

# Summary of Ohio's new HAB Rules and Drinking Water Response Strategy

June 7, 2016



08.11.2011

# Presentation Outline

- Brief Program History
- 2016 HAB Rules
- HAB Strategies
  - Drinking Water
  - Recreational Waters
- Next Steps



# The Beginning - 2010

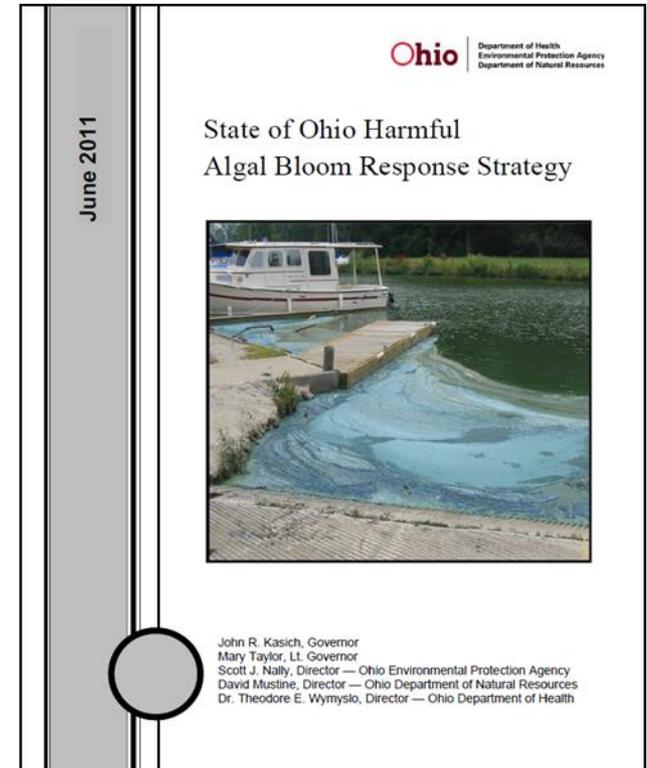
Ohio EPA began sampling for cyanotoxins

Grand Lake Saint Marys, 27 square mile recreation and drinking water lake, experiences lake-wide bloom



# 2011 - First HAB Strategy

- sampling procedures and frequency,
- cyanotoxin thresholds,
- public notice templates, and
- HAB-related contingency planning recommendations
- reviewed and revised annually



# 2011- Lake Erie Experiences Worst HAB on Record



# 2012 – Not so Bad

## Lake Erie algae bloom expected to be smaller by summer's end

Researchers seeking long-term answers

BY SOPHIE BROACH  
BLADE STAFF WRITER

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This satellite photo shows Lake Erie in 2011. The green coloration at left is an algae bloom that grew over a section of the lake.

NOAA/EUROPEAN SPACE AGENCY

Enlarge

GIBRALTAR ISLAND, Ohio -- Last summer, harmful algae covered a Long Island-sized area of water in Lake Erie, ramping up the cost of water treatment, sickening pets, and driving tourists away from beaches.

But state and federal officials Thursday predicted good news: This year, the algae bloom will likely be only about one-tenth the size of the bloom that spread across Lake Erie's western basin in 2011.

"The key question was: what will happen next?" said Jeff Reutter, director of Ohio State University's Sea Grant program, at a news conference held Thursday at the Ohio State University Stone Laboratory on



