

Abstract

Per- and polyfluoroalkyl substances are synthetic organic compounds which, due to their physicochemical properties, have a high application in many consumer products such as aqueous film forming foams or detergents. In the context with their worldwide use and their long persistence in the environment their concentrations also have been detected in remote areas without direct surrounding sources including plants, animals and humans. PFAS concentrations in surface water and groundwater range from tens of ng/l, in the case of strong point sources to hundreds of ng/l. In the seas and oceans, PFAS concentrations are most often in the tens of pg/l due to dilution. The 2 most frequently discussed substances, perfluorooctanoic acid and perfluorooctanesulfonate, have been classified as a persistent organic pollutants because of their negative effects on human health. However, based on toxicological studies, many other substances in this group also appear to be toxic so some countries have set recommended limits for their reduction. Drinking waters have concentrations in the order of units up to tens of ng/l and therefore generally do not exceed the recommended values. However, in the area of point source of pollution, PFASs values are strongly elevated and therefore their identification and subsequent environmental prevention should be taken into account. Conventional drinking water treatment processes are inefficient in removing them, but activated carbon, ion exchanges or membrane processes have achieved high efficiency in removing per- and polyfluoroalkyl substances. As the EU drinking water limit has been set and will enter into force in 2026, it will probably be examined in the near future to find the most economically and technically advantageous methods for the successful disposal of PFAS.