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# Frequently Asked Questions: PFAS in Recreationally Caught Freshwater Fish

## *What are PFAS?*

PFAS refers to a family of chemicals known as per- and polyfluoroalkyl substances. PFAS have been used for a long time in many household and industrial products to make them able to repel water and resist stains and grease. PFAS were used to make carpet, fabric, clothing, food packaging, pots and pans, and personal care products. PFAS were also key ingredients in some fire-fighting foams. The use of some PFAS chemicals in manufacturing has been phased out. Some of these chemicals can persist for a very long time once released into the environment and can remain in our bodies long after our exposure has stopped.

## *Why is PFAS in freshwater fish?*

PFAS found in freshwater fish are typically connected to sites associated with historical use of PFAS-containing products. These sites include areas with historical use of firefighting foams, industrial sites that used or processed PFAS, and fields with a history of land-spreading materials used for fertilizer that likely contained PFAS. PFAS may have either entered surface waters directly or been transported into ponds and other surface waters during heavy rains or by leaching into ground water. Fish that live in contaminated waterbodies accumulate PFAS in their tissues.

Perfluorooctane sulfonate (PFOS) is the predominant, and sometimes only, PFAS detected in fish tissue.

## *How are PFAS fish consumption advisories established?*

Fish consumption advisories are recommendations on the amount of fish from a specific waterbody that is safe to consume (*e.g.*, fish meals per week, month, or year). The recommendation is informed by the measured concentration of contaminants in a sample of fish obtained from a specific waterbody. Fish consumption advisories apply to the consumption of all sport fish in a water body unless more specific advice is provided. Generally speaking, the greater the contamination in fish, the less you should consume.

The underlying basis for a consumption advisory is an established toxicity criterion, which represents a level of contaminant that an individual can be exposed to every day with minimal risk of experiencing adverse health effects. Consistent with the U.S. Food and Drug Administration, Maine Center for Disease Control and Prevention (Maine CDC) recently adopted use of the “minimal risk levels” (MRLs) from the federal Agency for Toxic Substances and Disease Registry’s May 2021 Toxicological Profile for Perfluoroalkyls as the toxicity criteria to evaluate a safe level of exposure to PFAS.

The Maine CDC follows standard U.S. Environmental Protection Agency (EPA) guidance to develop fish consumption advisories. Maine CDC uses chemical-specific fish tissue action levels (FTALs) as a guide to determine the need to develop fish consumption advisories. FTALs are a concentration of a contaminant, in this case the specific PFAS called PFOS, in fish tissue below which there should be minimal risk of health effects at a certain fish consumption rate (*e.g.*, meals per week, month, or year). Measured concentrations of PFOS in fish tissue are compared to the FTALs and when fish tissue concentrations exceed a FTAL, the development of a fish consumption advisory is considered.

For more information on how Maine CDC developed the PFOS FTAL, visit https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/fish/documents/pfas-fish-science-brief-05052022.pdf.

## *Why are PFAS advisories being issued now?*

Maine CDC recently updated the PFOS FTALs to reflect the latest science on the toxicity of PFOS. This resulted in a PFOS FTAL that is roughly 10 times lower than what was previously being used. Because of the lower toxicity value, Maine CDC reevaluated the need for fish consumption advisories on several waterbodies throughout the state where the Maine Department of Environmental Protection (DEP) had previously collected fish tissue data. Maine CDC also evaluated new fish tissue data obtained by the DEP from several waterbodies in areas of the state where there has been growing concern about environmental PFAS contamination.

## *Should I be concerned about eating fish from other waterbodies throughout the state?*

Maine CDC, in collaboration with Maine DEP and the Maine Department of Inland Fisheries and Wildlife (MDIFW), is evaluating fish tissue data from several additional waterbodies to determine if more waterbody-specific fish consumption advisories are needed. State agencies are developing sampling plans for the upcoming summer to collect fish from new waterbodies to continue to investigate the presence of PFOS and other PFAS in fish from inland waters.

The existing statewide fish consumption advisory due to the presence of mercury in fish along with other waterbody-specific advisories will provide a measure of protection against exposure to PFAS that may be present in fish while we learn more. The statewide mercury consumption advisory is:

> **Pregnant and nursing women, women who may get pregnant, and children under age 8** SHOULD NOT EAT any freshwater fish from Maine's inland waters. The exception is brook trout and landlocked salmon, for which these groups may safely consume 1 meal per month.
>
> **All other adults and children 8 years and older** CAN EAT 2 freshwater fish meals per month. For brook trout and landlocked salmon, the limit is 1 meal per week.

Preliminary sampling of surface waters located throughout the State with no known sources of PFAS contamination have suggested that tissue levels of PFOS in fish in these lakes and ponds are generally low (less than 5 parts per billion). Fish caught from these waterbodies are considered safe for consumption, provided that people are following the existing statewide fish consumption advisory due to the presence of mercury in fish.

### *Is there a way of cleaning or cooking fish to get rid of PFAS?*
No. You cannot get rid of PFAS by cooking, cleaning, or removing certain parts of the fish.

### *Should I be concerned if I have eaten fish from one of the advisory areas?*
Eating fish from one of the advisory areas doesn't necessarily mean that you or your family will become ill. Your risk of any health effects will depend on how much fish you have eaten and how often you eat fish caught from these areas.

If you have questions about your PFOS exposure from eating fish or potential health effects, please contact a Maine CDC toxicologist at 866-292-3474 (toll-free in Maine), 207-287-4311, or Maine Relay 711.

### *Is it safe to still go fishing if I don't eat the fish?*
Yes, fishing in these waterbodies is a safe activity so long as you follow the consumption advice.

### *Can I safely swim, wade, or boat in waterbodies that have PFAS fish consumption advisories?*
Yes, potential exposure to PFAS associated with swimming, wading, and boating would be much less than exposure from drinking water or eating fish containing PFAS. These recreational activities are considered safe because they would not result in significant exposure to PFAS and because very little PFAS are absorbed through the skin.

### *What are the health effects of PFAS?*
Scientists are still learning about the possible health effects from exposure to PFAS. Most people have low amounts of these chemicals in their blood because PFAS were used for several decades in many household and industrial products. Regularly eating fish 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 levels of certain PFAS in the blood have shown that these chemicals may:

- increase the risk of kidney and testicular cancer;
- 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 vaccine response in children;
- increase cholesterol levels;
- cause changes in liver enzyme levels.

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