

PFAS CAP Meeting 11.1.17 Case Studies

Extensive Unknowns

Compounds known to the regulatory and scientific community make up only 30 to 85% of the organic fluorine in human serum samples, indicating there are extensive unknowns in the compounds we are exposed to (Shi 2016, ES&T).

Novel PFAS Contaminates Water and Accumulates in Organisms

A report was published in August, 2017 (Pan, ES&T) detailing the measurement of a novel PFAS compound in surface water, fish, and people.

- HFPO-TA is a processing aid used in the production of fluoropolymers.
- This compound is the trimer acid of HPFO; Dupont's GenX is the dimer acid.
- Levels in surface water increased dramatically downstream of a fluoropolymer production facility, and were second only to PFOA; annual discharge was estimated at 4.6 tons/year.
- HPFO-TA was the dominant PFAS in fish liver and muscle (PFOA was dominant in blood).
- HPFO-TA was more bioaccumulative than PFOA in fish.
- In human serum, HPFO-TA had the fourth highest median level, after PFOA, PFOS, and 8:2 Cl-PFESA, another novel PFAS.

PFOS Replacement Doubling Every Six Years in Swedish Mothers

A study published in 2012 (Glynn ES&T) tested Swedish mothers' blood for PFASs and found levels of PFBS increased rapidly: 11% per year between 1996 and 2010. Although PFBS's half-life in people is much shorter than that of PFOS, its increased use appears to be leading to greater human exposure. Researchers were able to conduct this study and detect this trend because of new ability to detect PFBS at low levels.

Novel PFASs in Soils After Foam Use in Lac-Mégantic

After the derailment of 63 rail cars of an oil train in Lac-Mégantic, Quebec, 33,000 liters of AFFF concentrate were applied. Recently published analysis of soil samples found that the total PFAS levels were much higher than those of PFOS and PFOA, indicating that sampling only for those compounds would significantly underestimate total contamination (Mejia-Avenida, ES&T 2017). The researchers quantified 33 compounds and qualitatively identified an additional 55, which could not be quantified due to the lack of analytical standards. Therefore, they were able to quantify less than half of the total number of compounds contaminating soil.