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Fact Sheet on Perfluoroalkyl Substances (PFAS) in Drinking Water

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. Because of these beneficial properties, PFAS are applied to a wide variety of industrial, commercial, and consumer products.
- PFAS do not break down easily, and can be transported long distances in water. As a result, they are widely distributed throughout the environment and most people have been exposed to PFAS from one or more sources.
- Some of the main sources of PFAS exposure include drinking contaminated water, eating contaminated food, or contact with PFAS-containing consumer products (like waterproof clothing or rain gear, non-stick cookware, or stain-resistant fabrics).
- Aqueous film forming foam (AFFF) used to extinguish petroleum and chemical fires contains PFAS. Use of these foams at airports and fire training centers is a source of environmental contamination that can impact nearby drinking water sources.

How can PFAS affect my health?

- Research with animals has shown that exposure to certain types of PFAS can affect several body systems. However, it is important to note that these studies typically use much higher exposure levels than humans commonly experience, and not all effects are expected to occur to the same degree in humans (due to differences between species).
- Scientists are still determining how long-term, low-level exposure to PFAS may affect human health. Studies of highly exposed communities show a probable link between exposure to certain types of PFAS and effects on the:
    - 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

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

- Because of the prevalence of PFAS in the environment and consumer products, almost all people and animals have been exposed to PFAS at some time. According to the federal Agency

for Toxic Substances and Disease Registry (ATSDR), most people have more than one type of PFAS present in their blood. At this time, there are no medical interventions that will remove PFAS from the body. The best intervention is to stop the source of exposure.

What levels of PFAS are considered unsafe?

- The U.S. Environmental Protection Agency (EPA) has issued a drinking water lifetime health advisory (LHA) of 70 parts per trillion (ppt) for two types of PFAS, called PFOS (perfluorooctanesulfonic acid) and PFOA (perfluorooctanoic acid). The EPA's LHA is intended to prevent adverse health effects associated with consuming water containing PFOS and PFOA over a lifetime, even for sensitive populations.
- The EPA LHA value was based on the available scientific evidence at the time regarding the potential health effects of PFAS. Historically, most research has been done on PFOS and PFOA. Recently, new scientific studies have become available that suggest other PFAS compounds (e.g., PFNA, PFHxS, and PFHpA) may also pose a health risk.
- Because of this new information, the Alaska Department of Environmental Conservation (DEC) issued more stringent guidelines on PFAS in groundwater (08/21/18). The new guidelines state that the sum of all five PFAS compounds of concern (i.e., PFOS, PFOA, PFNA, PFHxS, and PFHpA) must be below 70 ppt in drinking water to ensure that human health is protected.

What do I do if my drinking water is contaminated with PFAS?

- If the sum concentration of the five PFAS of concern in your drinking water is above the DEC action level of 70 ppt, immediately stop drinking the water and stop using it to prepare baby formula. Consider finding a clean water source for pets and other animals.
- Do not use the contaminated water when cooking or washing food if the sum concentration of the five PFAS of concern is 70 ppt or more. Heating or boiling contaminated water does not remove PFAS.

How can I reduce my exposure?

- Certain technologies are effective at removing many type of PFAS from drinking water, including 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)

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 vegetables that were watered using contaminated tap water?

- Plants may absorb small amounts of PFAS through their roots, which can be distributed to other parts of the plant. The amount taken up will vary based on the PFAS concentration, the types of PFAS in the water, and the type of produce grown. Ultimately, exposure to PFAS through vegetables is not likely to be substantial compared to other exposure routes (e.g. drinking contaminated water), so the health benefits of eating fresh vegetables may outweigh the risks associated with PFAS exposure. Prior to eating, it is best to wash vegetables with clean water, and consider peeling root vegetables. To reduce PFAS uptake in garden vegetables, consider growing produce in raised beds with clean soil using rainwater or an alternative water source.
- 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.

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

- Out of all fish sampled for PFAS by the Office of the Alaska State Veterinarian to date, the majority have not had detectible amounts of PFAS and none have had levels of PFAS that are considered unsafe for human consumption. However, all of the fish sampled so far have been from marine environments, and little is known about PFAS concentrations in the muscle of freshwater fish in Alaska. For more information, contact the Alaska Fish Monitoring Program (phone: 907-375-8200).
- 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 the 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 tests have not been shown to be helpful for clinicians to develop treatment plans or assess potential health risks for their patients.

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 DHSS offering to pay for PFAS testing for Alaskans who would like to get tested?

- No. DHSS does not currently have funds to pay for PFAS testing.

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?

- To learn more about PFAS contaminated sites contact the Alaska DEC contaminated sites program (phone: 907-269-7545)
- To learn more about health effects of PFAS contact the EPHP (phone: 907-269-8000)
- ATSDR also has additional resources available online, including a list of FAQs and information on talking to your doctor about PFAS exposure.
- 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.