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PFOS, PFOA and other PFAS Questions and Answers

What are PFOS, PFOA and PFAS?

PFOS and PFOA belong to a family of chemicals referred to as perfluoroalkyl substances or PFAS for short. PFOS (perfluorooctanesulfonic acid) and PFOA (perfluorooctanoic acid) are two chemicals in this family that were made in the largest amounts in the United States. Some other chemicals in this family that have been found in Maine soils and water are:

- PFNA (perfluorononanoic acid)
- PFHxS (perfluorohexanesulfonic acid)
- PFHpA (perfluoroheptanoic acid)

PFOS and PFOA were used for a long time in many household and industrial products. These chemicals were used to make products to repel water and resist stains and grease. PFOS and PFOA were used to make carpet, fabric, clothing, food packaging, pots and pans, and personal care products. They were also used in some factories and were a key ingredient in some fire-fighting foams. Most companies have stopped using these two chemicals.

How might you come into contact with PFOS, PFOA and other PFAS?

Almost everyone has some PFOS or PFOA in their bodies because these chemicals were in so many consumer products and for many years. For most of us, the amount of these chemicals in our bodies have been decreasing as the use of PFAS in consumer products has been phased out.

Low levels of PFOS, PFOA and other PFAS are also present in our environment. Higher levels are sometimes found near airfields that may have used fire-fighting foams, factories that used these chemicals, or land with a history of using certain waste materials or biosolids containing PFOS, PFOA, or other PFAS.

Crops may be grown on soil that has these PFAS, but how much of these chemicals are in the crop depends on the type of crop, what part of the crop is edible, soil properties, and levels in the soil. These chemicals may end up in the milk and meat of animals fed crops like hay containing PFAS. These chemicals can also move from the soil into the ground water and into well water. Consuming contaminated milk, meat, plants, or water are potential ways people can be exposed to these chemicals.

How can PFOS, PFOA and other PFAS affect my health?

Scientists are still learning about the possible health effects from being exposed to PFAS. Most health studies so far have focused on PFOS and PFOA.

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According to the U.S. Agency for Toxic Substances and Disease Registry, some, but not all, studies have shown that PFOS and PFOA may:

- increase cholesterol levels;
- decrease how well the body responds to vaccines;
- increase liver enzymes;
- increase risk of high blood pressure or pre-eclampsia in pregnant women;
- decrease infant birth weight.

It is unclear if PFAS exposure directly causes cancer. Some studies show people exposed to high levels of PFOA may have an increased risk of kidney cancer or testicular cancer. Fewer studies have found a link between PFOS and increased cancer-risk. The studies on PFAS exposure and cancer all have limitations. For example, not all PFAS studies have made sure that other known risk-factors like smoking are not the cause of cancer. Some studies with laboratory animals, mostly with PFOA, have also shown higher exposures can cause cancer.

Should I test my blood for PFOS, PFOA, or other PFAS?

Blood test results will only tell you the levels of PFOS, PFOA and other PFAS in your blood and whether they are high or low compared to typical levels found in the United States population. Most people in the United States have very low amounts of PFAS in their blood because of the wide-spread use in consumer products. Individuals that are consuming foods or water contaminated with PFOS, PFOA or other PFAS may have higher levels in their bodies.

A blood test will not provide information on whether any PFAS are causing a current health problem, nor will a blood test predict a health problem. There are no health-based screening levels to which your doctor can compare the levels measured in your blood. There are also no treatments that will directly result from having a blood test for PFAS.

Public health officials sometimes perform studies where they collect blood samples from a larger number of individuals to learn if there is community-wide exposure. This helps understand the kinds and amounts of PFAS exposures in a community and how they compare to other populations.

If you are concerned about a known PFAS exposure it is best to talk with your doctor to decide whether to test for these chemicals.

If you have questions about PFOS, PFOA or other PFAS in the environment, blood testing, or health effects, please contact one of our toxicologists at 866-292-3474 (toll-free in Maine), 207-287-4311, or Maine Relay 711.

