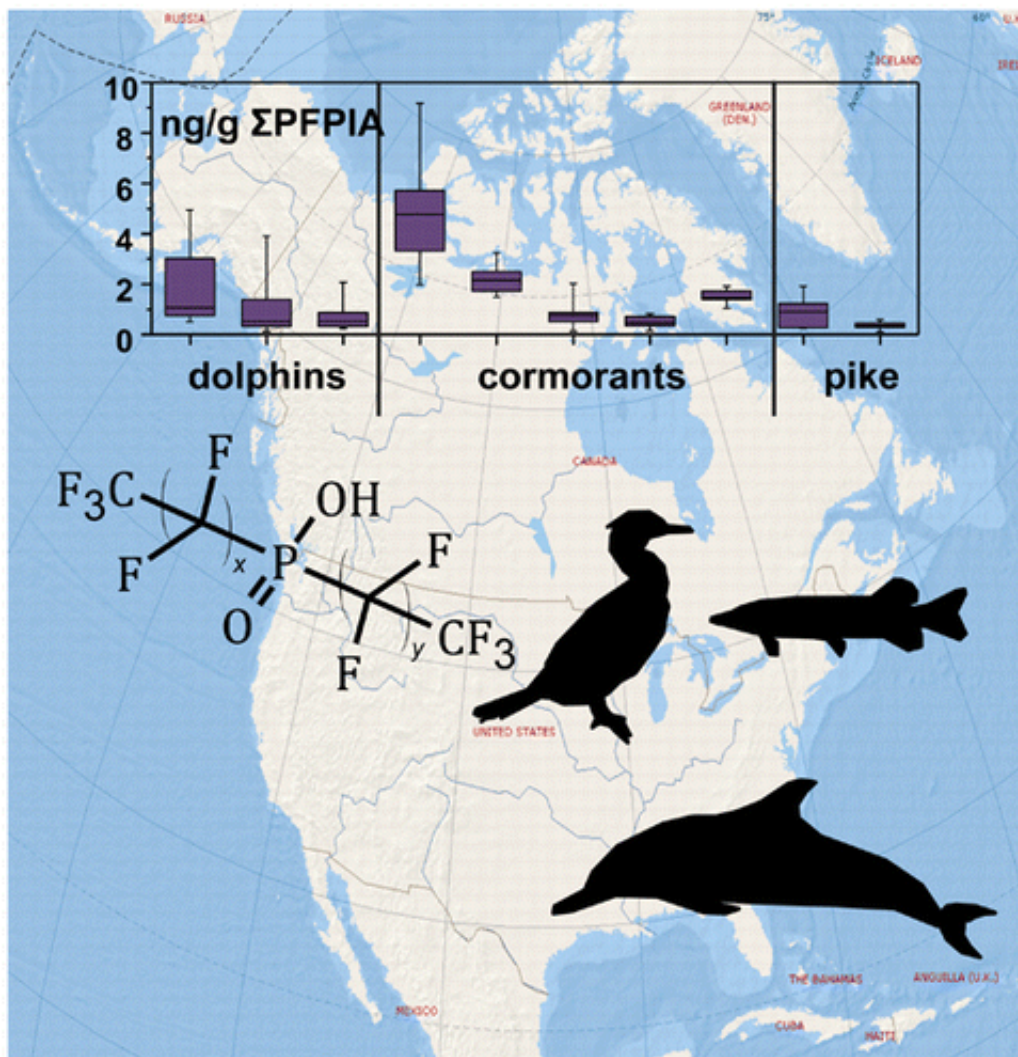


Former pesticide ingredient found in dolphins, birds and fish

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Credit: American Chemical Society

A family of common industrial compounds called perfluoroalkyl substances, which are best known for making carpets stain resistant and cookware non-stick, has been under scrutiny for potentially causing health problems. Focusing on one of the family's sub-groups, scientists report for the first time that some dolphins, fish and birds have perfluoroalkyl phosphinic acids (PFPIAs) in their blood. The work appears in the ACS journal *Environmental Science & Technology*.

Studies on PFPIAs have been limited, but some have detected the compounds in human blood samples. The substances also stick around in the environment for a long time, which makes them likely to be inhaled or ingested by people and animals. This particular subgroup of perfluoroalkyl substances was once used in pesticides and continues to be used in other industrial applications such as carpet cleaning.

To find out more about PFPIAs, Amila O. De Silva and colleagues analyzed blood samples from northern pike near the Island of Montreal, cormorants from the Great Lakes and bottlenose [dolphins](#) from Sarasota Bay, Florida, and Charleston, South Carolina. Although the concentrations were low, the survey detected PFPIAs in 100 percent of the samples. The researchers say this ubiquity underscores the need for further studying the potential effects of these substances.

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More information: Perfluoroalkylphosphinic Acids in Northern Pike (*Esox lucius*), Double-Crested Cormorants (*Phalacrocorax auritus*), and Bottlenose Dolphins (*Tursiops truncatus*) in Relation to Other Perfluoroalkyl Acids, *Environ. Sci. Technol.*, Article ASAP. [DOI: 10.1021/acs.est.6b03515](https://doi.org/10.1021/acs.est.6b03515)

Abstract

Perfluoroalkyl phosphinic acids (PFPIAs) are perfluoroalkyl acids (PFAAs) that are used for their surfactant properties in a variety of applications, resulting in their presence in environmental waters; however, they have not been widely studied in biota. A survey of PFPIAs was conducted in fish, dolphins, and birds from various locations in North America. Northern pike (*Esox lucius*) were collected at two locations in 2011 near Montréal Island in the St. Lawrence River, Canada, double-crested cormorants (*Phalacrocorax auritus*) were collected from bird colonies in the Great Lakes in 2010–2012, and bottlenose dolphins (*Tursiops truncatus*) from Sarasota Bay, FL and Charleston Harbor, SC were sampled in 2004–2009. PFPIAs had a detection frequency of 100% in all animals. This is the first report of PFPIAs in fish, dolphin, and bird plasma. Total PFPIA levels (mean \pm standard deviation, 1.87 ± 2.17 ng/g wet weight (ww), range of 0.112–15.3 ng/g ww) were 1–2 orders of magnitude lower than those of perfluoroalkyl carboxylates (PFCA) and perfluoroalkanesulfonates (PFSA) in the same samples. The predominant congeners were 6:8 PFPIA (cormorants and pike) and 6:6 PFPIA (dolphins). Total PFPIAs in cormorants from Hamilton Harbour (5.02 ± 2.80 ng/g ww) were statistically higher than in other areas and taxonomic groups. The ubiquity of PFPIAs warrants further research on sources and effects of these unique compounds.

Provided by American Chemical Society

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