

WHAT ARE PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of chemicals used since the 1950s to manufacture stain-resistant, water-resistant, and non-stick products. PFAS are widely used in common consumer products such as food packaging, outdoor clothing, coatings, carpets, leather goods, and other products.

BACKGROUND

The Environmental Toxicology Program in the DPH Bureau of Environmental Health routinely issues advice based on the identification of contamination in environmental samples, such as water and food.

In March 2023, DPH issued public advice on the safe use of recreational waterbodies that are located at 20 different state parks operated by the Department of Conservation and Recreation (DCR).

This advice is based on the identification of PFAS contamination that was measured in fish and surface water samples that were collected as part of a statewide surveillance effort during the late spring and summer months of 2022.

DPH issued specific recommendations on activities such as swimming and the consumption of fish caught from these waterbodies.

This is only the second time that recreational fish consumption advisories have been issued based on the presence of PFAS in fish collected in the Commonwealth of MA.

The advice included recommendations for the following 13 communities and waterbodies:

1. Ashland (Ashland Reservoir)
2. Chicopee (Chicopee Reservoir)
3. Concord (Walden Pond)
4. Douglas (Wallum Lake)
5. Gardner (Dunn Pond)
6. Milton (Houghtons Pond)
7. Natick, Framingham, and Wayland (impacted by the Lake Cochituate advisory)
8. Plymouth (Fearing Pond)
9. Saugus (Pearce Lake)
10. Taunton (Watsons Pond)
11. Westfield (Pequot Pond)
12. Winchendon (Dennison Lake)
13. **Worcester / Shrewsbury (Lake Quinsigamond)***

*LAKE QUINSIGAMOND SAMPLING LOCATIONS

- Lake Park Beach (42.2593, -71.7515)
- Regatta Point Beach North (42.2774, -71.7573)
- Regatta Point Beach South (42.2766, -71.7574)

PFAS was found in fish at every waterbody where they were sampled. Consistent with last year's advisories, DPH is recommending that sensitive populations (such as young children or people who are pregnant, nursing, or planning to become pregnant) not eat certain fish, or refrain from unlimited (or daily) consumption at certain waterbodies. PFAS was **not** found at levels that would be unsafe for swimming or recreational activities in any of the waterbodies that were sampled. In addition to the freshwater locations mentioned above, surface water was also found to be safe for swimming or recreational activities at seven marine (or saltwater) beaches, including Carson, Constitution, Savin Hill, and Tenean Beaches in Boston Harbor; Revere Beach in Broad Sound; Kings Beach in Nahant Bay; and Wollaston Beach in Quincy Bay.

WHAT ARE THE ACCEPTABLE STANDARDS FOR PFAS IN FISH?

When chemical contaminants such as PFAS are identified in food, health agencies conduct a safety assessment to evaluate whether levels present in food present a possible human health concern. The DPH approach considers a number of factors, including whether there is an established state or federal “action level”, how much of the specific food people eat, the level measured in the food, and the potential toxicity of the contaminant.

Fish Consumption Advisories are typically risk-based recommendations on a level of fish consumption (e.g., servings per day, week, month, or year) informed by the measured concentration of contaminants in a sample of fish that are representative of a specific waterbody. As the concentration of chemicals in fish increases, the amount of fish that you should eat decreases.

The underlying basis for the recommendation is a “toxicity criterion”, which represents a level of a contaminant that an individual can be exposed to every day without experiencing adverse health effects.

Consistent with the US Food and Drug Administration, DPH preferentially uses the “minimal risk levels” (MRLs) from the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate a safe level of exposure to PFAS. If MRLs are not available, US EPA RfDs are used, if available.

WHY IS DPH MEASURING PFAS IN WATERBODIES AT STATE PARKS?

Since 2015, PFAS have been detected in groundwater, surface water, and residential drinking water wells, associated with contaminated sites in MA. Surveillance of surface water by the MA Department of Environmental Protection (MassDEP) and the US Geological Survey indicates that PFAS may be present in one localized area as high as 259 parts per trillion (ppt), for sum of the 6 PFAS regulated by MassDEP. As PFAS in surface water may not always be associated with any known point-source or site-related contamination, it is important to determine if these locations are safe for recreational activities such as swimming and fishing.

Given that PFAS are chemicals of toxicological concern with widespread occurrence in the environment, DPH initiated surveillance of surface water and fish, to evaluate whether waterbodies are safe for swimming, and whether fish are safe for eating. During the late spring and summer of 2022, DPH initiated a project to sample state-operated waterbodies that have a DPH issued permit for swimming.

HOW DO PEOPLE GET EXPOSED TO PFAS?

While consumer products and food are a large source of exposure for most people, drinking water can also be a source in communities where these chemicals have contaminated the water supplies. Such contamination is typically localized and associated with a specific facility, (e.g. an industrial facility where these chemicals were produced or used to manufacture other products or where firefighting foam was used).

HOW CAN PFAS AFFECT MY HEALTH?

In people, exposure to certain PFAS has been associated with increased cholesterol and liver enzymes, decreased response to vaccines in children, and increased risk of high blood pressure or pre-eclampsia during pregnancy. PFAS have also been shown to cause slightly decreased birth weights. There is also evidence that long-term exposure to elevated levels of some of these PFOA may increase the risk of both kidney and testicular cancer in humans.

It's important to keep in mind that the likelihood of experiencing health effects associated with PFAS depends on the amount of PFAS that a person has been exposed to, considering concentrations in environmental media, as well as frequency and duration of exposure. It's also important to keep in mind that health effects associated with PFAS may not be traced specifically to PFAS – they can also be caused by many other factors. As a result, it is not possible to definitively link a person's PFAS exposure to any previous, current, or future health effects. If you have specific health concerns, you should consult with your medical provider.

Despite extensive research, there are still some gaps in scientists' understanding of PFAS toxicity. At this time, scientists are still learning about the health effects of exposures to PFAS mixtures and about differences in how laboratory animals and humans respond to PFAS. Additional research may improve our understanding of the relationship between PFAS exposure and human health effects.

LINKS TO FREQUENTLY ASKED QUESTIONS ON PFAS IN FISH AND AT BEACHES

- [PFAS \(Per- and Polyfluoroalkyl Substances\) in Recreationally Caught Fish](#)
 - [PFAS in fish factsheet \(pdf\)](#)
- [PFAS and Swimming](#)

These pages can be translated to many languages by using the “Select Language” button in the top blue ribbon. To return to English, select “Options” (top right of page), and then “Turn off translation for this site.”

ADDITIONAL RESOURCES

Where can I find out more information about PFAS?

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

Where can I find out more information about Recreational Fish Consumption Advisories?

<https://www.mass.gov/lists/fish-consumption-advisories>

Where can I find out more information about PFAS in recreationally caught fish?

<https://www.mass.gov/info-details/pfas-per-and-polyfluoroalkyl-substances-in-recreationally-caught-fish>

Where can I find out more information about PFAS and Swimming?

<https://www.mass.gov/info-details/pfas-and-swimming>

Where can I find more information about the results from last year?

<https://www.mass.gov/doc/dph-pfas-pilot-results-summary/download>

**If you have additional questions about this issue in MA, please contact:
The Environmental Toxicology Program at the MA Department of Public Health
617-624-5757**