



Frequently Asked Questions About Perfluoroalkyl Substances (PFAS)

What are PFAS and how can I be exposed?

- PFAS are human-made chemicals that are manufactured for their heat, water, and stain-resistant properties. They are used in a wide variety of common products, like rain gear, non-stick cookware, stain-resistant fabrics, and certain types of firefighting foams called aqueous film forming foams (AFFF), which are used to extinguish fuel and chemical fires.
- The use of AFFF is a common source of environmental PFAS contamination, particularly near airports, military bases, industrial sites, and fire training centers. AFFF discharged during firefighting activities can eventually migrate into the groundwater, contaminating nearby drinking water supplies.

How do I know if I have been previously exposed to PFAS and how can I remove it from my body?

- Because PFAS are used in so many different types of products, almost all people and animals [have been exposed to more than one type of PFAS](#). There is no medical technique that can remove PFAS from the body, so the best approach is to stop the source of exposure and let the body's natural elimination processes slowly remove it.

How can PFAS affect my health?

- The likelihood of experiencing health effects from PFAS depends on many different factors, like how much, how often, and how long someone is exposed. Things like age, lifestyle, and underlying health status also play a role.
- Our current knowledge about the health effects of PFAS comes mostly from animal toxicology studies and a smaller number of human epidemiology studies; however, the number of studies showing negative effects of PFAS on humans is growing rapidly.
- Studies using human stem cells and animals show that certain types of PFAS can lead to negative effects on several different body systems. However, animals and humans have important differences in physiology that can cause them to respond to chemicals differently. Also, laboratory experiments usually use doses of PFAS that are much higher than the average person is likely to experience, so scientists are still learning about the potential health effects of low-dose exposure to PFAS.
- The Agency for Toxic Substances and Disease Registry ([ATSDR](#)) and the US Environmental Protection Agency ([EPA](#)) state that long-term exposure to high levels of PFAS can have the following [effects on human health](#):
 - [Gastrointestinal System](#)- Ulcerative colitis
 - [Liver](#)- liver damage, abnormal fat metabolism, high cholesterol
 - [Kidney](#)- kidney cancer and chronic kidney disease
 - [Cardiovascular system](#)- pregnancy-induced hypertension
 - [Immune system](#)- decreased response to vaccines
 - [Reproductive system](#)- testicular cancer and decreased fertility
 - [Endocrine system](#)- thyroid disease
 - [Development](#)- reduced birth weight, skeletal abnormalities, altered puberty

What levels of PFAS are considered unsafe in drinking water?

- EPA issued the following lifetime health advisory (LHA) for two types of PFAS, called PFOS and PFOA: *“To provide Americans, including the most sensitive populations, with a margin of protection from a life-time of exposure to PFOA and PFOS from drinking water, EPA established the health advisory levels at 70 parts per trillion.”* The LHA value of 70 ppt applies to PFOS and PFOA separately, and in combination with one another.
- The LHA was issued based on the available scientific evidence at the time about the potential health effects of PFAS, and most of the available research at that time focused on PFOS and PFOA. However, a rapidly growing number of scientific studies that suggest other PFAS compounds (e.g., PFNA, PFHxS,) have human health effects similar to those of PFOS and PFOA.
- The EPA has not yet developed guidance for additional types of PFAS compounds; however, ATSDR provides draft Minimum Risk Levels (MRLs) for four PFAS compounds (PFOS, PFOA, PFHxS, and PFNA). An MRL is the estimated daily dose of a chemical that a person can eat, drink, or breathe over a long period of time without experiencing a detectable increase in the risk of non-cancerous health effects.
- ATSDR used these MRLs and the average body weight and drinking water intake rates for children and adults in the US to calculate the maximum drinking water concentration of each type of PFAS that is not expected to increase your risk of developing health effects (see: https://www.atsdr.cdc.gov/pfas/mrl_pfas.html). However, it is important to note that these values can vary for each individual based on their body weight and water intake. Also, these values do not account for added exposure from other sources (like contaminated food), which may cause you to exceed the MRL if you drink PFAS-contaminated water that approaches these maximum concentrations. The drinking water values that ATSDR has developed are summarized in the following table:

ATSDR Drinking Water Screening Values		
COMPOUND	ADULT (ppt)	CHILD (ppt)
PFOA	78	21
PFOS	52	14
PFHxS	517	140
PFNA	78	21

- DEC previously required the provision of alternative drinking water when the sum concentration of PFOS + PFOA + PFNA + PFHxS + PFHpA exceeded 70 ppt. However, the most current policy (dated 10/2/2019) states the following: *“In order to align state actions to the recently announced EPA plans, DEC will use the EPA LHA (PFOS+PFOA above 0.07 µg/L) as the Action Level.”* Moreover, *“Any new testing for PFAS will report the full suite of PFAS compounds analyzed by the appropriate EPA Method.”* More information on DEC’s current and former PFAS policy can be found in their latest [Technical Memorandum](#).

