PERFLUOROALKYL SUBSTANCES (PFAS) CONTAMINATION AND WHY IT'S A BIG DEAL

On May 25, 2016, people across the U.S. saw their drinking water classification change from "safe" to "contaminated." This occurred when the Environmental Protection Agency (EPA) **established health advisories** for perfluoroalkyl acid (PFOA) and perfluorooctane sulfonate (PFOS). Since then, the media have reported drinking water concerns raised over the broader class of perfluoroalkyl substances, known as PFAS, and research has focused on sample analysis and remediation of these chemicals.

A little background on PFAS

PFAS compounds are a category of **persistent environmental contaminants** used for firefighting, mist suppression, and industrial processes, including manufacture of non-stick materials such as fabrics, food packaging, and cookware. PFOA and PFOS are, to date, the most produced - and studied - of these substances.

In the early 2000s, the U.S. phased out PFOA and PFOS production due to their **related health effects**. However, the presence of PFOA, PFOS, and other PFAS continue to be widespread based on their global use and the fact that they do not break down when exposed to air, water, or sunlight. A **recent survey** estimated that PFAS levels exceed EPA's values in drinking water supplies for six million people in the U.S.

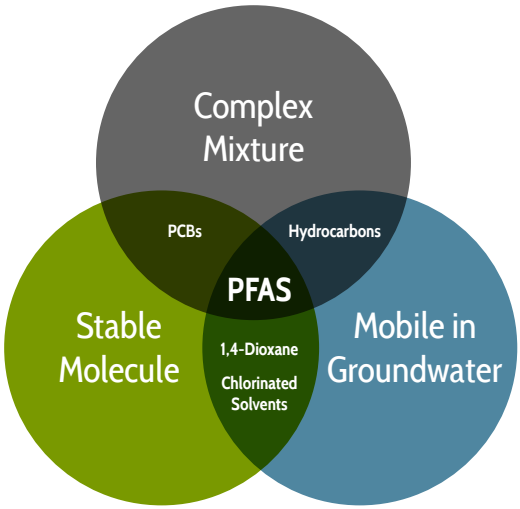
PFAS are of concern due to their known/suspected toxicity, bioaccumulation, and long half lives in humans. Although most PFAS compounds are currently unregulated, their **similarity to PFOA/PFOS and uncertain regulatory future** suggest that the broader class of PFAS compounds may be worth including in your site management plans.

What sets PFAS apart from other contaminants?

Some PFAS properties, including their resistance to biodegradation and relatively high solubility, are similar to those of other established contaminants, such as hydrocarbons, chlorinated solvents, and polychlorinated biphenyls (PCBs), as illustrated on the next page. However, the combination of PFAS' molecular structure, stability, and high mobility make characterization and remediation difficult. Additionally, there are currently no in situ treatment technologies capable of achieving complete degradation of PFAS.

Managing PFAS contamination

PFAS contamination is often found at locations like aqueous film-forming foams (AFFF) storage facilities, fire training areas, airports, fuel storage areas, chemical production facilities, metal-plating factories, and landfills. Aerospace, automotive, electronics, and construction industry sites may also be at risk of historical contamination.



Although clear challenges to PFAS remediation exist, new research is underway to generate solutions. Currently, the EPA's recommended best available practice involves groundwater extraction, followed by granular activated carbon (GAC) treatment. While PFAS degradation remains challenging, **substantial research is currently being conducted** and other sorption-based treatment **technologies** are among possible solutions that are being investigated.

Additional research and remedy implementation

Trihydro's team of emerging contaminant experts is currently taking part in various research projects to help advance solutions for PFAS management. Trihydro is part of a project team, led by Colorado State University, that is pursuing funding to address many of these challenges, including: (a) the complex PFAS mixture associated with AFFF releases, and (b) PFAS stability and biotransformation processes. Trihydro employees are also currently participating in PFAS teams with the National Groundwater Association (NGWA) and Interstate Technology Regulatory Council (ITRC) to produce best practices and PFAS overview documents.

Ask us your PFAS questions!

If you have questions or want to know more, please contact us:

Mitch Olson, P.E.
Subject Matter Expert, Emerging Contaminants
970-492-6022
molson@trihydro.com

delve

/delv/
verb: research or make inquiries into something
synonyms: investigate, inquire into, probe, explore, research, look into