

MDPH HAB Project Accomplishments



Michael Celona, Chief, Water Toxics Unit
Environmental Toxicology Program
Bureau of Environmental Health
MA Department of Public Health

Outline

- I. MDPH Environmental Sampling & Response
- II. MDPH Human Health Surveillance
- III. MDPH Animal Health Surveillance
- IV. MDPH Education and Outreach Activities
- V. CDC and EPA websites
- VI. Planning for the Future-MDPH Activities

HABs in the News 2012

Newton officials: Crystal Lake to remain closed

Photos

Zoom



Wicked Local staff photo by Jim Walker

[Purchase this photo](#)

By Ashley Studley
Wicked Local Newton

Posted Aug 01, 2012 @ 03:41 PM

Last update Aug 03, 2012 @ 09:00 AM

Thursday, September 13, 2012

Blue-green algae bloom grips Quaboag Pond



ing because of the algae bloom. (SUBMITTED PHOTO)

ZETTE STAFF

of record
ing sun yesterday

"pond closed."



[HOME](#) / [NEWS](#) / [LOCAL](#) / [MASS.](#)

The Bo

Blooms of toxic algae close swimming holes

By Deirdre Fernandes

Globe Staff / August 9, 2012

E-mail | Print | Reprints |

Text s

0 +1 0 ShareThis 125

use and turquoise, smells rotten and is respons
countless children and swimmers across Great



Check out the H

Awareness, Summer

Nab Lake Beaches Closed Until Further Notice

The Westford Board of Health announced on Friday that all public and semi-public beaches on Lake Nabnasset are closed until further notice due to concerns over cyanobacteria.

By Andrew Sylvia | [Email the author](#) | September 4, 2012

Recommend 2 Tweet 2 Email Print 5 Comments

A joint investigation between the Westford Board of Health and the Massachusetts Department of Health on Friday confirmed cyanobacteria levels of 110,000 cells/ml, well above the 70,000 cells/ml limit recommended for safe swimming.

An announcement from the board has indicated that all beaches have been closed at the lake until further water, and all humans and pets should not make contact with the water.



Local News

June 13, 2012

Algae bloom on lake finally diminishing

By Mack Cerullo
Correspondent

AMESBURY — The blue-green algae bloom that has plagued Lake Attitash since early May is finally showing signs of abating.

A June 5 water test taken at the Merrimac boat ramp showed safe levels of blue-green algae for the first time in nearly a month, according to the Lake Attitash Association. If this week's test also shows low concentrations of algae, the state will lift its advisory against contact with the water, effectively declaring the lake safe for use.

Home

e-Edition

Local News

PortWatch

Sports

Opinion

Business

Obituaries

Celebrations

Multimedia

Video

TV Listings

Newburyport

Waterfront

Plans

CDC Cooperative Agreement

- In 2008, MDPH/BEH was one of 10 state agencies awarded funding from CDC to conduct HAB surveillance.
- MA was the only New England state funded.
- The goal was to evaluate potential health impacts from HABs by collecting and analyzing environmental and health data.
- CDC was interested in both human and animal health data (e.g., fish kills, pet poisonings).

I. Environmental Sampling & Response

- From 2009-2012, 886 water samples were collected at 69 waterbodies in 48 communities.
- Sampling conducted for two types of activities: 1) routine collection at selected waterbodies and 2) rapid collection in response to reports of HABs

