Per- and Polyfluoroalkyl Substances (PFASs) in the Aquatic Environment: Should we be concerned?

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Per- and polyfluoroalkyl substances (PFASs) are of rising concern due to their persistence in the environment and their potential for bioaccumulation in organisms.[1] This study gives an overview of sources, transport processes and fate of PFASs in the aquatic environment in Sweden. Additionally, the occurrence of PFASs in drinking (raw) water and their removal efficiency using advanced treatment technologies has been evaluated. Fire training facilities at municipal and military airports, wastewater treatment plants and landfills were identified as the main point sources of PFAS pollution in the aqueous environment.[2] PFAS concentrations near point sources were in the range of hundreds to thousands of nanograms per liter in aqueous samples.[3] The PFAS concentrations decreased with distance from the source due to dilution and partitioning of some PFASs to sediment. However, maximum concentration in the aquatic environment such as surface and groundwater were still in the hundreds of nanograms per liter. This can be of concern in particular in drinking water source areas, as these concentrations exceed the Swedish drinking water guideline value of 90 ng L^{-1} for $\sum_{11}$PFASs. Conventional drinking water treatment plants in Sweden are inefficient for the removal of PFASs in drinking water, and thus advanced treatment options are needed such as nanofiltration membranes, granular activated carbon (GAC), and ion exchange (AIX) filters.[4]

[1] I. Gyllenhammar, et al. *Environ. Sci. Technol.* **2018**. *52*, 7101–7110. [2] L. Ahrens, L, et al. *Chemosphere*. **2015**. *129*, 33–38. [3] L. Gobelius, et al. *Environ. Sci. Technol.* **2018**. *52*, 4340–4349. [4] P. McCleaf, et al. *Water Res.* **2017**. *120*, 77–87.