD) for the upcoming

fiscal year (FY), including finalizing perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) aquatic life criteria, developing per- and polyfluoroalkyl substances (PFAS) aquatic life benchmarks for 8 chemicals, expanding the Metals Aquatic Life Criteria and Chemistry (MetALiCC) map with state data, developing PFOA and PFOS human health criteria and additional PFAS human health criteria using final toxicity values, developing a technical support material (TSM) for non-human fecal sources for recreational water quality criteria, and beginning

The purpose of this newsletter is to update Federal-State Toxicology and Risk Analysis Committee (FSTRAC) members on current developments in toxicology, risk analysis, and water quality criteria and standards. This newsletter also provides information on recent FSTRAC webinars and upcoming events. Please share this newsletter with those who may be interested in these topics. If you are interested in joining FSTRAC, please contact the FSTRAC Co-Chairs, Dr. Shamima Akhter ([Akhter.Shamima@epa.gov](mailto:Akhter.Shamima@epa.gov)) or Ms. Katie Fallace ([Katie.Fallace@state.mn.us](mailto:Katie.Fallace@state.mn.us)).

to implement recommendations from the Report on the 2nd Five-Year Review of EPA's Recreational Water Quality Criteria that was published in May 2023. She mentioned that EPA OST/HECD's priorities for the upcoming FY also include providing support for developing a PFAS National Primary Drinking Water Regulation (NPDWR) by the end of 2023, providing support for state-specific nutrient criteria development projects and EPA's National Harmful Algal Bloom (HAB) Program, streamlining development and implementation of biological condition gradients (BCGs), providing responses to Science Advisory Board (SAB) review of the prioritization and screening process for biosolids, and developing a biosolids risk assessment for PFOA and PFOS.

**Report on the 2nd Five-Year Review of EPA's Recreational Water Quality Criteria (presented by John Ravenscroft and Lars Wilcut, HECD/OST/OW/EPA).** Mr. Ravenscroft noted that EPA's Recreational Water Quality Criteria (RWQC) are designed to protect people from exposure to feces-associated pathogens during primary contact recreational waterbody uses, and that they are based on "fecal indicator bacteria" which are likely to be present in the same conditions as the disease-causing agents. For the 2nd five-year review, EPA reviewed recent scientific literature published since 2016 and had reviewed or developed new implementation tools. Mr. Wilcut noted that there is a chapter in the 2nd five-year review report that focuses on implementation tools (including a [spreadsheet calculator](#) that can be used to help implement EPA's [Site-Specific Alternative Recreational Criteria Technical Support Materials for Alternative Indicators and Methods](#)) that EPA has instituted as part of the broader recreational water effort. Mr. Ravenscroft mentioned that EPA made the following recommendations based on the 2nd five-year review: 1) develop a new qPCR-based RWQC to improve health risk protection for young children, the most sensitive age group to the risks of swimming in contaminated waters, compared to current culture-based criteria; 2) expand the protection of RWQC by developing criteria to protect humans from exposure to viruses using an indicator; and 3) explore new methods to better determine whether a waterbody is contaminated with human feces, as

this type of contamination presents the greatest risk of illness in recreational waters. While EPA works to develop updated national recommended RWQC, EPA encourages states and tribes to begin using or expanding their use of qPCR methods because these methods can improve prediction of health risk and can provide more timely results. For additional information, please refer to EPA's [Report on the 2nd Five-Year Review of EPA's Recreational Water Quality Criteria](#) that was released in May 2023.

**Overview of IRIS PFAS Assessments (presented by Andrew Kraft, PhD, CPHEA/ORD/EPA).** Dr. Kraft mentioned that an EPA-wide workgroup selected the following PFAS for EPA toxicity assessments: perfluorobutane sulfonic acid (PFBS), hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt (GenX chemicals), perfluorobutanoic acid (PFBA), perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and perfluorodecanoic acid (PFDA). These seven PFAS were identified as a priority to inform decision-making for EPA program or regional offices, tribes, or state departments of environmental protection; include studies of *in vivo* exposure in animals that could possibly be used to derive toxicity values; and are quantifiable in the environment using standardized analytical methods to allow for site-specific application of toxicity values to regulatory decision-making. Five of these (i.e., PFBA, PFHxA, PFHxS, PFNA, and PFDA) are being developed within EPA's Office of Research and Development (ORD) as Integrated Risk Information System (IRIS) assessments. Dr. Kraft described the IRIS 7-step review process which includes agency review, review by other federal agencies, public comment, and external peer review. He noted that IRIS PFAS assessments are final for PFBA and PFHxA, the external peer review process has been nearly completed for PFDA, the public comment review process has been nearly completed for PFHxS, and pre-public review steps are currently being performed for PFNA. Dr. Kraft mentioned that individual toxicity assessments are being developed for PFAS with more robust datasets and these toxicity values can be used in combination with information on human exposure and other information to support regulatory decisions,