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PFOS, PFOA and other PFAS Questions and Answers

What are PFOS, PFOA and PFAS?

PFOS and PFOA belong to a family of chemicals referred to as per- and polyfluoroalkyl substances or PFAS for short. PFOS (perfluorooctanesulfonic acid) and PFOA (perfluorooctanoic acid) are two chemicals in this family that were made in the largest amounts in the United States. Some other chemicals in this family that have been found in Maine soils and water are:

- PFHpA (perfluoroheptanoic acid)
- PFNA (perfluorononanoic acid)
- PFDA (perfluorodecanoic acid)
- PFHxS (perfluorohexanesulfonic acid)

PFOS and PFOA were used for a long time in many household and industrial products. These chemicals were used to make products to repel water and resist stains and grease. PFOS and PFOA were used to make carpet, fabric, clothing, food packaging, pots and pans, and personal care products. They were also a key ingredient in some fire-fighting foams. Most companies have stopped using these two chemicals but some other PFAS are still in use.

PFOS, PFOA, and other PFAS can be found in our environment. Sometimes they are found at higher levels in soils and groundwater near airfields that used fire-fighting foam, factories that used these chemicals, or in areas with a history of land-spreading of waste materials containing PFAS. This means that some water sources including private wells may contain these chemicals.

Is there PFAS in your well water?

Testing for PFAS in private wells is usually only performed when there is reason to think there could be water contamination. Testing for these chemicals in water is expensive and only done by a few laboratories that are located outside of Maine. Some Maine laboratories are providing a service of shipping water samples to out-of-state laboratories for PFAS testing.

Understanding Well Water Test Results for PFAS

Laboratory test results will usually be reported using units of nanograms of chemical per liter of water and these units will often be abbreviated as ng/L. Some test results may be reported as parts per trillion, abbreviated as ppt, which means the same thing as ng/L. Results for each individual PFAS will be shown separately. There may be results for over 20 different PFAS on the laboratory report.

Contact one of our toxicologists if you need help understanding your test results at 866-292-3474 (toll-free in Maine), 207-287-4311, or Maine Relay 711.

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How much is too much PFAS in well water?

In June 2021, the Maine Legislature established a new interim State drinking water standard of 20 ng/L for the combined sum of six different PFAS: PFOA, PFOS, PFHpA, PFNA, PFDA, and PFHxS. If your water has more than 20 ng/L for the sum of these six PFAS, it does not necessarily mean you will have health problems. It does mean that you should take action to reduce the amount of the contaminated water you are drinking.

What are the health effects of PFAS?

Scientists are still learning about the possible health effects from drinking water with PFAS in it. Most people have low amounts of these chemicals in their blood because they were used for several decades in many household and industrial products. Drinking water with PFAS can result in higher levels of these chemicals in the blood.

According to the U.S. Agency for Toxic Substances and Disease Registry, some, but not all, studies in people who have higher PFOS or PFOA levels in the blood have shown that these chemicals may:

- increase the risk of kidney and testicular cancer;
- increase cholesterol levels;
- increase the risk of high blood pressure or pre-eclampsia in pregnant women;
- lower infant birth weights; however, the decrease in birth weight is small and may not affect the infant's health;
- decrease how well the body responds to vaccinations;
- cause changes in liver enzyme levels.

Contact one of our toxicologists if you are concerned about PFAS and your health at 866-292-3474 (toll-free in Maine), 207-287-4311, or Maine Relay 711.

What do you do if you have too much PFAS in your water?

What you do depends on how much PFAS is in your water, how much water you use, and who is using the water. To reduce the amount of PFAS you take in, you can switch to bottled water for drinking, and making drinks such as coffee, tea, juice, and infant formula. Use of PFAS containing water for cooking on a short-term basis, or use of water for bathing or watering your garden is unlikely to be a concern unless your water levels of these chemicals are very high.