

Humans could serve as sentinels for 'forever chemicals' harm to wildlife health

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A [new paper](#) published in *Science of The Total Environment* by Environmental Working Group scientists proposes an intriguing concept: Humans can serve as a valuable resource for understanding the impact

on other animal species of the toxic "forever chemicals" known as PFAS.

"PFAS pollution is not just a problem for humans," said David Andrews, Ph.D., senior scientist at EWG. "It's a problem for species across the globe. This new paper delves into how humans serve as an early warning system for understanding how PFAS may impact other living creatures in the environment."

Forever chemicals are linked to a wide range of adverse effects in both humans and laboratory animals. These encompass harm to the [immune system](#), disruptions in reproductive and fetal development, hormone disruption and an increased risk of cancer. Scientists are able to tap into existing research on PFAS, including extensive human studies, and employ non-invasive methods to gather information without harming animals, especially endangered species.

EWG President Ken Cook emphasized EWG's 25-year battle against PFAS contamination.

"EWG researchers have analyzed scientific studies, conducted our own investigations, and plotted where people are exposed to toxic PFAS," said Cook. "Now we've shown that humans might signal how these toxic chemicals affect the bodies of polluted animals in almost every corner of the world."

PFAS pose a significant threat to wildlife, especially those that are endangered or risk extinction. These animals often face exposure not only to PFAS but also to other hazards, such as pollution, habitat loss and exploitation.

A global problem

"The PFAS crisis is global," said Alexis Temkin, Ph.D., a toxicologist at EWG. "Like humans, wildlife are exposed to multiple PFAS at a time, through the diet, air, water and soil, highlighting the need to tackle these persistent and toxic chemicals as a class."

A [study](#) of North Carolina alligators' immune response and disease-fighting abilities found that elevated levels of PFAS were associated with higher occurrences of skin lesions, as well as wounds that did not heal properly and became infected.

Another [study](#), on [sea turtles](#) in the north Pacific, found that animals are vulnerable to the effects of PFAS exposure at every stage, from their eggs to immune systems.

In the studies EWG analyzed, animal tests were conducted most often on blood serum and plasma; on organs like the liver, kidney, and muscle, where PFAS are most likely to build up; and on eggs and other tissue samples.

'Just the beginning'

"There are still countless locations and species across the globe that are likely contaminated but have not yet been tested. PFAS pollution is a global problem. This paper and map are just the beginning," said Cook.

Investigations of the effects of PFAS on [human health](#), as documented in [epidemiological studies](#), can also offer valuable insights into potential harm to wildlife health.

The updated PFAS in wildlife map now plots more than 200 peer-reviewed studies that detected over 120 unique PFAS compounds in 625 animal species. The absence of PFAS in species in some countries is due not to a lack of contamination but instead to a lack of recent test results

in the research EWG studied.

The [new interactive map](#) plots a great variety of wildlife, including many types of fish, birds, reptiles, frogs and other amphibians, large mammals such as horses and polar bears, and small mammals such as cats. Some are already endangered or threatened.

"The wildlife map is not an exhaustive catalog of all animal studies but mostly those published in the past few years. PFAS are ubiquitous, and this first-of-its-kind map clearly captures the extent to which PFAS have contaminated wildlife around the globe," added Andrews.

PFAS build up in the body and do not break down in the environment. The new study's findings raise serious health concerns for animals, since exposure to PFAS is linked to a range of health harms in people.

The chemicals are found in the blood of virtually everyone, including newborn babies. Very low doses of PFAS in drinking water have been linked to suppression of the immune system, including reduced vaccine efficacy, and an increased risk of certain cancers. PFAS are linked with increased cholesterol, reproductive and developmental problems and other health harms.

PFAS are used in a wide range of consumer products, including personal care products, food packaging, textiles like waterproof clothing, and many other products. They have also been widely used in firefighting foams and gear, a major source of contamination in the environment.

The extent of PFAS pollution is still being studied. EWG will add new studies to this map when new species and locations are tested for PFAS exposure.

"Our research found that the most common methods we have for getting

rid of PFAS may end up leading to further pollution," said Tasha Stoiber, Ph.D., a senior scientist at EWG. "And we can expect that contamination to ripple through the food chain, potentially affecting even more species, including humans."

"Our choice is either to keep polluting the planet or take immediate action to stop all nonessential uses of PFAS," added Stoiber.

Industrial pollution

Because of the health risks associated with PFAS exposure, it is important to try to minimize exposure wherever possible.

"We need to accelerate—not delay—efforts to turn off the tap of PFAS pollution from industrial sources," said Scott Faber, EWG's senior vice president for government affairs.

The widespread global contamination of wildlife further shows the need to end industrial discharges of PFAS. EWG estimates there may be more than 40,000 industrial polluters of PFAS in the U.S. Tens of thousands of manufacturing facilities, municipal landfills and [wastewater treatment plants](#), airports and sites where PFAS-containing firefighting foams have been used may be sources of PFAS discharges into surface water.

"For decades, polluters have with impunity dumped as much PFAS as they wanted into our air, rivers, streams, lakes and bays," said Faber.

"The Biden Environmental Protection Agency must move faster and not rely on cash-strapped state regulators to turn off the tap."

More information: Discussion. Has the human population become an sentinel for the adverse F effects of PFAS contamination on wildlife health and endangered species?, *Science of The Total Environment* (2023). [DOI: 10.1016/j.scitotenv.2023.165939](https://doi.org/10.1016/j.scitotenv.2023.165939)

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