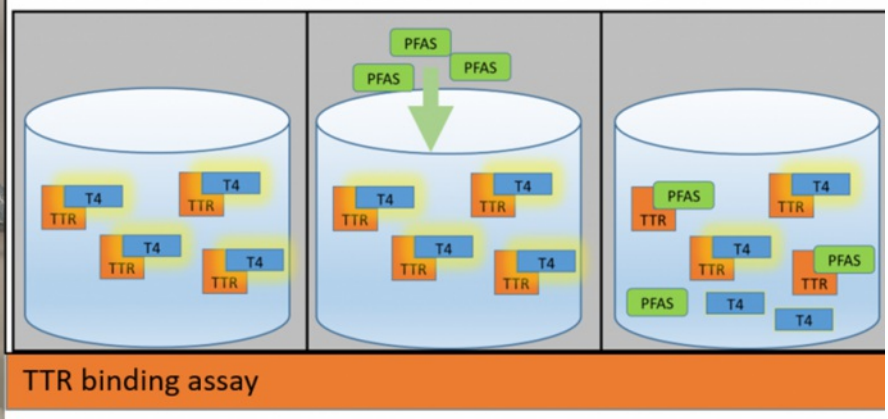


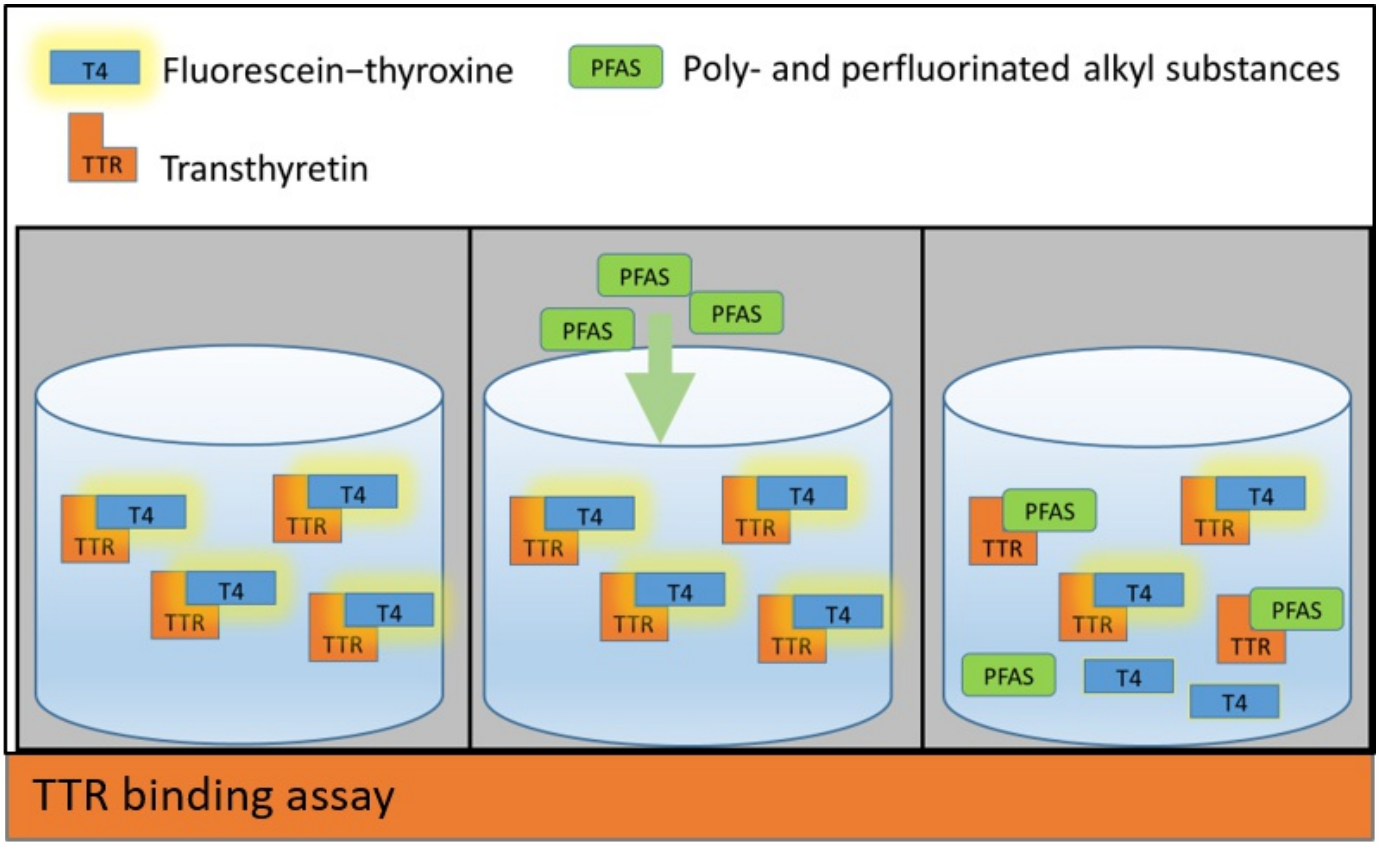
Project | Bioassay and effect directed analysis

PERIOD | 2017 - 2021
COUNTRY | NGI, OSLO, NORWAY
MARKET | GEODATA AND TECHNOLOGY
PROJECT MANAGER | SARAH HALE

Bioassays and effect directed analysis (EDA) were used in order to screen the potency of environmental PFAS mixtures on a relevant biological target.

The methods were used to provide information about the potency of real world samples from lake Tyrifjorden and standards as well as to identify suspect compounds for the observed response in the assay. PFAS have been reported to have the ability to displace the thyroid hormone thyroxine (T4) from its plasma transporter protein transthyretin (TTR), and TTR binding assays can be used to assess the potential of environmental mixtures to displace T4 from TTR.

Both analytical PFAS standards and real-world samples were used. The real world samples were from lake Tyrifjorden and were both biota and sediment extracts. In addition, four different AFFF were used. Targeted chemical analyses showed that PFAS profiles in biota were dominated by PFAA while sediments were dominated by compounds which are precursors to PFAA. Precursor compounds were generally less potent in the TTR assay than the corresponding PFAA end products. The two PFOS precursor compounds, N-ethyl perfluorooctane sulfonamido ethanol (EtFOSE) and N-ethyl perfluorooctane sulfonamido acetic acid (EtFOSAA) were less potent compared to PFOS. The PFHxA precursor, 6:2 fluorotelomer sulfonic acid (6:2 FTS), was also less potent than PFHxA.



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