and they could potentially serve as index values in read-across for data-poor PFAS in their “group.” He noted that EPA ORD is using tiered toxicity testing and systematic evidence mapping to generate and compile evidence for PFAS that are data poor and to possibly inform future PFAS grouping decisions.

**Screening Chemicals for Drinking Water Contaminants of Emerging Concern Using an Exposure-Focused Workflow (presented by Kristin Isaacs, PhD, CCTE/ORD/EPA and Chris Greene, MDH).** Mr. Greene mentioned that EPA’s Center for Computational Toxicology and Exposure (CCTE) and the Minnesota Department of Health (MDH) are collaborating to use new chemical data generated from scientific approaches such as read-across, quantitative structural-activity relationship (QSAR), high-throughput toxicology screening, and computational modeling of exposure and toxicokinetics to prioritize chemicals for further evaluation and inform risk assessment. He mentioned that MDH collaborates with partners and the public to identify contaminants of interest in drinking water through its Contaminants of Emerging Concern (CEC) initiative, and when feasible, the CEC team develops health-based drinking water guidance values for chemicals where exposure is known or likely to occur. Mr. Greene described the CEC screening and selection process, including exposure screening and scoring, which in its current form is highly labor-intensive. Dr. Isaacs mentioned that she is a co-lead of EPA ORD’s ExpoCast project which develops exposure new approach methodologies (NAMs) that help characterize exposure of the thousands of chemicals used in commerce to complement and provide context to the toxicity NAMs being developed under ToxCast. She described how NAMs and other data were used to develop an automated screening workflow consistent with MDH’s screening criteria. Dr. Isaacs described how the workflow was applied to a case study of 1,867 chemicals, including 82 chemicals that MDH had previously evaluated using its manual screening process (additional details are provided in the following peer-reviewed publication: <https://doi.org/10.1038/s41370-023-00552-y>). She noted that final workflow scores differed from the manual scores by an average of 25.1% and that agreement between the scores was

dependent on data availability in the automated workflow source. Dr. Isaacs mentioned that in the future, EPA will continue to work with MDH to refine their process to incorporate new NAM data, refine scoring if needed, and apply the workflow to new lists or libraries of chemicals relevant to CEC.

**Sociodemographic Factors Are Associated with the Abundance of PFAS Sources and Detection in U.S. Community Water Systems (presented by Jahred Liddie, Harvard University).** Mr. Liddie mentioned that the primary hypothesis of his study was that sociodemographic factors are associated with the siting of PFAS sources and PFAS detections in community water systems. In collaboration with Dr. Laurel Schaidler and Prof. Elsie Sunderland, he synthesized PFAS statewide sampling data from 18 states from public water system databases, PFAS contamination sources, and sociodemographic data. Using these data, they performed statistical modeling and found that major industrial facilities, military fire training areas, and airports are associated with the largest changes in PFAS concentrations; community water systems sharing a watershed with PFAS sources served higher proportions of people of color; and community water systems with detectable PFAS concentrations served higher proportions of people of color. Based on these results, they concluded that these statewide data show sociodemographic disparities in PFAS exposures through drinking water and that several PFAS sources are predictors of PFAS concentrations in community water systems, which is in line with prior research. In his presentation, Mr. Liddie mentioned that moving forward, environmental justice concerns highlighted from this study should be a component of efforts to mitigate risk and ongoing government efforts, alongside increased monitoring, to provide avenues to address exposure disparities. For additional information, refer to the following open access publication: <https://pubs.acs.org/doi/10.1021/acs.est.2c07255>

