Issue Brief: PFAS

NORTHEAST-MIDWEST INSTITUTE

What are PFAS?

PFAS are per- and polyfluoroalkyl substances, a group of thousands of synthetic chemicals commonly used in products since the 1940s including firefighting foam, sealants, and water-resistant coatings on fabrics, packaging, or cookware. PFOA and PFOS, the most common types of PFAS, have been phased out of American manufacturing, though other PFAS are still in use. PFAS are known as "forever chemicals" due to their long-lasting presence in the environment: some have half-lives of over eight years. The widespread use and persistence of PFAS has resulted in their accumulation in drinking water sources, soil, and other environmental sinks.

Further Reading:

NEMWI PFAS Briefing

EPA PFAS explainer

PFAS health effects (CDC)

EC-SDC grant information

NEMWI State PFAS Response Scorecard.

Nearly all people in the United States have been exposed to some amount of PFAS, most commonly by ingestion of contaminated food or water. Exposure can also come as a result of touching or inhaling material that includes the chemicals, though PFAS are not easily absorbed by the skin. Some forms of PFAS have been observed being absorbed by the lungs and intestines. PFAS exposure is highest in areas near facilities which have manufactured or used PFAS.

The long-term health impacts of PFAS vary depending on the specific chemical, and are still being studied. Still, research has uncovered associations between PFAS and cholesterol increases, lower birth weight, reduced immune response, fertility issues, and kidney, prostate, and testicular cancers.

PFAS and agriculture

The impacts of PFAS are not limited to humans. Studies have shown that PFAS may impact animal immune and reproductive systems, while PFAS in soil can alter the pH balance and impact the soil microbiome. Plants uptake PFAS from the soil through their roots and accumulate it in their tissues.

Farms face unique challenges related to PFAS. Irrigation systems can transfer PFAS from groundwater into the soil, and biosolids sourced from municipal wastewater systems used as fertilizer can contain concentrated levels of PFAS. In some cases, PFAS can render farmland unusable due to the health risks of consuming PFAS-contaminated food products.

PFAS in the Great Lakes

PFAS are ubiquitous in the Great Lakes region. Airborne concentrations are highest in urban areas such as Cleveland and Chicago. Most PFAS within the lakes themselves arrive through precipitation. A study by the American Chemical Society found that Lake Ontario had the highest average lake concentration at 11 nanograms per liter (ng/L), while Lake Superior had the lowest at 1.3 ng/L.

A 2023 study analyzing EPA data from 2013-2015 found average PFAS concentrations of 11,800 parts per trillion (ppt) in freshwater fish caught throughout the Great Lakes, several thousand times higherthan the current national drinking water standard. Consuming just one of these fish per year would be enough to notably raise PFAS concentrations in the blood.

Recent Federal actions to address PFAS

Congressional PFAS Task Force: In 2019, a Congressional Task Force was formed in the House of Representatives to spread awareness of PFAS by educating Members of Congress and their staff, address PFAS contamination through legislation, and advocate for increased federal funding to clean up PFAS. The Co-Chairs of the Task Force are Dan Kildee (D-MI) and Brian Fitzpatrick (R-PA).

Dairy Indemnity Payment Program (DIPP): The Dairy Indemnity Payment Program (DIPP) makes market-value payments to dairy producers who have lost product due to contamination, including from PFAS. In 2021, the U.S. Department of Agriculture (USDA) updated the DIPP to also compensate producers for the loss of contaminated cows, as milk from those cows would always contain PFAS.

PFAS Action Act of 2021: In 2021, the House of Representatives passed the PFAS Action Act of 2021, which would have required the EPA to designate PFOA and PFOS as hazardous substances, created standards to regulate PFAS concentrations in drinking water, and established grants to aid municipal water and wastewater utilities address PFAS. The bill did not pass the Senate, but these provisions were reflected in future executive action (see below).

Relief for Farmers Hit with PFAS Act: This bill, sponsored in 2023 by Susan Collins (R-ME) in the Senate and Chellie Pingree (D-ME) in the House, would have established a USDA grant program to help states, Indian tribes, and territories address PFAS contamination on agricultural land and commercial farms. The bill did not pass either chamber. Pingree has proposed that the 2024 Farm Bill provide resources for farmers whose land is contaminated.

National Drinking Water Standard: In April 2024, the Environmental Protection Agency (EPA) announced a national, legally enforceable national drinking water standard for PFAS, setting a Maximum Contaminant Level (MCL) for PFOA and PFOS at four ppt. The EPA estimates that 6-10% of public water utilities must "take action to reduce PFAS to meet these new standards," an effort that is projected to cost $1.5 billion annually. Systems have until 2027 to complete PFAS testing, and until 2029 to make the necessary upgrades. To this end, the EPA announced $1 billion in non-competitive grants to help states and territories test and treat public water systems. This funding is part of the Emerging Contaminants in Small or Disadvantaged Communities Grant program (EC-SDC) created through the Bipartisan Infrastructure Law.

CERCLA Hazardous Substance Designation: In April 2024, the EPA designated PFOA and PFOS as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or the Superfund law). Under CERCLA, the EPA has the authority to find potentially responsible parties (PRPs) for PFAS contamination and compel them to pay for damages or cleanup. In response to concerns from water utilities that they could be held liable as PRPs despite not being active polluters, the EPA issued a memorandum stating that they would use their enforcement discretion to ensure that water systems, storm sewer systems, local fire departments, and municipal solid waste landfills would not be targeted. The addition of PFOA and PFOS places them in the same category as PCBs, mercury, and approximately 800 other contaminants.