PFAS Sampling and Mitigation Services

EnviroScience subject experts have been closely tracking developments related to per- and polyfluoroalkyl chemicals (PFAS) and implications to our clients. Our experts can help you navigate the rapidly changing regulatory and analytical climate to confirm compliance, saving you time and money by ensuring you get it right the first time.

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals invented in the 1930s that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in the United States since the 1940s, as well as globally by various industries. Of the PFAS grouping, the most extensively produced and studied have been PFOA and PFOS. Both chemicals persist in the environment and the human body; this failure to break down allows them to accumulate over time. Adverse human health effects have been linked to PFAS exposure as a result of the accumulation. PFAS are found in a wide range of consumer products that people use daily such as stain repellants, cookware, and pizza boxes. Learn more.

As a result of phase-outs, including the PFOA Stewardship Program, certain PFAS chemicals are no longer manufactured in the United States. However, these PFAS chemicals are still produced internationally and can be imported into the United States in consumer goods such as rubber, textiles, carpet, leather and apparel, paper and packaging, coatings, and

plastics.

Where are PFAS found?

Source: Australian Department of Defense

According to the EPA, PFAS can be found in:

- **Food** packaged in PFAS-containing materials, processed with equipment that used PFAS, or grown in PFAS-contaminated soil or water.
- **Commercial household products**, including stain- and water-repellent fabrics, nonstick products (e.g., Teflon), polishes, waxes, paints, cleaning products, and fire-fighting foams (a major source of groundwater contamination at airports and military bases where firefighting training occurs).
- **Workplace**, including production facilities or industries (e.g., chrome plating, electronics manufacturing or oil recovery) that use PFAS.

- **Drinking water**, typically localized and associated with a specific facility (e.g., manufacturer, landfill, wastewater treatment plant, firefighter training facility).
- **Living organisms**, including fish, animals and humans, where PFAS have the ability to build up and persist over time.

Legislation

As of now, a federal health advisory level exists for drinking water (70 ppt) for PFOA and PFOS (combined) that is not enforceable. Many states have also proposed drinking water legislation, many with standards far below the federal health advisory level or for additional compounds. New Jersey has already adopted a drinking water standard of 13 ppt for PFNA. If an enforceable limit is put in place at the federal or state level, public utilities would be required to test their potable water supplies for PFAS.

In addition to drinking water standards, there are currently 38 bills in the federal arena regarding these chemicals that could impact manufacturers. This potential legislation includes propositions such as:

- Adding PFAS to Toxic Release Inventory (TRI) reports.
- Identifying PFAS as a "hazardous substance" under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
- Designating PFAS as toxic pollutants under the Federal

Water Pollution Control Act.

- Regulating PFAS under the Toxic Substances Control Act.
- Requiring polluters to pay ongoing water treatment costs associated with contamination from PFAS.
- Amending the Federal Food, Drug, and Cosmetic Act to deem any PFAS substance used as a food contact substance to be unsafe.
- Requiring USEPA to establish safe drinking water limits for specific PFAS chemicals, PFOA and PFOS, under the Safe Drinking Water Act.

Analytical Methods

Because several methods are in use and under development, it is important to ensure that the method your lab uses is appropriate for the situation. Currently, the only approved EPA method for PFAS compounds is method 537.1, which is valid for drinking water only and measures 18 PFAS chemicals. Most labs have modified this method to measure PFAS compounds in other media and to increase the number of PFAS compounds reported. However, once the method is modified, it is no longer considered an EPA-approved method.

The EPA Isotope Dilution Method
for matrices other than drinking water is currently under development by the
EPA Office of Water and will measure 28 PFAS compounds in all matrices using an
isotope dilution method. This method will be ready (at the earliest) by the end

of 2020.

Other methods under development include EPA method 533, which is a modification of 537.1 for drinking water, and method 8327 for non-potable aqueous samples. Neither of these methods will be useful for non-aqueous sampling.

Another method, called the Total Oxidizable Precursor (TOP) Assay, can be used to measure the concentration of PFAS compounds that are not determined by conventional analytical methods. This assay helps quantify the PFAS compounds present in a sample that may degrade to other, more stable forms of PFAS under environmental conditions. Assessment of TOP assay data can be used to improve your understanding of potential PFAS environmental risk.

