**Recreational Risk Management of Surface Waterbodies: Cyanobacteria Surveillance in Massachusetts**

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# Outline

# Harmful Algae Blooms

# MDPH Guidelines

1. Environmental Monitoring Program
2. Lessons Learned
3. Future Efforts

**Harmful Algae Blooms**

## Blue-green algae/cyanobacteria occur in aquatic ecosystems

## Highly concentrated in water: harmful algae bloom (HAB)

## Ability to produce toxins

## Human and animal health concerns

## MDPH Guidelines

## Established cyanobacteria guidelines in 2008

## MDPH recommends an advisory when:

### A cyanobacteria scum is present

### A cell count exceeds 70,000 cells per milliliter of water

### A microcystin level exceeds 14 parts per billion

## Advisories remain in place until levels remain below guidelines

# MDPH Guidelines

(PICTURE OF Public Health Advisory Poster for Cynobacteria Bloom Present

Waterbody Unsafe for People and Pets

# Environmental Monitoring

## MDPH established an environmental monitoring program for recreational waterbodies:

### Monitoring strategy

### Sampling and analysis protocol

### Data evaluation

### Recommendations

# Monitoring Strategy

## Two types of HAB monitoring:

### Routine

### Response

## Once detected, samples collected weekly until advisory rescinded

# Sampling and Analysis

## Sample collection:

### Chose location based on likelihood of exposure

### Fill 1L amber bottle at a location 6 inches below the water surface, in 3 feet of water

## Water quality parameters collected in the field included:

|  |  |
| --- | --- |
| * + Air and water temp. | * Salinity |
| * Secchi disk depth | * pH |
| * Dissolved oxygen | * Turbidity |

# Sampling and Analysis

## Photographs are taken to record surface water observations

## Samples are shipped to a private laboratory for analyses:

### Genera identification

### Genera cell count

### Microcystin level

# Results

## From 2009-2014, 1,075 samples were collected from 75 waterbodies in 58 municipalities

## One-third of samples exceeded the cell count guideline

## The dominant genera in the exceeding samples were primarily *Anabaena*, *Aphanizomenon,* and *Microcystis*

## Less than 1% exceeded the microcystin guideline

# Advisories

* MDPH recommended a total of 97 public health advisories

# picture of pie chart

# Advisory Length

* In general, these advisories lasted less than 60 days

# picture of pie chartAdvisory Issuance by Month

* Majority of advisories issued in July and August

# picture of graph

# Advisory Locations

* Locations tend to be in Eastern Massachusetts

# picture of map of eastern map

# Lessons Learned

## HABs are a common in Massachusetts

### Tend to be concentrated in eastern Massachusetts

### Most frequently occur in the summer months

### May continue into the fall

## Mutual reliance

### MDPH relies on local officials/residents to report blooms

### Local officials rely on MDPH to provide technical and analytical support

## Monitoring is resource intensive

# Lessons Learned

## Photographs are important!

### A significant number of blooms are identified by photographed scums

### Helps to limit responding to issues that are clearly not HAB-related

# Lessons Learned

* Great deal of public interest in this issue

### Sampling of media reports from 2015

# Future Efforts

## Harmonize MDPH guidelines with evolving federal guidance

## Use data for development of predictive models

## Continue to provide analytical and technical assistance to local health officials, requesting agencies, and others

# Acknowledgments

## This work was partially supported by a US Centers for Disease Control and Prevention cooperative agreement and a US Environmental Protection Agency BEACH grant.

## The content of this presentation and the views expressed by the authors do not necessarily reflect the official views of our federal partners.

## State partners: MA Department of Environmental Protection, MA Department of Conservation and Recreation, local health officials, and watershed organizations