

IT'S NOT ONLY PFOS – OTHER PERFLUORINATED COMPOUNDS ARE PRESENT IN NORTHERN FUR SEALS

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Perfluorinated compounds are an emerging class of anthropogenic contaminants. Most organic contaminants are deposited in fatty tissues because of their lipophilic nature; however, perfluorinated contaminants have an overall polarity which prevents their accumulation in fatty tissues. Instead, these compounds circulate in the blood and accumulate primarily in the liver. Perfluorinated compounds have a worldwide distribution and exhibit toxicological effects in laboratory animals, therefore they may pose a risk of adverse effects in marine mammals. Perfluorooctane sulfonate (PFOS) is the only compound that has been analyzed in northern fur seals (*Callorhinus ursinus*). In this preliminary study we measured thirteen perfluorinated compounds in 45 plasma samples from northern fur seals collected in 2006 from St. Paul Island (in the Bering Sea), Alaska. Liquid chromatography/tandem mass spectroscopy (LC-MS/MS) was used to perform the analytical measurements. Perfluoroundecanoic acid (PFUnA) was the most abundant compound (5.2 ng/g), followed by perfluorononanoic acid (PFNA) at 3.0 ng/g and PFOS at 2.0 ng/g. The higher concentrations of PFUnA and PFNA over PFOS have rarely been seen in wildlife studies of perfluorinated compounds. However, it is not surprising because the atmospheric oxidation of 8:2 and 10:2 fluorotelomer alcohols (FTOH) produce PFNA and PFUnA, respectively, allowing for increased exposure to these compounds. It is also possible that PFUnA and PFNA exhibit larger bioaccumulation factors in northern fur seals than PFOS, causing higher concentrations of these carboxylate compounds. The results reported here demonstrate that all thirteen perfluorinated compounds analyzed are at measurable quantities in northern fur seals. At this time it is unclear whether the concentrations reported here lead to adverse toxicological effects in northern fur seals.

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