PFAS Concentrations in Surface Water and Fish Tissue at Selected Rivers and Lakes in Massachusetts

MassDEP Watershed Planning Program

December 2023






SURFACE WATER

52 Waterbodies

11 Beaches

FISH TISSUE

47 Waterbodies

948 Fish

242 Composite samples

16 Species

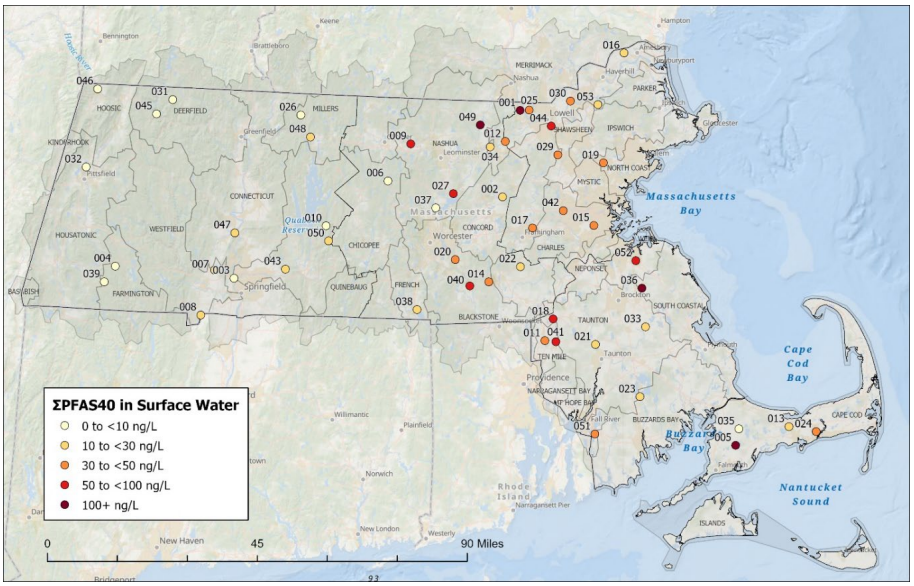
WHAT ARE PFAS?

Per- and poly-fluoroalkyl substances (PFAS) are a large class of fluorinated synthetic chemicals that tend to break down slowly and build up in humans, wildlife, and the environment. They are highly persistent and toxic and have been found in many drinking water supplies, fish tissue, and other environmental media.

In the ongoing effort to better understand the environmental burden and human exposure to PFAS in Massachusetts, the MassDEP Watershed Planning Program completed a study to characterize PFAS concentrations in surface water and edible tissue of commonly consumed freshwater fish from lakes, ponds, and rivers across the Commonwealth.

In the summer and fall of 2022, surface water and fish tissue samples were collected from 52 waterbodies, of which 46 were near known or suspected sources of PFAS and six were "reference" waterbodies with no proximity to known or suspected PFAS sources. Samples were analyzed for 40 PFAS.

This factsheet provides a very abbreviated snapshot; full results are available at https://www.mass.gov/info-details/pfas-in-surface-water-and-fish-tissue.



The sum of the 40 PFAS analytes (ΣPFAS40) included in the study are reported by waterbody for the surface water samples in the map to the left.

- All waterbodies had detectable levels of at least one PFAS analyte
- Median ΣPFAS40 across all sites was 23.7 ng/L
- The highest ΣPFAS40 water concentrations were found in Ashumet Pond on Cape Cod (460 ng/L) and Studley Pond (396 ng/L) in SE Mass.

WATER SAMPLES

Analyte	FOD (%)	Median (ng/L)
PFOA	100	5.70
PFBS	92.3	2.20
PFHpA	92.3	2.58
ΣPFAS40	--	23.7

FISH SAMPLES

Analyte	FOD Among Composites (%)	FOD Across Waterbodies (%)	Median (ng/g)
PFOS	99.1	100	5.70
PFUnA	94.6	97.9	0.72
PFTrDA	93.8	97.9	0.37
ΣPFAS40	--	--	9.00

FOD: Frequency of detection (as % of samples) for specific analytes. Tables present results only for the three analytes with the highest FOD and for ΣPFAS40. [ng/l=nanograms/liter (ppt); ng/g=nanograms per gram (ppb)]

None of the water or fish tissue samples exceeded EPA's Draft Aquatic Life Ambient Water Quality Criteria for PFOA and PFOS.

ΣPFAS40 is reported by waterbody for the fish tissue samples in the map to the right.

- PFAS were detected in at least one fish sample from all waterbodies
- Median ΣPFAS40 across all sites and species was 9.0 ng/g
- The highest average ΣPFAS40 tissue concentrations were found in Ashumet Pond (194.2 ng/g) and Studley Pond (109.0 ng/g)