



MassDEP Fact Sheet

PFAS in Drinking Water: Questions and Answers for Consumers

Introduction

This fact sheet is intended to inform you about Per- and Polyfluoroalkyl Substances (PFAS) and provide guidance on health protective limits for these chemicals in drinking water.

What are PFAS and how are people exposed to them?

PFAS are fluorinated organic chemicals. Two PFAS chemicals, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) have been the most extensively produced and studied of these chemicals. PFAS are contained in firefighting foams, which have been used in training exercises and to extinguish oil and gas fires at a variety of locations including airfields. PFAS are also used in a number of industrial processes and 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. Because these chemicals have been used in many consumer products, most people have been exposed to them.

While consumer products and food are the largest source of exposure to these chemicals for most people, drinking water can be an additional source of exposure in communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility, for example, an airfield at which they were used for firefighting or a facility where these chemicals were produced or used.

What are the levels of concern?

There are no enforceable federal or Massachusetts state standards for these substances in public drinking water. However, in June 2018, MassDEP issued a public health guideline to address five PFAS chemicals. These include PFOA, PFOS, perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS) and perfluoroheptanoic acid (PFHpA). This type of guideline, known as an Office of Research and Standards Guideline (ORSG), provides recommended contaminant levels in drinking water and is set to be protective against adverse health effects for all people consuming the water for a lifetime. MassDEP recommends that this ORSG also apply to shorter-term exposures of weeks to months during pregnancy and breast-feeding. Based on this ORSG, MassDEP recommends that:

- 1) consumers in sensitive subgroups (pregnant women, nursing mothers and infants) not consume water when the level of the five PFAS substances, individually or in combination, is above 0.070 micrograms per liter ($\mu\text{g/L}$) or 70 parts per trillion (ppt); and,
- 2) public water suppliers take steps expeditiously to lower levels of the five PFAS, individually or in combination, to below 70 ppt for all consumers.

In May 2016, the United States Environmental Protection Agency (EPA) issued a lifetime Health Advisory (HA) of 0.070 $\mu\text{g/L}$ (70 ppt) for any combination of PFOA and PFOS. The June 2018 MassDEP ORSG and associated recommendations were developed out of an abundance of caution because the five PFAS compounds included in the ORSG share very similar chemical structures and the available data indicates they most likely exhibit similar toxicities.

What health effects are associated with exposure to PFAS?

EPA's 2016 Health Advisory values for PFOS and PFOA were based on recent studies of these substances in laboratory animals and were also informed by studies of exposed people. Overall, these studies indicate that exposure to sufficiently elevated levels of PFOA and PFOS may cause developmental effects in fetuses during pregnancy and in breastfed infants. Effects on the thyroid, the liver, kidneys, hormone levels and the immune system have also been reported. Some studies suggest a cancer risk may exist in people exposed to levels well above the EPA Health Advisory.

It is important to note that consuming water with PFAS above the 70 ppt level does not mean that adverse effects will occur. The degree of risk depends on the level of the chemicals and the duration of exposure. The 70 ppt level assumes that individuals drink only contaminated water, which typically overestimates exposure, and are also exposed to PFAS

from sources beyond drinking water, such as food. To enhance safety, several uncertainty factors are additionally applied to account for the differences between animals and humans and the differences from one human to another human. Scientists are still working to study and better understand the health risks posed by exposures to PFAS. If your water has been found to have PFAS and you have specific health concerns, you may wish to consult with your doctor.

How can I find out about contaminants in my drinking water?

If you get your water from a public water system you should contact them for this information. For a contact list for all public water systems in the Commonwealth you may visit:

<https://www.mass.gov/lists/drinking-water-health-safety#contacts> then under “Contacts” click on “MA Public Water Supplier contacts sorted By Town”.

For private well owners, MassDEP recommends the use of a state certified analytical laboratory for all water quality testing. Local Private Well Regulations may specify the use of a state certified lab. A searchable list of MassDEP certified labs can be found at: <http://eeaaonline.eea.state.ma.us/DEP/Labcert/Labcert.aspx>

What options should be considered when PFAS in drinking water is above MassDEP’s recommendations?

- ✓ Sensitive subgroups, including pregnant women, nursing mothers and infants, should use bottled water that has been tested for PFAS, for drinking and cooking of foods that absorb water (like pasta).
- ✓ The water should not be used to make infant formula. Bottled water that has been tested for PFAS, or formula that does not require adding water, should be used.
- ✓ For older children and adults, the 70 ppt value is applicable to a lifetime of consuming the water. For these groups, shorter duration exposures present less risk. However, if you are concerned about your exposure while steps are taken to assess and lower the PFAS concentration in your drinking water, use of bottled water that has been tested for PFAS will reduce your exposure.
- ✓ Water contaminated with PFAS can be treated by home water treatment systems that are certified to remove PFAS by an independent testing group such as NSF, UL, Water Quality Association or the CSA Group. These may include point of entry systems, which treat all the water entering a home, or point of use devices, which treat water where it is used, such as at a faucet.
- ✓ In most situations the water can be safely used for washing foods, brushing teeth, bathing and showering. If you have cuts or broken skin, you may want to avoid long showers or baths. If you are concerned about your exposure, even though the risk is very low, you may want to use bottled water for brushing your teeth and cleaning items like dentures, pacifiers, and fruits and vegetables.
- **NOTE ON BOILING WATER:** Boiling water will not destroy these chemicals and will increase their levels somewhat due to water evaporation.
- **NOTE ON BOTTLED WATER:** Even though bottlers are not required to test for PFAS, some bottlers have tested. The best way to know if the bottled water you are drinking or plan to drink has been tested for PFAS is to contact the bottler and ask for the latest testing results. Contact information should be available on the bottle or you may need to search the internet.

Where can I get more information on PFAS?

MassDEP’s Office of Research and Standards Guideline for PFAS can be found at:

<https://www.mass.gov/lists/contaminants#pfas-per-and-polyfluoroalkyl-substances-including-pfos-and-pfoa>

EPA’s Drinking Water Health Advisories for PFOA and PFOS can be found at: <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>

The Centers for Disease Control and Prevention’s Public Health Statement for PFOS and PFOA can be found at:

<https://www.atsdr.cdc.gov/pfas/index.html>

For additional information on possible health effects, you may contact the Massachusetts Department Environmental Protection, Office of Research and Standards at 617-556-1165.

For information on the MassDEP Drinking Water Program, you may visit <https://www.mass.gov/drinking-water-program> or contact the program at program.director-dwp@state.ma.us or 617-292-5770.