

What are PFAS?

Polyfluoroalkyl substances (PFAS) are a large group of man-made toxic chemicals. PFAS are used to make consumer products resistant to water, grease or stains, including Gore-Tex rain gear, Teflon no-stick cookware and Scotchguard stain-repellant for carpets or furniture fabric. PFAS have also been used in firefighting foams. Two of the chemicals in the PFAS family that were the most commonly used and produced are perfluorooctanoic acid (PFOA, also referred to as C8) and perfluorooctane sulfonic acid (PFOS).

A note on language: We will refer to PFAS, the larger group of chemicals, unless referring to communities, data or regulations that are specifically dealing with either PFOA or PFOS. As with many classes of chemicals, the same group may be called by many different names, so always read carefully.

Fast Facts

PFAS are found in public drinking water supplies serving 6 million U.S. residents in excess of federally recommended safety levels.

PFAS were detectable in water systems in 33 states at the minimum reporting levels required by the EPA.

In Bennington, VT, blood sampling has shown average PFOA levels nearly five times the national average – with some residents showing levels more than 100 times higher – far in excess of what the EPA considers safe.

PFAS have been found in drinking water in all six New England states.

How are we exposed to PFAS?

The biggest threat of exposure to PFAS is through drinking water. While exposure is possible from consumer products – and in fact, nearly everyone tested has shown low levels of PFAS in their blood – contaminated drinking water is the most serious PFAS-related concern. PFAS are extremely persistent in the environment, which means they last a long time and harmful exposure is possible even after the active contamination has stopped. Contaminated water is most likely to be found near manufacturing facilities that have used PFAS or areas where the chemicals were used in firefighting foams, especially military bases. However, because of their persistence in the environment, PFAS are capable of traveling long distances and may be found far from the locations where they were initially released into the environment. Exposure may also occur by eating fish caught in contaminated water and may have seriously affected workers in facilities using PFOA and PFOS.

Is it regulated?

No. In 2016, EPA issued health advisories for PFOA and PFOS that suggest that any combined exposure over 70 parts per trillion (ppt) over the course of a lifetime is unsafe. However, health advisories are non-enforceable and there are no national regulations for PFOA or PFOS in drinking water.

If there are no regulations for it, does that mean it's not dangerous?

No. The Safe Drinking Water Act says that a nation-wide standard cannot be established until the following three conditions are met: the EPA must find that a chemical has adverse health effects, that it occurs frequently at levels of public concern, and that there is a meaningful opportunity for health risk reduction for people served by public water systems. This means that a chemical could be suspected – or even proven – to have adverse health effects, but if public water systems across the country lack the capacity to remedy the threat, a national standard cannot be established. However, many states have primacy over the EPA, meaning that they can set more protective standards if they have the ability to measure and treat the contaminant. For example, Vermont's PFOA standard is 20 ppt, which is much stronger than EPA's standard; Massachusetts, on the other hand, has not set its own standard.

What are the potential health threats?

Research has shown probable links between PFAS exposure and cancer, thyroid disease, high cholesterol, ulcerative colitis, and pregnancy-induced hypertension. In animal studies, PFAS are shown to have adverse effects on multiple organs, cause developmental problems to offspring, reduce immune function, and disrupt normal endocrine activity. Once PFAS are in the body, they bioaccumulate and will remain until they are excreted in urine or feces over many years.

What can I do?

If you are on well water, contact your regular water safety tester for more information on how you can test for PFAS. If you are on a public water supply, check your Consumer Confidence Report, which is publically available and should be communicated yearly to all consumers. If PFAS are not listed, you can order a sampling kit yourself through a state-certified laboratory. Reach out to your state environmental services department to have them coordinate with the polluter to pay for the tests.

Contaminated water can be treated by at-home water filters *only if* they are specifically designed to capture PFAS, and many store-bought filters are not. The best way to ensure that your water is PFAS-free is to get your water supplier to install a point-of-entry treatment system and test the water quality regularly.

Communities across the country are fighting for a responsible answer to PFAS contamination in their water supplies. Connecting with other concerned residents and community groups could help you see how best to address the issues in your own community.

References

- Agency for Toxic Substances and Disease Registry (ATSDR). 2016. "Family tree of perfluoroalkyl and polyfluoroalkyl substances (PFAS) for environmental health professionals." http://www.atsdr.cdc.gov/pfc/docs/pfas_familytree_envhealthpro-508.pdf
- Agency for Toxic Substances and Disease Registry (ATSDR). 2016. "Per- and Polyfluoroalkyl Substances and Your Health". <http://www.atsdr.cdc.gov/pfc/index.html>
- Agency for Toxic Substances and Disease Registry (ATSDR). 2015. "Perfluoroalkyls – ToxFAQS TM". www.atsdr.cdc.gov/tfacts200.pdf
- Center for Health, Environment & Justice (CHEJ). 2016. "The New Lead – Perfluorinated Compounds (PFCs)". www.chej.org/2016/08/05/22325/
- Centers for Disease Control and Prevention. 2012. "Drinking Water FAQ". www.cdc.gov/healthywater/drinking/drinking-water-faq.html
- Hu, X. C., Andrews, D. Q., Lindstrom, A. B., Bruton, T. A., Schaidler, L. A., Grandjean, P., . . . Sunderland, E. M. (2016). Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants. *Environmental Science & Technology Letters*, 3(10), 344-350. doi:10.1021/acs.estlett.6b00260
- National Institute of Environmental Health Sciences (NIEHS). 2016. "Perfluorinated Chemicals (PFCs)". www.niehs.nih.gov/health/materials/perfluorinated_chemicals_508.pdf
- Scammell, M. K., Howard, G. J. 2015. "Health Studies Guide: Is a health study the answer for your community?" www.bu.edu/sph/health-studies-guide
- U.S. Environmental Protection Agency (EPA). 2016. "Fact Sheet: PFOA & PFOS Drinking Water Health Advisories". www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf
- Vermont Department of Health. 2016. "PFOA (Perfluorooctanoic Acid) Blood Test Clinics". www.healthvermont.gov/enviro/pfoa_clinics.aspx



Get help now

Toxics Action Center works side-by-side with communities across New England, providing residents with the skills and resources needed to prevent or clean up pollution at the local level. Toxics Action Center trains neighbors to not only defend their health and safety, but to think strategically and come together for proactive, positive change. Visit toxicsaction.org, call 617-292-4821 or email info@toxicsaction.org for more information and to get help now.



Health Studies Guide

Are you concerned about PFAS in your drinking water? Would conducting a health study facilitate the change you want to see? The Health Studies Guide is designed to help community groups clarify questions and goals, determine whether or not a health study is an appropriate strategy to investigate an environmental health concern, and develop a strategic plan to ensure that the health study produces the information that the community wants and needs. The Health Studies Guide is free and available online at www.bu.edu/sph/health-studies-guide

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