**Massachusetts Department of Public Health**

**Operational Guidance for Bathing Beaches**

**at PFAS Impacted Waterbodies**

**May 22, 2024**

**Purpose**

This document provides operational guidance for municipalities and beach operators on evaluating and managing bathing beaches at waterbodies impacted by per- and poly-fluoroalkyl substances (PFAS).

**Regulatory Authority**

The Massachusetts Department of Public Health (DPH) bathing beach regulations govern the operation of public and semi-public beaches (i.e., bathing beaches) at waterbodies in Massachusetts (105 CMR 445; part of the State Sanitary Code). PFAS compounds are hazardous materials which, when present in waterbodies intended for swimming (*i.e.,* those with bathing beaches), may constitute a menace to public health (105 CMR 445.030). To assist with the risk management of this hazard, DPH has developed health-based guidance values for PFAS to determine whether the beach water is unfit for swimming activities and corresponding response actions for when PFAS concentrations exceed these guidance values.

Municipalities and beach operators are not required to test bathing beaches for PFAS. However, testing may be conducted at waterbodies for different reasons, including their proximity to a known PFAS source, or as part of surveillance efforts conducted by DPH and the Massachusetts Department of Environmental Protection (MassDEP).

**Note:** The state of the science of PFAS and their associated human health effects is constantly evolving, and many aspects of PFAS in the environment are not well understood. Furthermore, US EPA has recently proposed updated final Maximum Contaminant Levels (MCLs) for PFAS in drinking water. Therefore, it is likely that the content of this document will change as more is learned about the health risks of PFAS.

**Evaluating PFAS in Bathing Waters**

*Sampling Location*

Water samples used for evaluating PFAS risk to swimmers should be collected from a location within the area of greatest usage and where the water depth is approximately 1-1.5 feet. If possible, sampling should be done at the same location used for bacterial testing. Available surveillance data of surface water PFAS levels for samples collected outside the beach swimming area may be useful for informing if bathing water should be tested but should not be used to determine swimming restrictions.

*Guidance Values*

DPH’s health-based guidance values apply to concentrations of individual PFAS compounds for which there are established toxicity criteria. To date, this includes:

* Perfluorobutanoic acid (**PFBA**)
* Perfluorobutane sulfonic acid (**PFBS**)
* Perfluorohexanoic acid (**PFHxA**)
* Perfluorohexane sulfonic acid (**PFHxS**)
* Perfluorooctanoic acid (**PFOA**)
* Perfluorooctane sulfonic acid (**PFOS**)
* Perfluorononanoic acid (**PFNA**)
* Hexafluoropropylene oxide dimer acid **(HFPO; also known as GenX)**

Technical details on the development of these guidance values can be found in DPH’s *Technical Support Document for Evaluation of PFAS in Recreational Waterbodies* (see References section).

DPH uses 20 nanograms per liter (ng/L) as an initial conservative screening value. If levels of individual PFAS compounds in bathing water are at or below 20 ng/L, no action is required from Local Boards of Health (LBOHs) and/or beach operators.

|  |  |
| --- | --- |
| **DPH Screening Value for PFAS in Bathing Waters:** | **20 ng/L** |

For bathing waters where at least one PFAS compound is measured above the screening value, DPH developed a tiered approach for determining whether swimming activity should be restricted at the beach (Table 1), where the tier is determined by using the PFAS compound with the highest concentration among the compounds tested.

DPH’s approach is to base any determination of swimming restrictions on the results of at least two rounds of sampling. In other words, if an initial sample is found to have a PFAS compound with levels above 20 ng/L, a second “confirmatory” sample should be collected. In general, when the confirmatory sample result falls within a different “tier” than the initial sample, the higher result of the two samples is used to evaluate the bathing beach water.

Table 1. DPH Guidance Value Tiers for Assessing PFAS Risk in Bathing Water

|  |  |
| --- | --- |
| Guidance Value [ng/L] | Bathing Water Quality Evaluation |
| >20 - 90 | No restrictions on swimming |
| >90 - 500 | DPH conducts beach-specific evaluation to determine whether restrictions on swimming are appropriate |
| >500 | Swimming prohibited |

At levels greater than 20 ng/L and at or below 90 ng/L, bathing water is considered safe for swimming, and no restrictions are necessary.

At levels greater than 90 ng/L and at or below 500 ng/L, DPH performs a beach-specific evaluation to determine whether swimming should be restricted. The resulting recommendation may range from no restriction, a partial restriction (*e.g.,* limit swimming to twice weekly), or a full restriction. As part of this evaluation, DPH may ask for the following information from the municipality or beach operator:

* Waterbody usage (primary uses – swimming/fishing/recreation)
* Frequency of usage (peak season/timeframe of maximum beachgoers)
* Public access points to the waterbody
* Any previous testing or assessment performed at the waterbody (e.g., sanitary surveys, watershed studies, etc.)

At levels above 500 ng/L, swimming should be prohibited (“full restriction”).