**NHDES Development of PFAS Soil Remediation Standards (SRS) (presentation from Jeffrey Marts, PG, presented by Kate Emma Schlosser, PE, NHDES).** Ms. Schlosser indicated that the New Hampshire Department of Environmental Services (NHDES) is required by

statute to initiate rulemaking by November 1, 2023 for Soil Remediation Standards (SRS) for PFNA, PFOA, PFOS, and PFHxS. She noted that these PFAS are the four PFAS that have Ambient Groundwater Quality Standards (AGQS) established in rule. Ms. Schlosser described the factors considered in the development of the proposed SRS: direct contact risk, soil-to-groundwater leaching risk, background conditions, analytical capabilities, and ceiling conditions. She described NHDES' selection of a computer model and NH-specific input parameters used to calculate leaching-based soil concentrations expected to be protective of groundwater quality. Ms. Schlosser described a recent study that demonstrated the potential for certain PFAS to be present statewide in shallow soil and mentioned that although the proposed statewide SRS values do not account for background conditions, NHDES plans to consider anthropogenic ambient background conditions for PFAS on a site-by-site basis.

#### **Addressing PFAS in Wastewater Discharged to Groundwater (presented by Jennifer Harfmann, PhD, NHDES).**

Dr. Harfmann mentioned that groundwater contamination in New Hampshire can be derived from wastewater discharges to ground/groundwater. She noted that groundwater discharges that may contain PFAS are waste management facilities (e.g., landfills, wastewater effluent), small commercial operations (e.g., cleaning businesses, marinas), and floor stripping/waxing for schools, grocery stores, and department stores. NHDES performed PFAS sampling at groundwater discharge sites for cleaning businesses (carpet cleaning) and schools (floor stripping/waxing) and analyzed them for 70 PFAS compounds. They found that carpet cleaning activities can generate high levels of PFAS (up to 130,000 ng/L PFAS in

wastewater) with nearly 10 mg/L detected in cleaning products, and that floor stripping/waxing can generate levels of PFAS of up to 229,000 ng/L in wastewater with 39,000 ng/L detected in cleaning products. She noted that NHDES' site-specific response includes sending letters to businesses to cease discharges and performing neighboring private well sampling, as well as reaching out to trade groups, stakeholders, and state partners to provide information on best management practices. Dr. Harfmann mentioned that some of NHDES' future initiatives include investigating other potential sources of PFAS in non-domestic wastewaters, characterizing a domestic wastewater signature, and performing wastewater treatment plant effluent sampling.

**Other PFAS Initiatives in New Hampshire (presented by Jonathan Petali, PhD, DABT, NHDES).** Dr. Petali described the New Hampshire funding sources for addressing PFAS which consist of PFAS-focused consolidation study and assistance grants, the PFAS remediation loan and grant fund, PFAS private well testing and removal rebate programs, and the PFAS Response Program's PFAS response fund. He mentioned that NHDES is working on several ongoing human health and ecological risk related projects (many of which are being performed in collaboration with federal agencies, universities, or non-governmental organizations), including a study on estuary bivalves, finfish, surface water, and sediments; a freshwater lakes investigation of bioaccumulation in invertebrates, fish, surface water, and sediments; an analysis of loon eggs from multiple lakes and years; performing testing of bio-solids and training facility operators to conduct PFAS sampling; a greenhouse and community garden study of PFAS into common vegetables; and an aqueous film forming foam (AFFF) take back program.

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## **Risk Assessment**

### **Drinking Water**

#### **EPA's Second Quarterly Release of Nationwide Monitoring Data on 29 PFAS and Lithium**

Quarterly, the EPA will publicly release the finished drinking water data collected at public water systems

for 29 PFAS and lithium under the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) until completion of data reporting in 2026. The most recent installment of data was released on November 9th on the [UCMR Occurrence Data webpage](#) and represents approximately 15% of the total results that EPA

expects to receive. The data collected under UCMR 5 will ensure science-based decision-making and help EPA better understand national-level exposure to these 29 PFAS and lithium, where and to what extent PFAS co-occur with each other, and whether they disproportionately impact communities with environmental justice concerns. The EPA also released the [UCMR 5 Data Finder](#) that will improve data accessibility for users.

Answers to common questions on accessing and understanding the UCMR 5 data, and on PFAS and lithium in drinking water, are provided [here](#). Before conducting your own assessment of the data, please review the [UCMR 5 Data Summary](#).

