

# Compilation of research on PFAS in the environment

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Per- and polyfluoroalkyl substances (PFAS) are a class of man-made chemical compounds and a current, emerging concern to environmental health. PFAS substances have unique characteristics-resistance to heat, water, oil and stains-that make them useful in a variety of industrial applications and popular in consumer goods. Many PFAS are stable and long-lasting in the environment, acquiring the name "forever chemicals." Industrial use of some of these compounds has been halted; however, many derivatives are still in commerce and more are under development. PFAS are now found in many compartments of the environment.

In order to manage PFAs in the environment, a lot of research has been directed at understanding their sources, fate and transport in the environment, and their potential effects on humans and wildlife. Recently, *Environmental Toxicology and Chemistry* (ET&C) published a special issue dedicated to PFAS with 32 articles, providing a valuable summarization of risk assessment approaches for PFAS, which are needed for environmental managers and [regulatory bodies](#) to set appropriate drinking water standards and health advisory guidelines.

The published research illustrates that PFAS are ubiquitous and raise more questions than answers about their potential toxicity to humans and wildlife. The articles in the issue report that PFAS were found near defense bases, [urban environments](#), treatment plants and waste disposal sites but also in remote, less inhabited areas. PFAS were detected in breeding kittiwakes in Svalbard, Norway, and ducks in Australian estuaries. They were found in hens' eggs, soil, tadpoles, zebrafish, house

crickets; the list goes on. The breadth of the published research illustrates that PFAS have dispersed in every medium in the environment (soil, water and wildlife).

In some of the studies, the presence of PFAS was related to a nearby source while in others it was not determined. For example, the authors of the article that investigated PFAS in Australian ducks did find a correlation between local sources of PFAS and bioaccumulation in ducks and noted that "Human health risk assessment showed that only ducks inhabiting wetlands near local sources of PFAS were likely to pose a risk to consumers," and continued, "Management of food consumption from these locations is an effective measure to limit exposure." In another study published in this same issue, long-chain PFAS were found in eight [fish species](#) across ten European glacial lakes in the Alps region, and while correlated to urban areas, could not be attributed to a specific, nearby industry source.

The issue illustrates that there are a tremendous number of PFAS substances, and it is a challenge for environmental managers and regulatory bodies to devise an approach to identify, understand and manage them all. The series provided a great review of the state of the science of PFAs risk assessment and also identified data gaps and the work needed to fill them in order to devise an effective approach to manage PFAS.

Provided by Society of Environmental Toxicology and Chemistry

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