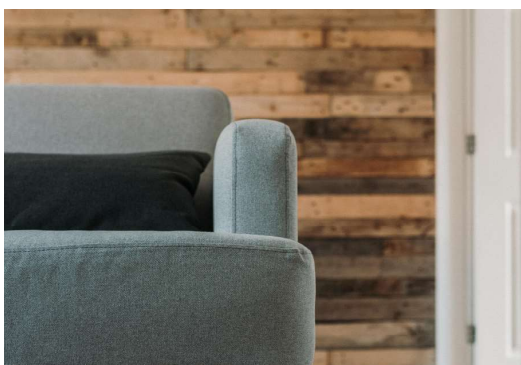




# An Introduction to Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a large group of human-made chemicals that are not naturally found in the environment. PFAS have been used in many settings and are persistent, meaning they do not break down easily. Because PFAS have been used so often, PFAS have found their way into the environment. PFAS can be harmful to human health, but there are ways to reduce PFAS exposure. Read on to learn more about PFAS, how you may be exposed to PFAS and how to protect yourself.

## What are PFAS?



PFAS are used to fight fires and repel oil, stains, grease and water. PFAS have been used in manufacturing and commercial products since the 1940s and are used in some firefighting foams, metal plating, carpeting, waterproof clothing, upholstery, food paper wrappings and personal care products. When products that contain PFAS are created or used, PFAS can be released into the environment. Although some PFAS are no longer being used in most items, other types of PFAS are still commonly used in some products and industrial settings.

## Where are PFAS found?

PFAS are persistent chemicals, meaning that they do not easily break down in the environment. This has resulted in PFAS being found nearly everywhere. Although PFAS can be found all over, there are specific areas that are known to have higher levels of PFAS. These include:



**Airports and Military Bases.** PFAS have been and continue to be used in firefighting foam. Groundwater contaminated with PFAS near airports and military bases is often associated with the use of firefighting foams.



**Manufacturing facilities.** PFAS have been used in manufacturing. They can be released into lakes and rivers during production or as wastewater. PFAS may be in industrial waste that can seep into the soil and groundwater.



**Landfills.** PFAS are used in many different consumer products that eventually end up in landfills. PFAS in unlined landfills can seep from the soil into groundwater.



**Farmland.** PFAS may be in treated sewage sludge, which is sometimes used on farmland as fertilizer. Once applied, it can seep into groundwater.

# How can PFAS impact human health?

PFAS can stay in people's bodies for many years. PFAS also bioaccumulate, which means that they build up in our bodies over time. Long-term exposure to PFAS may impact human health. Some studies have found exposure to PFAS may be related to health effects such as:

- High blood pressure or pre-eclampsia in pregnant women.
- Thyroid disease.
- Decreased immune system response to vaccines.
- Reduced fertility.
- Liver damage.
- Higher cholesterol, especially total cholesterol and LDL cholesterol.
- Small decreases in infant birth weight.
- Developing certain types of cancer, in particular kidney and testicular cancers.

## How are people exposed to PFAS and how can they reduce exposure?

People are exposed to PFAS mainly through swallowing them. There are three ways people typically swallow PFAS: drinking water, eating fish and wildlife contaminated with PFAS, and accidental swallowing of PFAS-containing foam.



**Drinking water** is the main way people are exposed to PFAS. Groundwater, lakes and rivers can be contaminated with PFAS when products containing PFAS are released into the environment. If you are concerned about being exposed to PFAS in drinking water, you can:

- Learn more about drinking water quality and PFAS by visiting the PFAS and Drinking Water page (URL: [bit.ly/PFASDW](https://bit.ly/PFASDW)).
- Have your drinking water well tested for PFAS if you have a private residential well. For more information on private water well testing, visit the PFAS Laboratories and Home Testing site (URL: [bit.ly/PFASWaterTest](https://bit.ly/PFASWaterTest)).
- Use a water filter that is certified to reduce PFAS. Visit the Home Filters site (URL: [bit.ly/HomeFilters](https://bit.ly/HomeFilters)) for more information.
- If PFAS is detected in your water, contact the MDHHS Toxicology Hotline for more information at 800-648-6942.



**Wildlife**, such as fish and deer, have been found to have PFAS in their bodies. Consuming wildlife that have been exposed to PFAS can expose you to PFAS. If you are concerned about PFAS exposure through wildlife, you can:

- Follow MDHHS Eat Safe Fish guidelines on the Eat Safe Fish page (URL: [Michigan.gov/EatSafeFish](https://Michigan.gov/EatSafeFish)).
- Follow MDHHS Do Not Eat deer and wildlife advisories available on the PFAS and Wildlife page (URL: [bit.ly/PFASWildlife](https://bit.ly/PFASWildlife)).



**Accidentally swallowing foam** that can form on waterbodies that contain PFAS is another way people are exposed to PFAS. PFAS-containing foam tends to be bright white in color, lightweight, and may pile up like shaving cream. Swallowing foam with PFAS can be a risk to your health. If you are concerned about accidentally swallowing PFAS-containing foam, you can:

- Avoid foam on lakes, rivers and any other waterbodies.
- Rinse off and/or shower after swimming or coming into contact with PFAS-containing foam.
- For more information, visit the PFAS Foam page (URL: [bit.ly/FoamWaterbodies](https://bit.ly/FoamWaterbodies)).

## For More Information

For more information on PFAS, visit the Michigan PFAS Action Response Team (MPART) website (URL: [Michigan.gov/PFASResponse](https://Michigan.gov/PFASResponse)).

If you have questions about PFAS and your health, call the MDHHS Environmental Health Hotline at 1-800-648-6942

