

PFAS are polluting the Arctic, threatening both humans and animals

Toxic chemicals, called PFAS, pose alarming danger to animals and humans in the Arctic, scientists say

SHARJAH, EMIRATE OF SHARJAH, UNITED ARAB EMIRATES, April 29, 2025 /EINPresswire.com/ -- Scientists have found that PFAS, nicknamed 'forever' toxic chemicals, are building up in animals like polar bears, seals, and birds and at alarming levels in the Arctic.

People living in the Arctic, they said, are also in danger because they rely on traditional foods such as marine mammals whose meat is already contaminated.



Differential pathways of transport, accumulation and effects of PFAS in the Arctic environment, biota and humans. Credit: Science of The Total Environment (2024). DOI:

https://doi.org/10.1016/j.scitotenv.2024.176274

A study published in the journal Science of The Total Environment is conducted by a group of scientists from a host of countries including the US, Finland, Denmark, Canada, Norway, and the United Arab Emirates. (Original source URL: <u>https://doi.org/10.1016/j.scitotenv.2024.176274</u>)

"The research highlights how PFAS can affect reproduction, immune systems, and even increase cancer risk in both humans and animals," said co-author Khaled Megahed Abass, associate professor at Sharjah University's College of Health Sciences.

"Alarmingly, people living in the Arctic who rely on traditional foods such as marine mammals are also exposed to these chemicals. The research highlights how PFAS can affect reproduction, immune systems, and even increase cancer risk in both humans and animals."

The study examines impact of toxic chemicals called PFAS, short for per- and polyfluoroalkyl substances, and the danger they pose to life in the North Pole. The chemicals are used in many industrial products like non-stick cookware, waterproof clothing, and firefighting foam.

PFAS travel long distances through air and water, eventually reaching even the remotest corners of the planet. Widely used, they are long lasting chemicals and some of the components take a long time to break down. Exposure to PFAS has been found to be associated with increased risk of some diseases like thyroid cancer and liver damage.

"The long-range transport of PFAS reminds us that environmental problems don't respect borders—what we release in one part of the world eventually ends up in another," said co-author Elsie M. Sunderland, Harvard University's Fred Kavli professor of environmental chemistry.

PFAS exposure Maternal Passage health and Fetal through the retention of exposure placenta PFAS Early-life Excretion of PFAS into retention of PFAS human milk Developmental Potential impact toxicity and effects on adult health on programming of and disease risk organ functions - Documented --- Hypothetical Pathways and impacts of PFAS on maternal and developing human health. Credit: Science of The Total Environment (2024). DOI:

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The authors write, "Physiological, endocrine, and reproductive effects

linked to PFAS exposure were largely similar among humans, polar bears, and Arctic seabirds. For most polar bear subpopulations across the Arctic, modeled serum concentrations exceeded PFOS levels in human populations, several of which already exceeded the established immunotoxic thresholds for the most severe risk category."

The study's lead author Rainer Lohmann, who is professor of oceanography at USA's University of Rhode Island, had a word of warning to the world, "The similarities in health effects across species—humans, animals, and birds—are deeply concerning and underscore the interconnectedness of environmental and human health." emphasized.

Prof. Ohmann's warning was echoed by the study's other lead author Pal Weihe, University of the Faroe Islands' professor of occupational medicine and public health: "The Arctic acts like a mirror—what we find here reflects the global scale and persistence of PFAS pollution. It's a warning signal we cannot ignore.

Experts and scientists have for long urged for tighter controls on the use of the chemicals and some countries have introduced restrictions on some older PFAS; however, the authors point out that new variants continue to show up in Arctic environments. They call for continued global cooperation and stronger regulations to prevent further contamination.

Dr. Abass added, "Even in the most remote corners of our planet, industrial pollution finds its way into the bodies of animals and people. PFAS are persistent, mobile, and harmful—we need a global solution."

The study's findings show that some Arctic human populations had PFAS levels that exceeded health-based thresholds, mostly due to traditional diets and that the health effects seen in wildlife, like hormone disruption and immune system problems, were similar to those seen in humans.

"The Arctic is uniquely vulnerable, and both legacy (old) and emerging PFAS continue to be detected at concerning levels," noted Dr. Abass.

Some of the study's outcomes raise real concern as the authors note that "physiological, endocrine, and reproductive effects linked to PFAS exposure were largely similar among humans, polar bears, and Arctic seabirds."

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The authors caution against "increasing trends of certain long-chain PFCAs (C9-C20), including PFNA, are observed in the Arctic, highlighting the persistence and ongoing threat of these contaminants ... Communities that rely on traditional diets face significantly higher PFAS concentrations than those relying more on market foods.

"In fact, similar results can even be found in industrialized countries, showing that Arctic Indigenous communities involuntarily serve as sentinels of contamination concerns ... PFAS contamination poses challenges to food security and sovereignty as well as to multiples species' health across the Arctic."

The study is part of a project launched address growing international concern about the use of PFAS and their detrimental impact on the environment. It is the outcome of collaboration, notably through the Arctic Monitoring and Assessment Program (AMAP).

According to the authors, their findings have already received attention and support from governments, research institutions, and environmental agencies in the Kingdom of Denmark, Canada, and beyond.

"While specific industry engagement is not highlighted, the work directly informs global policy discussions and regulations affecting chemical manufacturers and environmental health bodies," said Dr. Abass.

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