Where can I find an overview of PFAS standards and guidance values established by EPA, states, and other countries?

- An overview of PFAS standards and guidance values established by various regulatory agencies is available [here](#).

What do I do if my drinking water is contaminated with PFAS above the DEC action level?

- If the concentration of PFAS in your drinking water exceeds the DEC action level, stop drinking the water and stop using it to prepare baby formula. Do not use contaminated water to wash or cook food (boiling contaminated water does not remove PFAS). Consider finding a clean water source for pets and other animals.

What if my water contains PFAS at concentrations that don’t exceed DEC’s current action level, but I still have concerns?

- People in this situation may wish to consider taking measures to reduce their exposure from drinking water.
- Technologies effective at [removing many type of PFAS from drinking water](#) include activated carbon adsorption, ion exchange resins, and high-pressure membranes. These systems can be installed in homes at the point-of-entry (where water enters the home), or even at the point-of-use (such as in a kitchen sink or a shower).

- While installing a filtration system in your home can reduce PFAS levels, these filters may not reduce the PFAS concentration enough to meet DEC guidelines in some circumstances.
- Factors affecting how much PFAS can be removed include:
 - The water concentration before filtration
 - The type of PFAS in the water
 - The type of filter and how well the filter is maintained (the manufacturer may be able to make recommendations to maximize the removal of PFAS)

Where can I find more information about testing my water for PFAS?

- DEC provides information on water testing [here](#).

Are some populations more susceptible to PFAS?

- ATSDR considers babies and children to be [more susceptible to PFAS exposure](#). This is because there are additional sources of PFAS exposure for children that lead to higher body concentrations relative to their body weight. Some of these additional sources include hand-to-mouth transfer from contaminated items, and transfer from mothers to babies during pregnancy and breastfeeding.

Is it okay to breastfeed my child if I have been exposed to PFAS through my drinking water?

- [ATSDR recommends that nursing mothers should continue to breastfeed](#) because the benefits of breastfeeding outweigh any known risk associated with transfer of PFAS through breast milk.

Is it okay to shower/bathe with PFAS-contaminated tap water until I have a long-term solution?

- It is very unlikely that showering or bathing with PFAS contaminated water will result in considerable exposure, unless large amounts of contaminated water are routinely being ingested while bathing. This is because [PFAS is not easily absorbed by the skin](#), and very little PFAS is inhaled while showering.

Is it okay to clean and wash dishes and clothes with PFAS-contaminated water until I have a long-term solution?

- If tap water is contaminated with PFAS, [it is considered safe to use the water to clean](#) your house, wash dishes, and do laundry until a treated or alternative water source is available.

Is it okay to brush my teeth with PFAS-contaminated tap water until I have a long-term solution?

- It is better to reduce PFAS exposure by using a clean or treated water source for brushing teeth or any other activity that might result in accidental ingestion of water, especially for young children who may swallow water during these activities.

Is it okay to eat garden fruits and vegetables that were irrigated with contaminated water or grown in contaminated soil?

- Plants irrigated with contaminated water or grown in contaminated soil have been shown to take up some PFAS from the surrounding environment. Most of the water and soil contamination in Alaska is the result of AFFF use, but other sources of contamination may include landfills (which generally contain a wide variety of disposed-of consumer products that contain PFAS), certain industrial processes, or using contaminated biosolids as a fertilizer.
- The amount of PFAS taken up by fruits and vegetables will vary based on the severity of the PFAS contamination, the type(s) of PFAS in the water and/or soil, and the type of produce grown. Different parts of the same plant are also expected to accumulate variable amounts and types of PFAS (fruits usually have the lowest concentration of PFAS of concern).
- Ultimately, exposure to PFAS through produce [is not likely to be substantial compared to other exposure routes, like](#) drinking contaminated water. Furthermore, the health benefits of eating fresh produce [generally outweigh the risks](#) associated with PFAS exposure from plants.

How can I reduce my exposure to PFAS from garden produce that was irrigated with contaminated water or grown in contaminated soil?

- To reduce PFAS uptake in garden produce, consider growing produce in raised beds with clean soil, avoid the use of PFAS-containing fertilizers, and use rainwater or an alternative water source to irrigate crops if there is

groundwater contamination nearby. *Note: DEC regulations ([AS 46.03.710](#) & [AS 46.03.745](#)) prohibit the continued use of contaminated wells for all purposes, including watering gardens, because they may create new sources of PFAS exposure.*

- To reduce dietary exposure to PFAS from fruits and vegetables irrigated with PFAS-contaminated water or grown in PFAS-contaminated soil, wash fruits and vegetables in clean water before eating them, and peel root vegetables.

Should I be concerned about exposure to PFAS from contaminated fish?