**Response Actions**DPH’s risk management approach calls for different response actions depending on the level of swimming restriction. These actions are summarized in Table 2 and described in detail below.

Table 2. Summary of Risk Management Approach for Beaches at PFAS-Impacted Waterbodies

|  |  |
| --- | --- |
| Swim Restriction Level | LBOH Response Actions |
| No Restriction | * Post sign at beach to notify public that PFAS were detected, but water is safe for swimming
* DPH coordinates with LBOH on conducting annual follow-up sampling for 2 years
 |
| Partial Restriction | * Notify residents and affected homeowners that water is partially restricted to swimming
* Post sign at beach stating that it is safe to swim within the specified limits/parameters
* DPH coordinates with LBOH on conducting annual follow-up sampling for 2 years
 |
| Full Restriction | * Notify residents and affected homeowners that water is unsafe for swimming
* Post “No Swimming” sign at beach
* DPH coordinates with MassDEP on site investigation
 |

*No Restriction of Swimming*

* LBOH and/or beach operator posts signs at the beach which include the following information:
	+ The words “PUBLIC HEALTH NOTIFICATION”
	+ The name of the specific beach and municipality
	+ Contact information of the LBOH (or DPH if a state-operated beach)
	+ Language indicating that PFAS were measured in the waterbody at levels that do not pose a health risk
	+ A reference to where beachgoers can find additional information about PFAS
		- *Recommendation: use QR code linked to online PFAS information*
* Additional samples are collected annually for at least 2 years to monitor PFAS levels in bathing water.

*Partial Restriction of Swimming*

* LBOH notifies homeowners located along the impacted beach/waterbody that the water is safe for swimming under the specified limits/parameters
* DPH coordinates with LBOH to determine if additional locations at the waterbody (beaches, access points, etc.) should be tested for PFAS
* LBOH and/or beach operator posts signs at the beach which include the following information:
	+ The words “PUBLIC HEALTH ADVISORY”
	+ The name of the specific beach and municipality
	+ Contact information of the LBOH (or DPH if a state-operated beach)
	+ Language indicating that PFAS were measured in the waterbody
	+ Language indicating children and adults can safely swim at the beach within the specified limits/parameters
	+ A reference to where beachgoers can find additional information about PFAS
		- *Recommendation: use QR code linked to online PFAS information*
* Additional samples are collected annually for at least 2 years to monitor PFAS levels in bathing water

*Full Restriction of Swimming*

* Beach closed for swimming per DPH beach regulations due to presence of a hazardous substance, per 105 CMR 445.030(C)
* LBOH notifies homeowners located along the impacted beach/waterbody that the water is unsafe for swimming
* DPH coordinates with MassDEP to conduct site investigation
* DPH coordinates with LBOH to determine if additional locations at the waterbody (beaches, access points, etc.) should be tested for PFAS
* LBOH and/or beach operator posts signs at the beach which include the following elements:
	+ The words “NO SWIMMING! SWIMMING MAY CAUSE ILLNESS”
	+ Graphic depiction of a swimmer in a red circle with a diagonal hatch mark
	+ The name of the specific beach and municipality
	+ Contact information for the LBOH (or DPH if a state-operated beach)
	+ Language indicating that PFAS has been measured in the waterbody at levels deemed unsafe for swimming
	+ A reference to where beachgoers can find additional information about PFAS
		- *Recommendation: use QR code linked to online PFAS information*
* Bacterial testing of beach may be paused while PFAS-related closure is in place

General Signage Requirements

The public notification of the presence of PFAS at public and semi-public bathing beaches should be conducted using signage that is displayed in a manner consistent with the requirements for permanent beach signs, as outlined in 105 CMR 445.020(A)-(B). Specifically, sign(s) must be posted at all entrances to the beach and parking lots and the beach operator is responsible for providing and maintaining the sign(s).

**Reducing/Lifting Swimming Restrictions**

PFAS-related swimming restrictions can be lifted or reduced (*i.e.,* from no swimming allowed to swimming allowed under certain restrictions) only after DPH has been provided with the following information:

1. An assessment which is conducted consistent with the standards of the state or federal environmental site investigation process indicates that any PFAS sources previously impacting the waterbody have been sufficiently managed. The assessment must indicate that there are no significant human health risks from PFAS with the less stringent or unrestricted use of the waterbody for swimming.
2. Results from two rounds of beach water sampling with PFAS levels below DPH guidance values. Both rounds of samples should be collected using a DPH-approved sampling and analysis plan.

LBOHs and/or beach operators wishing to conduct testing for the purpose of reducing/lifting a PFAS-related swimming restriction should contact DPH for site-specific guidance on conducting this assessment.

**References**

DPH Bathing Beach Regulations: <https://www.mass.gov/doc/105-cmr-445-state-sanitary-code-chapter-vii-minimum-standards-for-bathing-beaches/download>

DPH Technical Support Document: Evaluation of PFAS in Recreational Waterbodies in Massachusetts (v 1.0): <https://www.mass.gov/doc/technical-basis-for-issuing-fish-advisories-0/download>