

## Q&A: EPA finalizes phase-out plan for 'forever chemicals' known as PFAS

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Long-term, low-dose exposure to per- and polyfluoroalkyl substances, also known as PFAS or forever chemicals, can hinder the immune system, interfere with hormones, and reduce the effectiveness of vaccines. It can also cause low birth weight and high cholesterol. High doses of PFAS increase the risk of kidney cancer, liver damage, testicular cancer, and thyroid disease.

On April 10, the EPA passed [historic regulations](#) on six PFAS compounds in drinking water based on their potential to cause kidney and liver cancer.

Carsten Prasse is an assistant professor of environmental health and engineering whose research focuses on the occurrence and fate of organic contaminants in the urban water cycle and their impact on environmental and human health. The researcher answers three questions regarding the EPA's plan.

## **What do we need to know?**

An estimated 98% of the U.S. population has detectable concentrations of per- and polyfluoroalkyl substances, also known as PFAS, in their blood.

While diet and dust are the primary routes of exposure, contaminated drinking water is a common way people ingest PFAS. A recent study estimated that 45% of drinking [water samples](#) contain at least one PFAS. These chemicals, which comprise more than 10,000 individual compounds, enter drinking water sources through their use in firefighting foams on fire training/fire response sites, industrial sites, and landfills, as well as [wastewater treatment plants](#) and associated byproducts such as biosolids.

Unfortunately, conventional drinking water treatment approaches cannot remove these compounds. The new regulation is an important step because it will require drinking water treatment plants that have PFAS in their source water to upgrade their technology to remove them. This includes the use of activated carbon, anion exchange resins, and high-pressure membranes.

## What can consumers do to limit their exposure to these chemicals now?

PFAS are extremely persistent in the environment. As a result, even as regulations roll back production and use of PFAS in a variety of products and drinking water systems come into compliance with new rules, PFAS exposure will continue to be a problem. In the meantime, municipal residents can reach out to their local utility to ask whether PFAS have been tested for and detected in the water system. If the utility hasn't tested, people can test their tap water at home.

Water filtration at home is an option if people identify PFAS in their [drinking](#) water. There are a number of water filters available specifically designed for PFAS removal. This could be a meaningful and temporary solution while utilities come into compliance with the new rules over the next five years and beyond. For those on a private well, these regulations do not apply to them. The EPA has indicated, however, that private well owners will have access to funds to support testing and treatment of their wells.

I want to emphasize that bottled water does not necessarily represent a better alternative. PFAS have been detected in bottled water. In addition, [plastic bottles](#) can leach other chemicals that are used in the [manufacturing process](#), and plastic waste is a major environmental problem.

## What happens next?

By 2027, water systems will have to demonstrate initial monitoring for PFAS in their water systems at a rate depending on the system size and source water type (e.g., groundwater versus surface water). After this point, a system that exceeds the limit has until 2029 to come into

compliance with the new rules.

While this may seem like a lot of time, it's not. PFAS monitoring requires new sampling procedures and compliance with the rule will require large updates to treatment plants. This is not trivial considering that PFAS contamination is widespread. At the same time, we know how to test for these PFAS and we know how to treat them.

What we don't know—and what poses perhaps the biggest challenge to compliance with the new rules—is exactly how much this will cost and who will pay for it. Testing and treatment for PFAS are expensive, and many industry experts feel that funds made available from the EPA are inadequate to the costs that utilities will endure. The issue of cost will be particularly important and potentially challenging for small water systems.

Provided by Johns Hopkins University

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