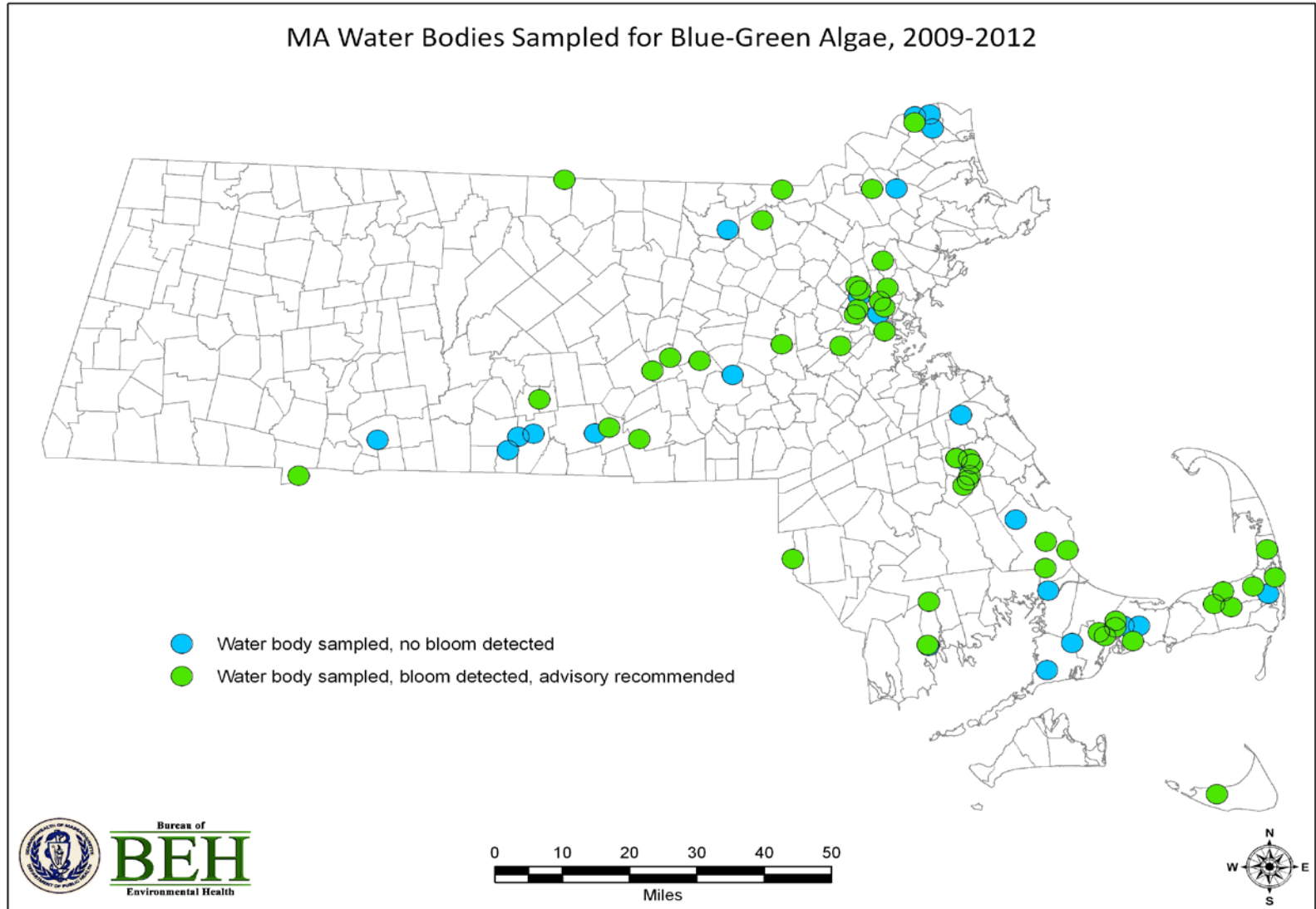
Routine Monitoring Sampling

- MDPH collects samples on a weekly basis for a minimum of 12 weeks at five locations.
- Locations chosen based on past bloom history as reported to MDPH.
- Samples tested for:
 - Cyanobacteria count & ID
 - Microcystin
 - Water quality parameters
 - Turbidity, pH, dissolved oxygen, water temperature

Bloom Response Sampling

- MDPH responds to all reports of blooms that are received
- Ask local health department or individual reporting the bloom to email photos of bloom before samplers are deployed
- Reports come from state environmental and local health officials, parks staff, residents, and watershed associations