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## Publications

### Annual Beach Swimming Season Reports

EPA releases an annual report that contains national level statistics of beach closings and advisories that states, territories, and tribes issued during the swimming season as well as beach data trends over several years. You can also create a report for any year from 2014 to the present that uses the most up-to-date information in EPA's database (that may have been updated after our reports were released) using the dynamic report using the following link: [https://ordspub.epa.gov/ords/beacon2/f?p=BEACON2:DNR.EPA's 2022 Beach Swimming Season Report \(EPA 823-R-23-005\) is available here: https://www.epa.gov/system/files/documents/2023-06/beach-report-2022.pdf](https://ordspub.epa.gov/ords/beacon2/f?p=BEACON2:DNR.EPA's+2022+Beach+Swimming+Season+Report+(EPA+823-R-23-005)+is+available+here:https://www.epa.gov/system/files/documents/2023-06/beach-report-2022.pdf).

### EPA Case Studies that Demonstrate the Benefits of Water Reuse

EPA has developed a [water reuse webpage](#) that provides a description of the ways that water reuse is used to benefit communities across the United States and highlights example projects from across the United States that describe how a particular benefit drove the adoption of water reuse. Water reuse projects often provide multiple benefits, which can make water reuse more attractive. Additional links to [general information about the benefits of water reuse](#) and

## Clean Water

### N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine (6PPD)

On November 2nd, EPA's Office of Chemical Safety and Pollution Prevention (OCSPP) responded ([press release](#)) to a Toxic Substances Control Act (TSCA) Section 21 petition submitted by EarthJustice on behalf of three Pacific Northwest Tribal Nations requesting that EPA "establish regulations prohibiting the manufacturing, processing, use, and distribution of N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine ("6PPD")." See the TSCA 21 web page for the [petition and response letter](#). To learn more about 6PPD and its degradant, 6PPD-quinone, see EPA's [6PPD-quinone web page](#).

[details about the benefits of water reuse and example projects](#) are provided on this webpage. For updates on water reuse activities, please refer to the [Water Reuse Monthly](#) and [Quarterly Updates](#) webpages.

### Mitigating Risks and Maximizing Sustainability of Treated Wastewater Reuse for Irrigation

EPA and coauthors from an interdisciplinary group from the United States, Israel, and Europe that convened in Israel last October at the [treWAG 2022 Conference](#) published a paper in December 2023 that highlights the challenges and solutions involved in using treated wastewater for irrigation, identifies agronomic and public health considerations, and presents recommendations on sustainability. Refer to the published paper for additional information: <https://www.sciencedirect.com/science/article/pii/S2589914723000397>

### National Fish Forum

EPA hosted the virtual 2023 National Forum on Contaminants in Fish on February 28, March 2, 7 and 9, 2023. The event brought together approximately 1,000 attendees from state, tribal, and federal governments/agencies, local governments, environmental advocacy groups, utilities, academia, consultants, and non-governmental organizations, among others. The

2023 National Fish Forum Proceedings (EPA 820-R-23-006) is available here: <https://www.epa.gov/system/files/documents/2023-06/2023proceedings.pdf>.

### EPA CyanoSymposium 2023

This October, the U.S. Environmental Protection Agency hosted CyanoSymposium 2023 that was open to the public. This online symposium featured 15 speakers and 5 panelists from across academia and government agencies who spoke on a wide range of subjects related to freshwater Harmful Algal Blooms (HABs)—from basic biology to monitoring and analysis technology and from genes to satellites. Each day featured focused topical presentations as well as state and tribal HAB program spotlights. Following welcoming remarks from Deborah Nagle, Office of Science and Technology Director and Co-Chair of the Interagency Working Group under HABHRCA, the first day focused on the biology and ecology of cyanobacteria and methods for sampling cyanobacteria from a range of freshwater types. The day ended with a highlight of Ohio's HAB program. The focus of Day two was on cyanotoxins. It started with a deep dive into the chemistry and human health and ecological toxicity of dominant freshwater toxins and then a presentation on the wide variety of methods with which these toxins are measured. The day ended with a presentation on the Big Valley Band of Pomo Indians HAB program. Day 3 took participants to space and started with a talk on satellite technologies being used to monitor and forecast HABs. This was followed by a presentation on participatory science tools developed by the Cyanobacteria Monitoring Collaborative. This day ended with a presentation on the State of Washington HAB program. The final day was all about program application. It featured presentations on the

many Clean Water Act and Safe Drinking Water Act tools provided by the EPA. This was followed by an engaging panel on federal funding opportunities for HAB work provided by representatives from the EPA, National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Agriculture (USDA), U.S. Army Corps of Engineers (USACE), and Centers for Disease Control and Prevention (CDC). This final day came to a close with a presentation on the California HAB program. While primarily introductory, it is likely that even experienced HAB program staff will find something new in the presentations given the fast rate at which the science is evolving. The Symposium Agenda and presentations, including the panel discussion, are available online through the EPA HABs website at: <https://www.epa.gov/cyanohabs/epa-cyanosymposium-2023-october-16-18-23-and-26-2023>

