

PFAS in Drinking Water

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals applied to many consumer goods to make them waterproof, stain resistant, or nonstick. PFAS are also used in products like cosmetics, fast food packaging, and a type of firefighting foam called aqueous film forming foam (AFFF) which are used mainly on large spills of flammable liquids, such as jet fuel.

How do PFAS get into drinking water?

PFAS enter the environment at sites where they are made, used, disposed of, or spilled. PFAS are mobile and transported through rainwater run-off and enter surface water (lakes, ponds, etc.) or seep through the soil and migrate into groundwater (underground sources of drinking water). Because PFAS are very long-lasting and are not easily broken down by sunlight or other natural processes, they may remain in water for many years.

If a public water system or your private well gets its water from a surface or groundwater source that is contaminated with PFAS, and the water is not properly treated to remove the PFAS, the chemicals may be in your drinking water and can pass into your body when you ingest (drink or eat food cooked in) them.

What are the health effects of drinking water that contains PFAS?

There are many chemicals in the PFAS family, and they may cause different health effects if you are exposed to them. Some, but not all, studies in humans with PFAS exposure have shown that certain PFAS may:

- Affect growth, learning, and behavior of infants and children;
- Lower a woman's chance of getting pregnant;
- Interfere with the body's natural hormones;
- Increase cholesterol levels;
- Affect the immune system; or
- Increase the risk of certain cancers.

Scientists are still learning about the health effects of exposures to mixtures of PFAS. Laboratory animals exposed to high doses of one or more PFAS chemicals have shown changes in liver, thyroid, and pancreas function, as well as some changes in hormone levels. Because animals and humans process these chemicals differently, more research will help scientists fully understand how PFAS affect human health.

Exposure to PFAS does not always mean a person will have health effects. Whether a person gets sick depends on how long they were exposed (duration), how often they were exposed (frequency), and how much PFAS they were exposed to (dose). Personal factors like age, lifestyle, and other illnesses may also contribute to whether a person gets sick. Young children, infants, and unborn babies may be at more risk of health effects.

What levels of PFAS in drinking water are unsafe?

The Ohio Environmental Protection Agency (OEPA) and the Ohio Department of Health (ODH) have established PFAS Action Levels for the six PFAS chemicals listed in the table below. OEPA and ODH use these action levels as thresholds in providing guidance to residents, drinking water system owners and operators on health effects, ways to reduce exposures, and options for treating drinking water.

PFAS Chemicals ¹						
	PFOA	PFOS	GenX	PFBS	PFHxS	PFNA
Action Level (ppt) ²	>70 single or combined with PFOS	>70 single or combined with PFOA	>700	>140,000	>140	>21

¹ PFOA (Perfluorooctanoic acid); PFOS (Perfluorooctane sulfonate); GenX (HFPO dimer acid); PFBS (Perfluorobutanesulfonic acid); PFHxS (Perfluorobexane sulfonic acid); and PFNA (Perfluorononanoic acid).

² PPT (Parts per trillion)

How can I test my water and what are treatment options if PFAS is present?

Water Testing

Ohio residents who get their water from a private water system (well, spring, pond, cistern, or hauled water storage tank) may be interested in having their water tested. Because PFAS are in many items most people use daily, including waterproof or stain-resistant fabrics, personal hygiene products, and food and beverage packaging, it is difficult to collect a sample without contaminating it. It is recommended that water samples be collected by someone specifically trained to sample drinking water for PFAS analysis. Ohio's PFAS [webpage](#) provides a list of labs and resources for water testing. If you receive your water from a public water system, you may contact the utility to obtain more information.

Water Treatment

Based on the laboratory results, you may want to install a PFAS water treatment system in your home. These treatment systems may be:

- At the point of entry (POE) where treatment for all the water entering the household plumbing system occurs; or
- At the point of use (POU) which is often at the kitchen sink or primary source of water for drinking or cooking (potentially also including a water line to the refrigerator if it has a plumbed in water line).

Either type of water treatment system has pros and cons that should be considered before selecting the best treatment option for a home. The type of treatment system chosen should consider the volume of water that will be used in the home, the number and location of sites where water is consumed in the home, and the type of PFAS chemicals identified by laboratory testing.

For More Information

For more information on PFAS, including the health effects of PFAS, PFAS in drinking water, water testing and treatment, and other PFAS activities in Ohio, visit the Ohio PFAS webpage here: pfas.ohio.gov.

For more information on PFAS and your health, contact the ODH Health Assessment Section at BEH@odh.ohio.gov or at (614) 728-9452.