Map of Locations Tested in MA



HABs across Massachusetts



Congamond Lake- Southwick



Jordan Pond- Shrewsbury

HABs across Massachusetts



Carbuncle Pond- Oxford



Lake Attitash- Amesbury and Merrimac

HABs across Massachusetts



Crystal Lake- Newton



Stevens Pond- North Andover

HABs across Massachusetts



Turner Reservoir- Seekonk



White Island Pond- Plymouth

HABs across Massachusetts



Smith Pond- Brewster

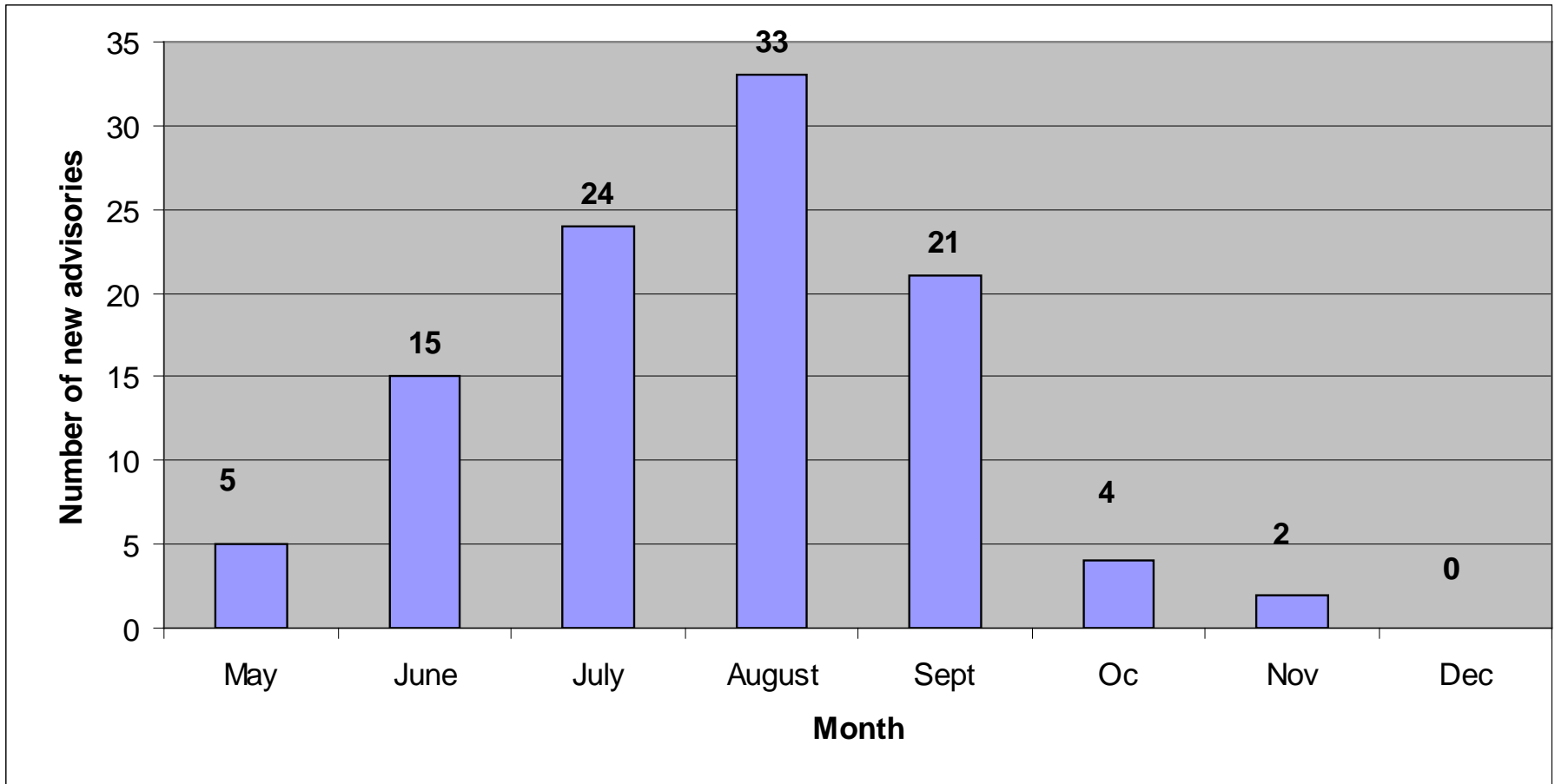


Head of Hummock Pond-
Nantucket

HAB Advisories, 2009-2012

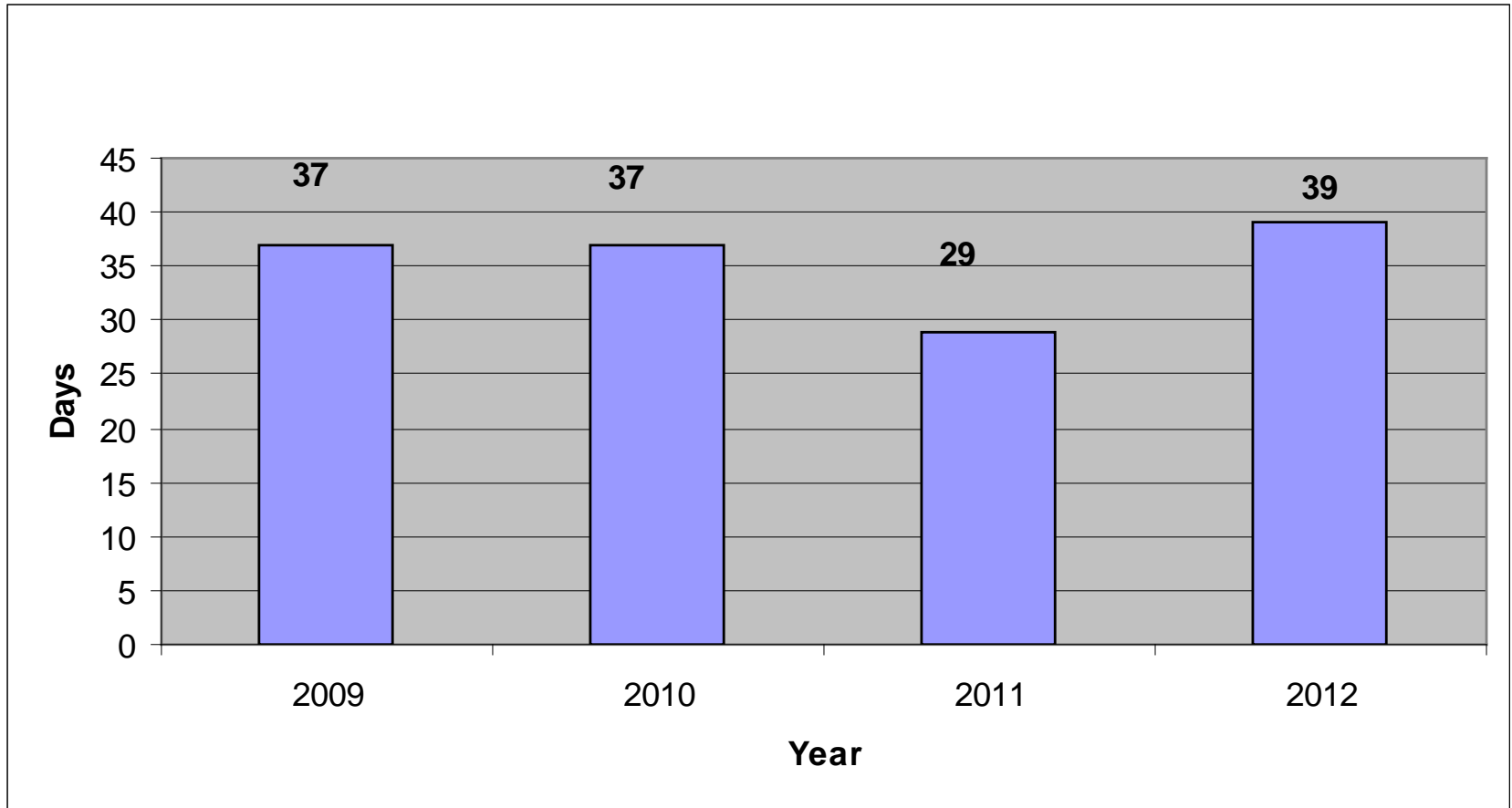
- Issued by the local health department or relevant state agency (e.g., DCR)
- 30% of the 886 water samples collected at 69 waterbodies exceeded MDPH guideline level of 70,000 cells/ml, resulting in 104 separate advisories.

