

## Perfluorinated contaminants in liver tissue of ringed, bearded, spotted, and ribbon seals from the Alaskan Bering Sea

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Perfluorinated contaminants (PFCs), such as perfluorooctane sulfonate (PFOS) and related compounds have been found in marine mammals in remote Arctic locations far from known areas of application. PFCs are synthetic molecules that are thought to bioaccumulate and are believed to be extremely resistant to physical degradation, biodegradation, and biotransformation. Transport mechanisms and source locations for the Arctic are unknown but PFCs have been detected in ringed seals (*Phoca hispida*) from Canada, Greenland, and the Baltic Sea. This is the first report of PFC concentrations in ringed and other ice-associated seals from the Bering Sea. We quantified concentrations of PFCs in liver tissue of eight ringed seals, eight bearded seals (*Erignathus barbatus*), seven spotted seals (*P. largha*), and seven ribbon seals (*P. fasciata*) using liquid chromatography and mass spectrometry. All seals were harvested by Alaska Native hunters in the Bering Sea during 2003–2006. We detected no significant differences in mean PFOS concentrations among species (Kruskal-Wallis  $P=0.43$ ). In all species combined, concentrations of PFOS ranged from 2.8–22.8 (median = 7.5) ng/g wet weight (ww) and concentrations of perfluorononanoic acid (PFNA) ranged from 1.1–29.6 (median = 7.6) ng/g ww. Concentrations of PFOS and PFNA were generally higher than those for other PFCs although perfluorodecanoic (PFDA) and perfluoroundecanoic (PFUnDA) acids were also detected in most samples. PFC concentrations in this study were lower than those documented for ringed seal liver in Canada, Greenland, and the Baltic Sea. Although potential effects of PFCs on marine mammals remain unknown, the presence of PFCs in seals in the Alaskan Bering Sea is confirmed.

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