PFAS in the Environment. First indications from a large scale environmental monitoring study

Matthias Kotthoff [1], Mark Bücking [1], Heinz Rüdel[1], and Jan Koschorreck[2]

[1]Fraunhofer Institute for Molecular Biology and Applied Ecology IME, Auf dem Aberg 1,
57392 Schmallenberg, Germany
[2]German Environment Agency (Umweltbundesamt), Bismarckplatz 1, 14193 Berlin, Deutschland
E-mail contact: matthias.kotthoff@ime.fraunhofer.de

Keywords: PFAS, Precursors, Environmental Monitoring, Emerging Substances

Per- and Polyfluorinated Substances (PFAS) have been an ongoing challenge for the environmental sciences for decades. However, the substance versatility, in terms of chemical classes and physico-chemical characteristics yet hinders a full overview of the spectrum. Due to the differential mobility and degradation pathways, the environmental distribution of individual species is complex and requires massive analytical effort. This obscure situation is even stretched by new molecules from international markets, that already travel around the world as industrial substance or as ingredient of commercial applications.

Our study set out to apply two large scale multi methods capturing short (e.g. C2 to C6 PFAA), medium and long chain PFAS (e.g. C6 to C14 PFAA and PFSA), and also precursors (e.g. PAPs, diPAPs, FTS, NaDONA) and novel molecules (e.g. F-53B constituents) on samples of the German Environmental Specimen Bank. Samples include rain samples, suspended particulate matter samples, fish liver, mussels, tree leaves and needles, deer liver, earthworm and herring gull eggs.

Here, we present first detections of the F-53B constituents in bream liver samples afar from production sites, and provide indications on distribution patterns.