Advisory Issuance by Month, 2009-2012



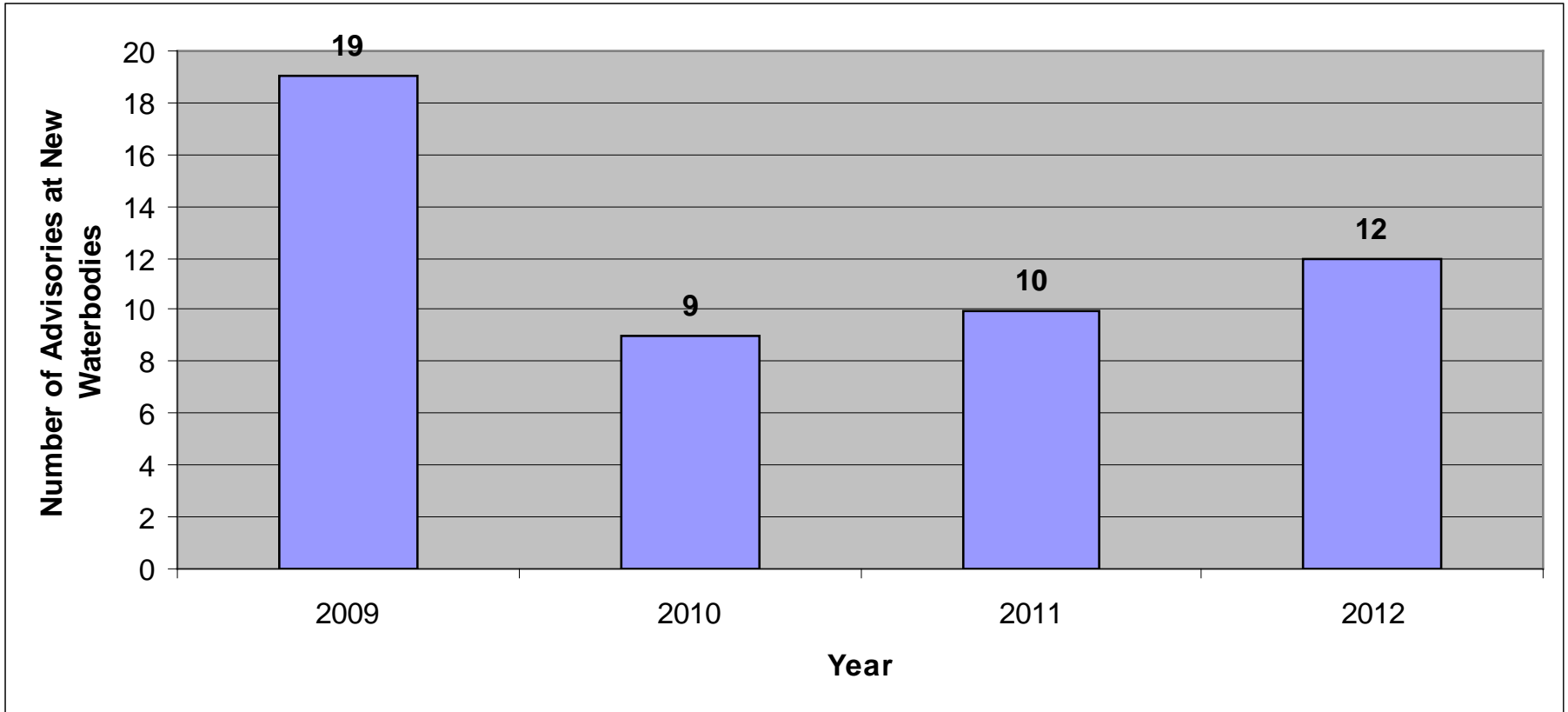
- Peaks in August, but many in the Fall

Average Length of Advisory, 2009-2012



•Average 36 days

Advisories Issued at New Waterbodies, 2009-2012



- New waterbodies = those never having previous advisory
- Advisories increasingly occurring at new waterbodies

II: Human Health Surveillance

- Surveillance Activities
 - Passive Surveillance
 - 2009-2012
 - Mail-drops to residences around waterbodies under advisories

II: Human Health Surveillance (cont.)

- Active Surveillance
 - 2011-2012
 - Interviewed 254 visitors to waterbodies under advisories, identified 17 potential cases
 - Most visitors aware of advisory
- Surveillance Results for Active and Passive Surveillance
 - 2009-2012
 - 22 suspect/probable human cases
 - Symptoms: rashes, upper respiratory, ear irritation, GI, fever, and/or malaise.

III. Animal Health Surveillance

- **Passive Surveillance Activities**
 - 2009-2012
 - Mailing to all veterinarians requesting case information
- **Animal Illness**
 - 2009-2012
 - 11 suspect animal cases
 - Dogs (6), fish (2), bird (1), mussels (2)

IV. Education and Outreach

- Printed materials
 - HABs & Health Brochure
 - HABs & Health Fact Sheets
 - HABs Advisory Sign
 - HAB Animal Health Poster
 - Translated HAB brochure and advisory sign into 8 languages, pet safety poster into Spanish.

HARMFUL ALGAE BLOOMS IN FRESH WATER BODIES



Massachusetts Department of
Public Health
Bureau of Environmental Health
Environmental Toxicology Program



MA Dept. of Public Health guidelines for cyanobacteria (blue-green algae) in recreational waters have been exceeded. A public health advisory has been issued for this waterbody.



- Water that looks like the pictures above may contain algae capable of producing toxins that can be dangerous to humans and pets.
- People and pets should avoid contact in areas of algae concentration- even on shore.
- Do not swallow water and be sure to rinse off after contact.

For further information call MDPH at 617-624-5757 or visit www.mass.gov/dph/environmental_health

IV. Education and Outreach

- Mailings
 - Local health officials- Material including HAB brochure
 - Veterinarians- HAB animal health poster
- Website
 - Maintain a list of active advisories
 - All print materials available online

www.mass.gov/dph/beaches

Protect Your Pets from Harmful Algae Blooms



Blue-green algae can form harmful blooms in lakes, ponds, and rivers that make the water murky, and can sometimes make the water look like pea soup or paint. These blooms may produce toxins and could make pets and people sick.

- If you see water like this,
- do not allow your pet to swim in or drink the water.
- Rinse pets off immediately if they come into contact with an algae bloom.



Call your vet immediately if your pet has been around an algae bloom and shows symptoms such as vomiting, staggering, drooling, or convulsions.