Thornton Hampton, L., H. De Frond, K. Gesulga, S. Kotar, W. Lao, C. Matuch, S. Weisberg, C. Wong, S. Brander, S. Christiansen, C. Cook, F. Du, S. Ghosal, A. Gray, J. Hankett, P. Helm, K. Ho, T. Kefela, G. Lattin, A. Lusher, L. Mai, R. McNeish, O. Mina, E. Minor, S. Pimpke, K. Rickabaugh, V. Renick, S. Singh, B. van Bavel, F. Vollnhals, and C. Rochman. 2023. The influence of complex matrices on method performance in extracting and monitoring for microplastics. *Chemosphere* 334:138875. <https://doi.org/10.1016/j.chemosphere.2023.138875>.

Gobindlal, K., E. Shields, A. Whitehill, C. Weber, and J. Sperry. 2023. Mechanochemical destruction of per- and polyfluoroalkyl substances in aqueous film-forming foams and contaminated soil. *Environmental Science: Advances* 2:982-989. <https://doi.org/10.1039/D3VA00099K>.

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## Upcoming Events and Conferences

### Upcoming FSTRAC Webinar

The next FSTRAC Webinar is scheduled for spring 2024. Additional details, including the date of the next FSTRAC Webinar, will be provided to FSTRAC members in the coming weeks.

### SETAC North America Annual Meeting – Society of Environmental Toxicology and Chemistry

SETAC will be holding its 45th annual North America meeting on October 20–24, 2024 in Fort Worth, Texas. Additional information is provided

on the SETAC website: <https://www.setac.org/discover-events/ems-event-calendar/setac-north-america-45th-annual-meeting.html>

## SOT Annual Meeting – Society of Toxicology

SOT will be holding its annual meeting on March 10–14, 2024 in Salt Lake City, Utah. Additional information is provided on the SOT website:

<https://www.toxicology.org/events/am/AM2024/session-proposals.asp#>

## SRA Annual Meeting – Society for Risk Analysis

SRA will be holding its 2024 annual meeting in Austin, Texas, from December 8–12, 2024. Additional information is provided on the SRA website:

<https://www.sra.org/event/2024-sra-annual-meeting/>

## ASM – American Society for Microbiology

ASM Microbe will be holding its annual meeting in Atlanta, Georgia, on June 13–17, 2024. Additional information is provided on the ASM website:

<https://asm.org/events/asm-microbe/home>

## ECOS – Environmental Council of the States

The ECOS will be holding its 2024 ECOS Spring Meeting in Austin, Texas on March 25–27, 2024. Additional information is provided

on the ECOS website: <https://www.ecos.org/event/2024-ecos-spring-meeting/>

The ECOS will be holding its 2024 ECOS Fall Meeting in Newport, Rhode Island on September 4–6, 2024. Additional information is provided

on the ECOS website: <https://www.ecos.org/event/2024-ecos-fall-meeting/>

## ITRC Webinar – Interstate Technology Regulatory Council

ITRC will host its 2024 Annual Meeting in Long Beach, California from April 8–11, 2024. More information will be provided on ITRC's website: <https://itrcweb.org/itrcwebsite/events/2024-annual-meeting>

## NACWA Winter Meeting – National Association of Clean Water Agencies

NACWA will host its 2024 Winter Meeting in Austin, Texas from February 13–16, 2024. More information will be provided on NACWA's website: <https://www.nacwa.org/conferences-events/event-at-a-glance/2024/02/13/nacwa-events/2024-winter-conference>

## AWWA Annual Conference and Expo – American Water Works Association

AWWA will host its 2024 Annual Conference and Expo in Anaheim, California from June 10–13, 2024. More information is provided on AWWA's website: <https://www.awwa.org/ace>

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## EPA ORD Upcoming Events

### EPA Research Webinar Series

EPA ORD hosts several webinar series dedicated to providing the latest information and training on cutting-edge scientific research activities and results in order to provide assistance and solutions to

environmental and public health issues. The webinars are free of charge and open to the public. Additional information, schedules, and registration can be found on the individual webinar series webpages [here](#).