- Long chain PFAS (e.g., PFOS, PFOA, PFNA, and PFHxS) have been shown to bioaccumulate in fish, creating a potential route of human exposure through consumption of contaminated fish.
- Because the health effects of PFAS contamination are not yet well understood, federal health officials and most states (including Alaska) do not currently have fish consumption guidance for PFAS chemicals. However, the EPA has developed a reference dose (RfD) for PFOS and PFOA and ATSDR has developed MRLs for the four compounds discussed above.
- Both the RfD and the MRL are intended to provide an estimate of the amount of a chemical a person can eat, drink, or breathe each day without a detectable increase in the risk of non-cancerous health effects in chronic exposure scenarios.
- Consumption of contaminated fish could result in exposure to PFAS at levels that exceed EPA's RfD and ATSDR's MRL, depending on the concentrations in the fish, and the amount and frequency of consumption.

Where can I find information about PFAS contamination in Alaska fish?

- All fish sampled for PFAS by the Office of the Alaska State Veterinarian [Fish Monitoring Program](#) have had very low, or undetectable amounts of PFAS. Fish included in the monitoring program are not collected from sites with known PFAS contamination, and are considered to be representative of background levels in fish from Alaska. Visit the [Alaska Fish Monitoring Program](#) page online, or call 907-375-8200 with additional questions.
- On 4/3/19, the Alaska Department of Fish and Game issued the following [Emergency Order](#): *“Surface water in Kimberly and Polaris Lakes have tested to exceed EPA and DEC action levels for PFAS. As a precautionary measure, Kimberly Lake and Polaris Lake are closed to sport fishing effective immediately, and will not be stocked until additional information becomes available.”* DEC has made testing results for these two lakes available online here: [Kimberly Lake](#) and [Polaris Lake](#). Visit our fact sheet on PFAS in fish from [Kimberly Lake](#) for more information.

Should I be concerned about exposure to PFAS from game meat?

- Studies show that PFAS do not typically accumulate to levels of concern in the muscle of game animals, so game meat is not considered a significant route of PFAS exposure to humans. In Michigan, one deer living in a marsh with known PFAS contamination was found to have levels of PFAS in the muscle that exceeded the state's action levels. No other deer in the sample area that were tested had unsafe levels of PFAS, and it is unknown how PFAS could have accumulated to such high levels in the muscle of the contaminated deer. Out of an abundance of caution, a recommendation to avoid eating meat from deer living in/near the marsh was issued. Michigan has tested at least 147 other deer, including those living near water sources with known PFAS contamination, and none had levels of PFAS in the muscle that exceeded the state's action levels.
- However, animal [livers](#) have the potential to accumulate high levels of many contaminants, including PFAS. You may want to consider limiting consumption of animal liver to avoid exposure to environmental contaminants, including PFAS.

Is a blood test for PFAS routinely recommended for people who have been exposed?

- Blood testing for PFAS is not currently a routine test offered by most doctors or [health departments](#). This is because scientists do not know how blood levels of PFAS correspond with effects on health. As such, blood test results are not helpful to clinicians developing treatment plans or assessing health risks for patients at this time.

What should I do if I would like to get tested for PFAS even though it is not routinely recommended?

- If you would like to get you or your family tested for PFAS, you should contact your health care provider. Measuring a person's exposure to PFAS and monitoring potential impacts on an individual patient's health is best served by the relationship between a patient and their health care provider.
- If you choose to get a blood test, please consider that:
 - The test results will not determine if your health problems are due to PFAS exposure
 - Your health insurance may not cover testing; if you pay out-of-pocket, testing can cost hundreds of dollars
 - You will need a health care provider or clinic to collect, process, and send your blood sample to a laboratory that can run the test

Is state funding available to pay for PFAS testing for Alaskans who would like to get tested?

- No, state funds are not currently available to pay for blood testing for PFAS.

Will the responsible party reimburse me for the cost of a blood test if I chose to pay out-of-pocket?

- If your drinking water has been contaminated with PFAS and you have paid out-of-pocket for a blood test, you may file a claim with the responsible party to request reimbursement. *Be aware that filing a claim with the responsible party does not guarantee reimbursement.*
- DHSS is not involved with any part of the claim/reimbursement process.
- If the Department of Transportation (DOT) is the party responsible for contamination of your well, you can find more information about the claims process by [contacting the Alaska DOT](#) (phone: 907-465-2183)

Where can I get more information about PFAS?

- Visit the [Alaska DEC](#) Contaminated Sites webpage to learn more about PFAS sites in Alaska, or call 907-269-7545
- [ATSDR](#) also has a list of [FAQs](#) and information on [talking to your doctor](#) about PFAS exposure on their webpage.
- The [Northwest Pediatric Environmental Health Specialty Unit \(PEHSU\)](#) is available for clinician consultation regarding PFAS exposures in Alaska. PEHSU can be reached by phone at: 1-877-543-2436 or via email at pehsu@u.washington.edu.