MA Department of Public Health
Bureau of Environmental Health
Phone: 617-624-5757
TTY: 617-624-5286
www.mass.gov/dph/environmental_health



Consumer

Provider

Researcher

Government

[Home](#) > [Consumer](#) > [Community Health & Safety](#) > [Environmental Health](#) > [Environmental Exposure](#) > [Beaches and Algae](#) >

Algae

Guidelines

- [Guidelines for Cyanobacteria in Freshwater Recreational Water Bodies](#)  

Fact Sheets



















- [Microcystis and Anabaena Fact Sheet](#)  
- [Red Tide Fact Sheet](#)  
 - [Red Tide Fact Sheet - Spanish](#)  

Educational Materials

Photos

- [Identifying Cyanobacterial Blooms and Scums \(photographs of blooms and scums\)](#)  

Brochures

- [Harmful Algae Blooms in Fresh Water Bodies \(brochure\)](#)  
 - [Spanish](#)  
 - [Español](#)  
 - [Malayalam](#)  
 - [Simplified Chinese](#)  
 - [Traditional Chinese](#)  
 - [Haitian Creole](#)  
 - [Dutch](#)  
 - [Burmese](#)  



Posters

- [Protect Your Pets from Harmful Algae Blooms \(poster\)](#)  
 - [Spanish \(L1109\)](#)  

Presentations

- [Massachusetts Health Officers Association Annual Conference 2009 - Harmful Algae Blooms](#)  
- [Cape Cod Natural History conference 2009 - Freshwater Algae Blooms: Contributing Factors and Health Concerns](#)  

Reprinted Articles

- [Harmful Algae Blooms and Pet Health \(link\) by Michael Colons, R.S., Massachusetts Department of Public Health, Bureau of Environmental Health](#)  
Reprinted with permission from the Massachusetts Veterinary Medical Association Official Publication, - Mass/Vet News, April 2011

Related Links

- [CDC's Harmful Algae Bloom \(HAB\) Information](#)

www.mass.gov/dph/beaches

V. CDC HAB Webpage

CDC Home
CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) <#>

Promoting Clean Water for Health

Health Studies Branch
Promoting Clean Water for Health
About the Clean Water for Health Program
Water-related Research
Private Well Initiative
Technical Assistance and Outbreak Response
▶ **Recent Water-related Response Activities**

[Health Studies Branch](#) > [Promoting Clean Water for Health](#) > [Technical Assistance and Outbreak Response](#)

[Recommend](#) 31 [Tweet](#) 1 [Share](#)

Harmful Algal Blooms (HABs)

- **Harmful Algal Blooms (HABs)**
- [HAB-related Publications](#)

Algae are vitally important to marine and fresh-water ecosystems, and most species of algae are not harmful. Algal blooms occur in natural waters used for drinking and/or recreation when certain types of microscopic algae grow quickly in water, often in response to changes in levels of chemicals such as nitrogen and phosphorus from fertilizer, in the water. Algal blooms can deplete the oxygen and block the sunlight that other organisms need to live, and some can produce toxins that are harmful to the health of the environment, plants, animals, and people. Harmful algal blooms have threatened beaches, drinking water sources, and even the boating venue for the 2008 Olympic Games in Beijing, China. Cyanobacteria (blue-green algae) and red tides are examples of algae that can bloom and produce toxins that may be harmful to human and animal health. HABs can occur in marine, estuarine, and fresh waters, and HABs appear to be increasing along the coastlines and in the surface waters of the United States, according to the National Oceanic and Atmospheric Administration (NOAA). [HSB epidemiologists have led a number of studies to investigate the public health impacts of](#)

On this Page

- [Cyanobacteria \(blue-green algae\)](#)
- [Harmful Marine Algae](#)
- [Red Tide](#)
- [Ciguatera](#)

[Email page link](#)
[Print page](#)

Contact Us:

 Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333

 800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
[Contact CDC-INFO](#)

New Hours of Operation
8am-8pm ET/Monday-Friday
Closed Holidays

- www.cdc.gov/nceh/hsb/hab/default.htm#Cyanobacteria

V. EPA HAB Webpage

EPA United States Environmental Protection Agency

Advanced Search A-Z Index

LEARN THE ISSUES SCIENCE & TECHNOLOGY LAWS & REGULATIONS ABOUT EPA

Water: Nutrients

You are here: Water » Science & Technology » Surface Water Standards & Guidance » Water Quality Standards » Water Quality Criteria » Nutrients » Cyanobacterial Harmful Algal Blooms (CyanoHABs)