Sampling

No sampling protocols are currently approved by the EPA for PFAS. However, individual states and laboratories have developed guidelines for sampling. Due to the ubiquitous nature of PFAS in consumer products and the environment, and the low concentrations being monitored, sample contamination from the field is a large concern. Sampling methods must ensure no contamination is introduced by the sampling equipment, laboratory equipment, or field personnel.

EnviroScience can help you develop a site-specific protocol to assure compliance with state guidelines and that contamination does not occur.

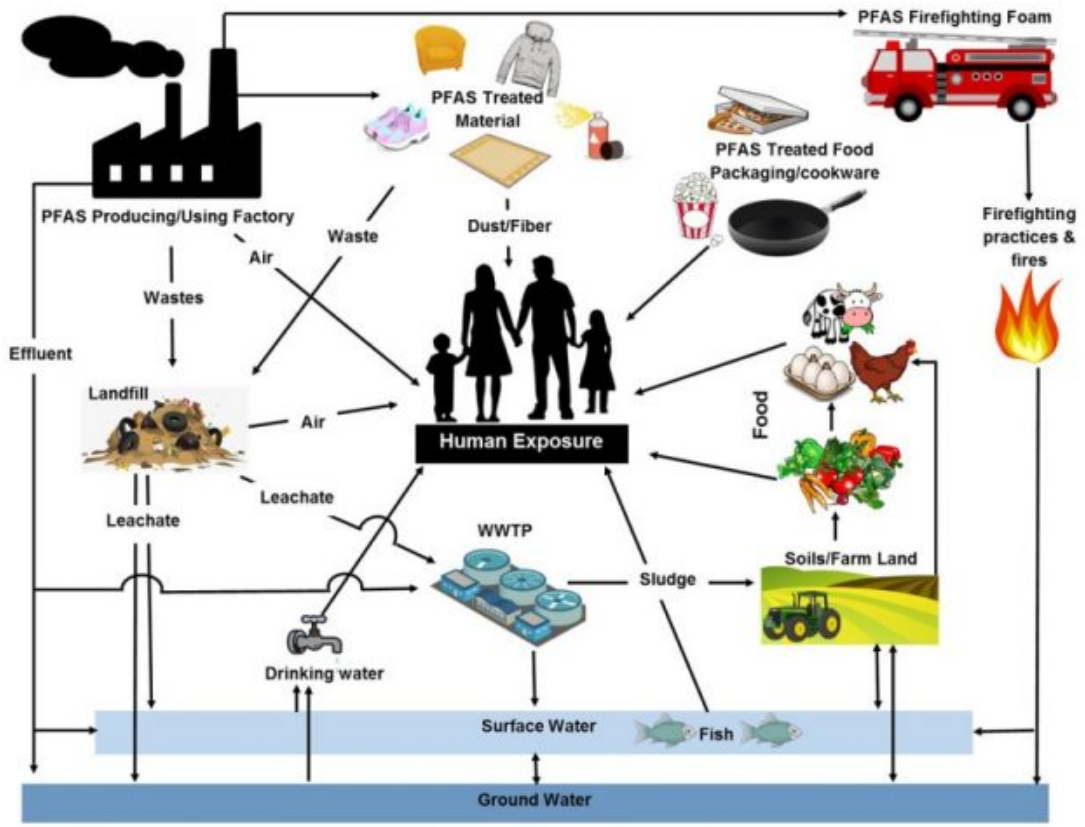
Mitigation

Due to the unique chemistry of PFAS compounds, many standard remedial techniques are not effective. Currently used treatment options include soil incineration, excavation, and groundwater extraction followed by treatment with activated carbon or ion-exchange resins. Research is ongoing to determine effective means of remediating these compounds. EnviroScience professionals are monitoring the research, and we are aware of the latest and best treatment options in all media. We can help you properly select, design, implement, and monitor an effective remedial approach.

Risk Assessment

EnviroScience can support our clients who are evaluating potential risks and/or requirements associated with PFAS compounds and the pending legislation. We can also assist with appropriate sampling and mitigation technologies.

For information about our PFAS related services, please contact Chrisie Brown at CBrown @ enviroscienceinc.com.



Human Exposure and sources of PFAS
Image: DWP, adapted from Oliaei et al. 2013.

Every day sources of PFAS that contribute to human exposure. *Source: [Maine.gov]*