FAST NEWS ON PFAS

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FAST NEWS ON PFAS NEWSLETTER

In the fast-paced news cycle of PFAS, discerning what is important can be a challenge. Weston has developed a newsletter to take you out of the minutia and into the big picture. We have assembled key regulatory highlights, expert input, and the state of the science and distilled them down to the essentials of what you need to know, why it matters, and how it could impact you. Make this quick read your quarterly jumping point to the latest on PFAS.

In this issue:

WHY THE DEFINITION OF PFAS MATTERS

Federal, state, and international environmental agencies, researchers, and regulatory bodies define PFAS differently.[1] Interestingly, EPA uses multiple working definitions for different purposes (e.g., the definition used by the EPA Office of Pollution Prevention and Toxics differs from the definition used by EPA for the Fifth Contaminant Candidate List). Definitions vary based on the number of fully and partially fluorinated carbons, the location of the fluorinated carbons in the structure, and other considerations. Regulators and scientists have not yet agreed on a definition of PFAS chemicals that is comprehensive and free of drawbacks.[2,3]

How PFAS are defined has potentially wide-ranging implications,[4] including, how PFAS are regulated; the roll out of federal funds made available as part of the Infrastructure Investment and Jobs Act (IIJA); treatment technologies designed, vetted, and available; the compounds that might be used to replace them; and the potential availability of some commonly prescribed medications.

- **What you need to know:** Stakeholders should be educated about the nuances and ramifications of different definitions of PFAS so that they can effectively participate in discussions about regulation and risk management. And, despite the various definitions "...all PFAS are alike in that they contain perfluoroalkyl moieties that are extremely resistant to environmental and metabolic degradation."[5]
- **Impact:** Billions of dollars are needed to address the problem of PFAS contamination, which is ubiquitous in the environment.[6] However, what has not been widely discussed is that the definitions of PFAS used can have significant socioeconomic implications. As an example, overly broad definitions of PFAS could result in sudden restrictions to important pharmaceuticals including popular antidepressants, NSAIDs, antibiotics, antidiabetic, cholesterol-lowering agents, etc.

ENVIRONMENTAL JUSTICE AND PFAS

Environmental justice (EJ) relates to addressing poor and marginalized communities' unfair exposure to environmental harms by ensuring that all communities have equal access to a safe and healthy environment.[7] A 2023 study by Liddie et al. published in *Environmental Science and Technology* found that although PFAS exposure-response is known to vary across sociodemographic groups, there are limited data on drinking water PFAS exposure and PFAS sources within EJ communities.[8,9]

In lieu of a nationwide dataset on PFAS exposure and sources in EJ communities, a recent study looked at data from more than 700 community water systems* in 18 states and found that PFAS sources were positively associated with people of color and rural populations below the federal poverty line. However, urban populations that were below the federal poverty line were inversely affected by PFAS sources and detection in drinking water. However, the data used in this study have limitations. The limited availability of EJ community data was also acknowledged in a 2022 report issued by the Government Accountability Office (GAO).[10] The GAO recommended that EPA use a comprehensive dataset—such as the data gathered as part of the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5)—to determine the demographic characteristics of communities with PFAS in their drinking water.

* The authors note that the county-level community water system data from 18 of 50 states as a limitation as well as limited data on community water systems serving other racial/ethnic groups.

- **What you need to know:** Market researchers at Bluefield Research forecast that by 2030, billions of dollars will be needed annually for the treatment of PFAS in drinking water.[11] These estimates do not consider other environmental media or address long-term health effects.[12] The IIJA set aside $10B to address PFAS-related issues, $5B of which is set aside for EJ communities.[13]
- **Impact:** Breaking the cycle of environmental impact to marginalized communities has been prioritized through the IIJA and EPA. The data collected as part of the UCMR 5 and the IIJA funding are both important initial steps in understanding and addressing PFAS issues in traditionally underserved communities. These actions are essential to ensuring that these communities are not disproportionately burdened by PFAS contamination.

EPA has developed a tool called "EJScreen" that is based on nationally consistent data and environmental and demographic indicators. This tool will help EPA meet its responsibility to protect human health and the environment.[14]

STATE OF THE SCIENCE: BIOINDICATOR SELECTION FOR PFAS

Bioindicators are organisms that can be used to qualitatively assess the status of their environment. In the United States, scientists commonly evaluate fish, deer, and certain plants as a means for understanding the fate and transport of pollutants in the environment. Using bioindicators for PFAS may provide a more effective method for understanding PFAS across a large area versus more traditional soil sampling methods. Whereas the physiochemical properties of both PFAS and soil dictate the detectable concentrations from one sample to another, bioindicators may be a better method of understanding a regional PFAS condition. And because PFAS bind to protein and circulate in the blood, organs like livers are ideally suited to these assessments.

Researchers from UFZ collaborated with the German Water Centre in Karlsruhe to create a biomonitoring technique to investigate three unique locations impacted by PFAS: (1) a region where paper sludge may have been applied to the land; (2) an industrial region; and (3) a location considered to be background (e.g., representative of natural environmental conditions).

The researchers selected wild boar, specifically wild boar livers, that are prevalent in the study regions and directly compared soil analytical results from the same regions. Of note, wild boar are omnivorous and sit at the top of the food chain. As foragers, they burrow in the soil with direct exposure to PFAS-impacted soils and waters aside from bioaccumulation of PFAS through their food sources. Importantly, "this first comparison of PFAS contamination between wild boars and soil suggests that wild boar livers are suitable bioindicators for PFAS contamination in the terrestrial environment."[15]

The livers of wild boars, omnivorous eaters and foragers, have been identified as suitable bioindicators for assessing PFAS contamination across a large geographic area.

- **What you need to know:** While deer, fish, and other lower-food-chain species may be suitable subjects for traditional environmental contaminant testing, biomonitoring studies for PFAS should be designed with the properties of PFAS and locale-specific considerations in mind. And identifying a local omnivorous, higher-food-chain wildlife population may be more beneficial to understanding the state of PFAS in the study area rather than, or in support of, other environmental sampling.
- **Impact:** The study highlights the importance of fully developing objective(s) early in the project planning phase to ensure that the right bioindicators are identified. Multiple factors will dictate which bioindicators are used for any given study, but the unique characteristics of PFAS suggest the need for something other than the routine.[15,16]

WESTON PRACTITIONER SPOTLIGHT

MEGAN ABBOTT
SENIOR PROJECT ENGINEER
11 YEARS WITH WESTON

Megan has 14 years of chemical and environmental engineering experience and 3 years of experience in PFAS remediation in groundwater including pilot studies, treatment system design, and proposed solutions for potential PFAS concerns. Her experience also includes providing engineering support on groundwater and soil remediation projects, RIs, FSs, SPCCs, SWPPPs, alternative evaluations, and various chemical and civil engineering projects.

> ***I have had the opportunity to work on a wide variety of innovative solutions for groundwater contamination, wastewater treatment, and other environmental concerns. Spending the last couple of years evaluating technologies to address our clients' PFAS concerns through pilot studies , research, and design has been both challenging and incredibly rewarding. I am looking forward to continuing to address this challenge and see how technology continues to evolve.***

About:
Subscriptions and topic ideas may be submitted to: **pfas@westonsolutions.com**

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