Cyanobacterial Harmful Algal Blooms (CyanoHABs)

Algae are natural components of marine and fresh water flora performing many roles that are vital for the health of ecosystems. However, excessive growth of algae becomes a nuisance to users of water bodies for recreation activities and to drinking water providers. Excessively dense algal growth could alter the quantity and quality of light in the water column. Some types of algae may also cause harm through the release of toxins. When conditions like light availability, warm weather, low turbulence and high nutrient levels are favorable, algae can rapidly multiply causing "blooms." When blooms (or dense surface scums) are formed, the risk of toxin contamination of surface waters increases especially for some species of algae with the ability to produce toxins and other noxious chemicals. These are known as harmful algal blooms (HABs).

The Harmful Algal Bloom and Hypoxia Amendments Act of 2004 mandates that the National Oceanic and Atmospheric Administration (NOAA) advance the scientific understanding and ability to detect, monitor, assess, and predict HABs and hypoxia events in coastal waters and the Great Lakes. Research and advances in knowledge have occurred regarding marine HABs. However, research on U.S. inland and fresh waters HABs has not been as extensive with the greatest federal efforts focused on the Great Lakes.

HABs include different types of algal taxa such as dinoflagellates, diatoms, and cyanobacteria. Cyanobacteria, also known as blue-green algae, are of special concern because of their potential impacts on drinking and recreational waters. In freshwaters, cyanobacteria can produce unsightly conditions along the shoreline and in open waters degrading aquatic habitats and posing a health risk to humans, pets or wildlife. Increasingly, water managers and the public have expressed concerns about public health and environmental quality from HABs toxins in recreational and drinking waters have become an increasingly serious public health and environmental concern in the United States. EPA has compiled information on freshwater HABs and their effects to help inform the public about potential impacts of toxic algal blooms in freshwater.

Use the navigation quick tabs below to learn more about what causes cyanobacterial toxins, how to prevent, detect, mitigate and treat for them; the health and ecological effects of cyanotoxins; current research activities in the U.S.; and policies and regulations for cyanotoxins at the state and international levels.

Contact Us

Links to State Information More Information

Cyanotoxins Detection Health and Ecological Effects Research Causes, Prevention and Mitigation Policies and Guidelines

Water Home
Drinking Water
Education & Training
Grants & Funding
Laws & Regulations
Our Waters
Pollution Prevention & Control
Resources & Performance
Science & Technology
Analytical Methods & Laboratories
Applications & Databases
Climate Change & Water
Contaminants of Emerging Concern
Drinking Water
Monitoring & Assessment
Research & Risk Assessment
Surface Water Standards & Guidance
Wastewater Technology
Water Infrastructure
What You Can Do



Algal bloom at Grand Lake St. Mary's, Ohio, 2010. Photo by Russ Gibson, Ohio EPA

- EPA published website on HABs in Summer 2012
 - <http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/cyanoHABs.cfm>

VI: Planning for the Future- MDPH Activities

- HABs are not an uncommon occurrence in Massachusetts
 - Possible role of climate change
- CDC cooperative agreement ends September 2013
- To assist BOH, MDPH is planning:
 - Development of BOH HAB Guidance Document
 - Protocol for responding to reports of HABs
 - Potential health concerns
 - State contact information
 - Development of Informational HAB signage for posting at waterbodies
 - Waterbodies with history of HABs
 - Maintain educational information on website

Acknowledgements

- We would like to thank the following for their collaboration and assistance on this project:
 - CDC
 - Local health officials (!)
 - MA DPH Public Health Veterinarian
 - MA Department of Environmental Protection
 - MA Department of Conservation and Recreation
 - Advocacy orgs (e.g. Charles River Watershed Association).

Questions?



2011 Lake Erie Algae Bloom from Space- (courtesy of NOAA)