

# Per- and Polyfluoroalkyl Substances (PFAS), Including PFOA & PFOS

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## 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.

- PFAS do not occur naturally, but are widespread in the environment.
- PFAS are found in people, wildlife, and fish all over the world.
- Some PFAS can stay in people's bodies a long time.
- Some PFAS do not break down easily in the environment.

Perfluorooctanoic acid (PFOA or C8) and perfluorooctane sulfonic acid (PFOS) are two common examples of PFAS. PFOA and PFOS have been used to make carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (e.g., cookware) that are resistant to water, grease or stains. They are also used for firefighting at air-fields and in a number of industrial processes.

## How can I be exposed to PFAS?

PFAS are man-made, so there are no natural sources in the environment. However, PFAS can be found near areas where they are manufactured or where products containing PFAS are often used.

PFAS contamination may be in drinking water, food, indoor dust, some consumer products, and workplaces. Most non-worker exposures occur through drinking contaminated water or eating food that contains PFAS.

Although some types of PFAS are no longer used, some products may still contain PFAS:

- Food packaging materials
- Nonstick cookware
- Stain resistant carpet treatments
- Water resistant clothing
- Cleaning products
- Paints, varnishes, and sealants
- Firefighting foam
- Some cosmetics

## How can I reduce my exposure to PFAS?

PFAS are present at low levels in some food products and in the environment (air, water, soil etc.), so you probably cannot prevent PFAS exposure altogether. However, if you live near known sources of PFAS contamination, you can take steps to reduce your risk of exposure.

- If your drinking water contains PFAS above the EPA Lifetime Health Advisory (combined PFOA/PFOS concentration of 70 parts per trillion), consider using an alternative or treated water source for any activity in which you might swallow water. These activities include drinking, food preparation, brushing teeth, or preparing infant formula.
- Check for fish advisories for water bodies where you fish. Research has shown the benefits of eating fish, so continue to eat fish from safe sources as part of your healthy diet.
- Read consumer product labels and avoid using those with PFAS.

## How can PFAS affect my health?

The potential for health effects from PFAS in humans is not well understood. PFOA and PFOS have been studied more than other PFAS. In general, animal studies have found that animals exposed to PFAS at high levels resulted in changes in the function of the liver, thyroid, pancreas and hormone levels.

Some scientific studies suggest that certain PFAS may affect different systems in the body. The U.S. Centers for Disease Control and Prevention (CDC) is working with various partners to better understand how exposure to PFAS might affect people's health—especially how exposure to PFAS in water and food may be harmful. Although more research is needed, some studies in people have shown that certain PFAS may:

- affect growth, learning, and behavior of infants and older children
- lower a woman's chance of getting pregnant
- interfere with the body's natural hormones
- increase cholesterol levels
- affect the immune system and
- increase the risk of cancer

At this time, scientists are still learning about the health effects of exposures to mixtures of PFAS.

## How can I learn more?

You can visit the following websites for more information:

- Agency for Toxic Substances and Disease Registry (ATSDR):  
[www.atsdr.cdc.gov/pfc/index.html](http://www.atsdr.cdc.gov/pfc/index.html)
- Environmental Protection Agency (EPA):  
<https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas>
- Food and Drug Administration:  
<https://www.fda.gov/food/newsevents/constituentupdates/ucm479465.htm>
- National Toxicology Program:  
<https://ntp.niehs.nih.gov/pubhealth/hat/noms/pfoa/index.html>

If you have questions about the products you use in your home, please contact the Consumer Product Safety Commission (CPSC) at (800) 638-2772.

If you have concerns about health effects related to PFOA, PFOS or other chemicals, contact N.C. DHHS at 919-707-5900.

## References

*Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS): Frequently Asked Questions*. Agency for Toxic Substances and Disease Registry (ATSDR). August 22, 2017.



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