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Topic: Emerging contaminants

PFOA vs. its replacement substance HFPO-DA: Their current environmental releases and fates in the rivers and coastal environment of Germany and China

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Long-chain PFASs, such as PFOA, are of high concern because they are highly persistent, bioaccumulative, toxic, and ubiquitously present in the environment. Thus there is the attempt of the fluoropolymer industry to develop other fluorinated substances with more favourable toxicological and environmental properties. Information on structural properties, production volumes, uses, and environmental as well as biological effects of those alternatives is limited. One fluorinated alternative is the chemical 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid, shortly HFPO-DA. The ammonium salt of HFPO-DA, namely GenX, is known as an APFO or PFOA alternative which has been produced as a processing aid for the fluoropolymer resin manufacturing since 2010. The producer developed an exposure control strategy to keep the substance within the manufacturing site. However, it is uncertain whether HFPO-DA is truly not emitted during the manufacturing process. In this study we investigated whether there is an exposure of HFPO-DA to the rivers and coastal environment of Germany and China. The current environmental releases of HFPO-DA and its predecessor PFOA were compared trying to assess the environmental relevance of the fluorinated alternative HFPO-DA.