Per- and Polyfluoroalkyl Substances

What are per- and polyfluoroalkyl substances?

Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that have been used in industry and consumer products worldwide since the 1950s. These chemicals are used to make products that resist stains, grease, and water. They are used in many common products such as stain resistant carpet, clothing, non-stick cookware, and firefighting foam. GenX is a PFAS chemical that is well known in North Carolina.

- PFAS do not occur naturally but are now widespread in the environment.
- PFAS are found in people, wildlife, and fish all over the world.
- Some PFAS do not break down easily in the environment and can stay in people's bodies for a long time. This is why they are sometimes known as "forever chemicals."

How can I be exposed to PFAS?

PFAS can be found in the environment near facilities where they are made or in areas where products containing PFAS are often used. PFAS may be found in contaminated drinking water, food, indoor dust, some consumer products, and workplaces.

Most exposures occur through consuming contaminated food or water. Research is limited regarding exposures through skin, but the current science indicates that only a small amount of PFAS can get into the body through skin, so very little PFAS exposure occurs during swimming, bathing, or showering in water contaminated with PFAS.

Although some types of PFAS are no longer used, many products such as food packaging, firefighting foam and stain resistant treatments still contain PFAS. Additionally, PFAS exposures can occur by eating fish contaminated with PFAS. Check for fish advisories before eating fish from local bodies of water in North Carolina.

What drinking water regulations exist for PFAS in drinking water?

In April 2024, the U.S. Environmental Protection Agency (EPA) implemented new drinking water regulations known as maximum contaminant levels (MCLs) for six PFAS chemicals (Table 1). The MCLs are part of the National Primary Drinking Water Regulations, which are legally enforceable primary standards and treatment techniques that apply to public water systems. The MCLs reflect levels that protect human health and that water systems can achieve using the best available treatment technologies.

TABLE 1. MAXIMUM CONTAMINANT LEVELS FOR PFAS IN DRINKING WATER

PFAS CHEMICAL	MAXIMUM CONTAMINANT LEVEL (MCL)
PFOA	4 ppt*
PFOS	4 ppt
HFPO-DA (GenX)	10 ppt
PFHXS	10 ppt
PFNA	10 ppt
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index**

*Parts per trillion (ppt) can also be expressed as nanograms per liter (ng/L).
**See the US EPA's Understanding the PFAS National Primary Drinking Water Proposal Hazard Index.

How can I reduce my exposure to PFAS?

It is difficult to fully prevent PFAS exposure because PFAS are present at low levels in some foods and in the environment. However, there are steps you can take to reduce your PFAS exposure.

- If you live near known sources of PFAS contamination or your drinking water contains PFAS, you may want to use a different water source or filter your water before drinking, cooking, and preparing infant formula. See below for more information on water supply testing.
- Reduce your use of products containing PFAS (packaged foods, products with non-stick or stain resistant coatings, and some personal care products). If you have questions about the products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772.
- Check for fish advisories before eating fish from local bodies of water.
- Boiling water will NOT remove PFAS.

Who's responsible for testing my water? How often should it be tested?

Water from a Private Well

- If you live in the Fayetteville area or lower Cape Fear region, you may be eligible for free testing. Visit the North Carolina Department of Environmental Quality (NCDEQ) website or contact the Chemours Fayetteville Works Plant to request well testing:
  - Bladen, Cumberland, Robeson, and Sampson counties: (910) 678-1101
  - New Hanover, Brunswick, Pender, or Columbus counties: (910) 678-1100
  - Those with GenX levels exceeding the EPA MCL or other PFAS contamination may be eligible for replacement drinking water supplies or filtration systems at no cost.
- Other private well owners should regularly test their wells for various contaminants that may be impacting their well water. Information on PFAS testing and filtration is available at PFAS Water Testing and Filtration Resources. Routine well testing information can be found at Well Water Testing FAQs.
- EPA provides training and technical assistance to private drinking water well owners. This includes test kits for emerging contaminants, including PFAS and assistance when test results indicate there is contamination.

Water from a Public Water Supply

- Reach out to your water utility provider with questions regarding concentrations of PFAS in your public water supply. Based on the National Primary Drinking Water Regulations implemented in April 2024, water systems must take action to reduce the levels of these PFAS in drinking water if the levels exceed MCLs. Public water systems have 5 years to meet this new requirement.
- Several utilities in the lower Cape Fear region are already implementing treatment systems to limit levels of GenX and other PFAS in municipal drinking water supplies.

How can PFAS affect my health?

Whether you develop health problems after being exposed to PFAS depends on which PFAS, how much, and for how long you are exposed, and personal factors including age, lifestyle and how healthy you are. Communities with known PFAS contamination should take special care to reduce exposure.

It now is known that some PFAS can cause serious health problems if you are exposed to them – even at low levels over a long period of time. Exposure to PFAS can increase the risks of a range of health effects, including:

- Reproductive effects such as increased high blood pressure in pregnant people.
- Developmental effects or delays in children, including low birth weight, bone variations, or behavioral changes.
- Increased risk of some cancers, including kidney, liver, and testicular cancers.
- Reduced ability of the body's immune system to fight infections, including reduced vaccine effectiveness.
- Interference with the body's natural hormones, including thyroid hormones.
- Increased cholesterol levels.
- Liver damage.

This information will continue to be updated as more health research becomes available. Additionally, residents who are concerned about PFAS exposure can use the NCDHHS Clinician Memo to talk to their doctor about their concerns.

What is being done to reduce PFAS in the environment?

NC government agencies are working on all fronts to continue to reduce exposures to PFAS. This includes continuing efforts to reduce emissions and discharges from the Chemours plant and efforts to reduce PFAS as much as possible in drinking water. The NC Department of Environmental Quality's Action Strategy for PFAS details NCDEQ's priorities and planned actions to reduce PFAS in North Carolina. The EPA's PFAS Roadmap details national policies, priorities, and actions planned for the next five years.

For more information:

- NCDHHS
  - PFAS Information: https://epi.dph.ncdhhs.gov/oee/a_z/pfas.html
  - Fish Advisories: https://epi.dph.ncdhhs.gov/oee/fish/advisories.html
  - Clinician Memo: https://epi.dph.ncdhhs.gov/oee/pfas/UpdatedDHHSClinicianMemoFinal.pdf
- NCDEQ: https://deq.nc.gov/news/key-issues/genx-investigation
- CDC: www.atsdr.cdc.gov/pfas/index.html
- EPA: www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas
- Food and Drug Administration: www.fda.gov/food/chemicals/and-polyfluoroalkyl-substances-pfas
- If you have additional questions or concerns about PFAS-related health effects, contact NCDHHS at (919) 707-5900.