Findlay 2012



Clermont CO-  
Harsha Lake 2012

Gibraltar Island

# 2013 - Carroll Township

**FINISHED WATER Microcystin concentrations:**

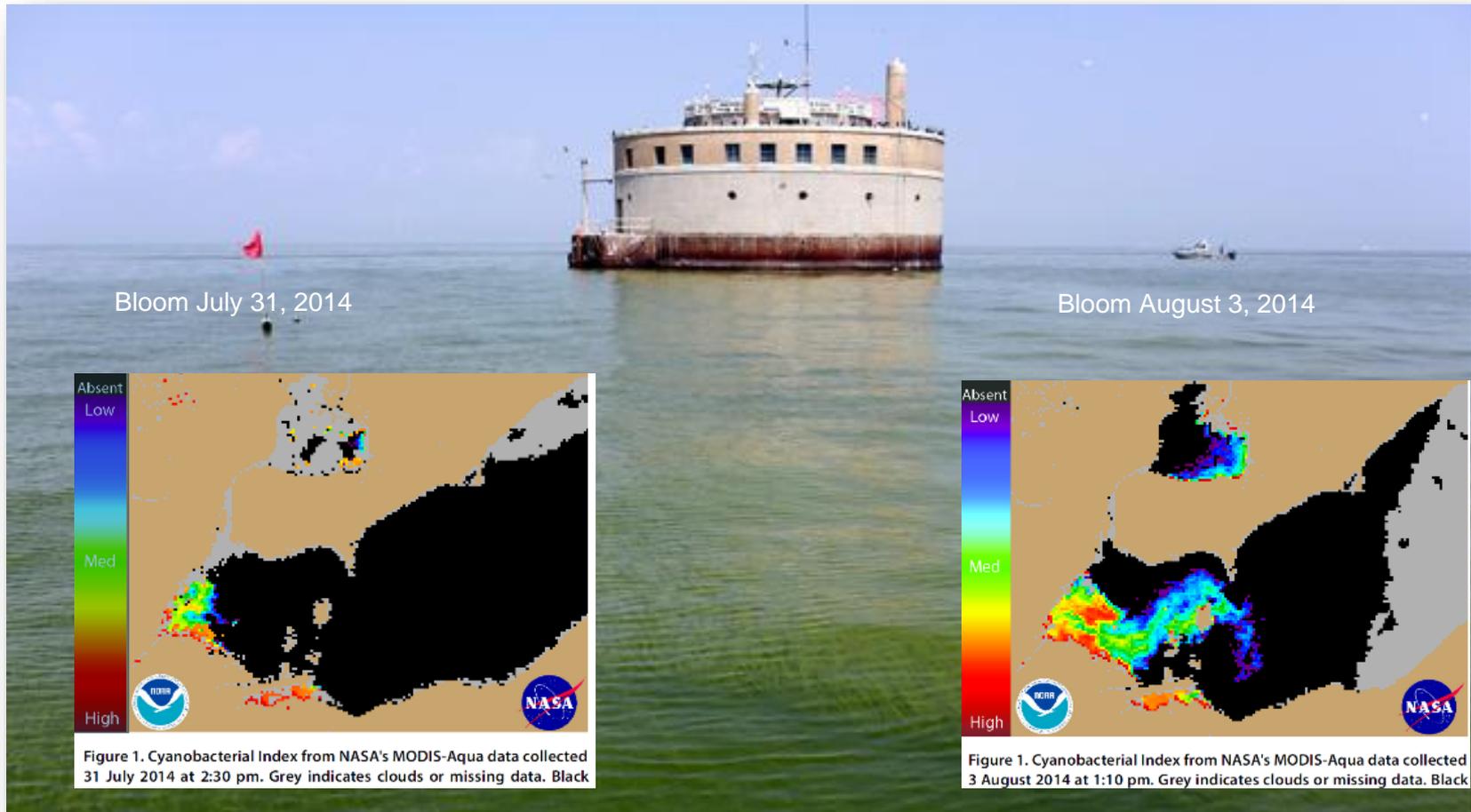
**1.43 ug/L**

**3.56 ug/L (repeat sample)**

**Do Not Drink Advisory Issued - 2288 People Affected**



# August 2014 - Harmful Algal Bloom Quickly Surrounds Toledo Intake Crib



# 2014 - City of Toledo “Do Not Drink” Advisory

## Toxic Algae Bloom Leaves 500,000 Without Drinking Water in Ohio

Codi Yeager-Kozacek, Circle of Blue | August 3, 2014 2:15 pm | Comments

### **BREAKING: Toledoans asked not to drink or boil water**

Posted: Aug 02, 2014 2:06 AM EDT  
Updated: Aug 02, 2014 2:29 AM EDT  
Posted by WTOL Staff - email

TOLEDO, OH (Toledo News Now) - The city of Toledo has sent out a urgent notice to residents of Toledo and Lucas County who receive water from the city of Toledo.

You are being asked to avoid drinking or boiling water.

Chemists testing water at Toledo's Collins Park Water Treatment Plant had two sample readings for microcystin.

You should not drink the water until an "all clear" is issued.

Here's additional information from the city:

What should you do?

**DO NOT DRINK THE WATER.** Alternative water should be used for drinking, making infant formula, making ice, brushing teeth and preparing food. Pets should not drink the water.



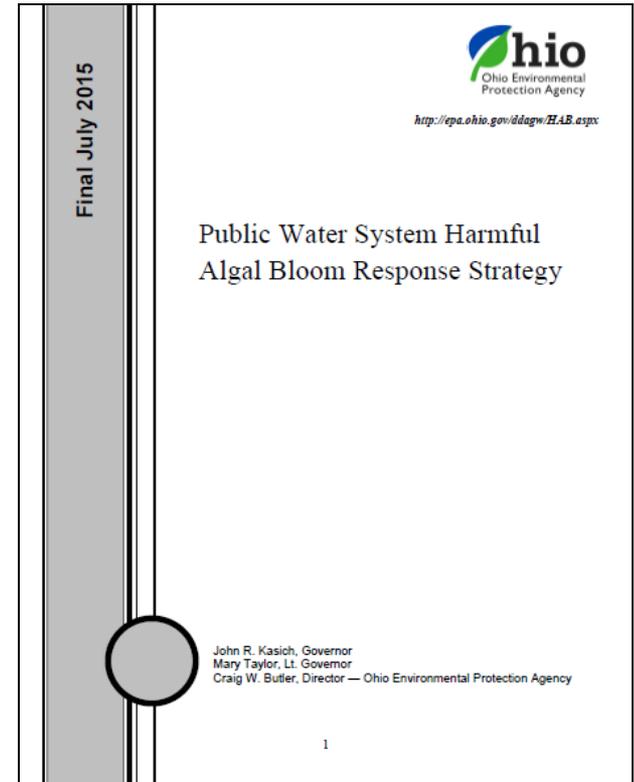
Microcystin fills a glass of Lake Erie water near the Toledo water intake crib.

THE BLADE

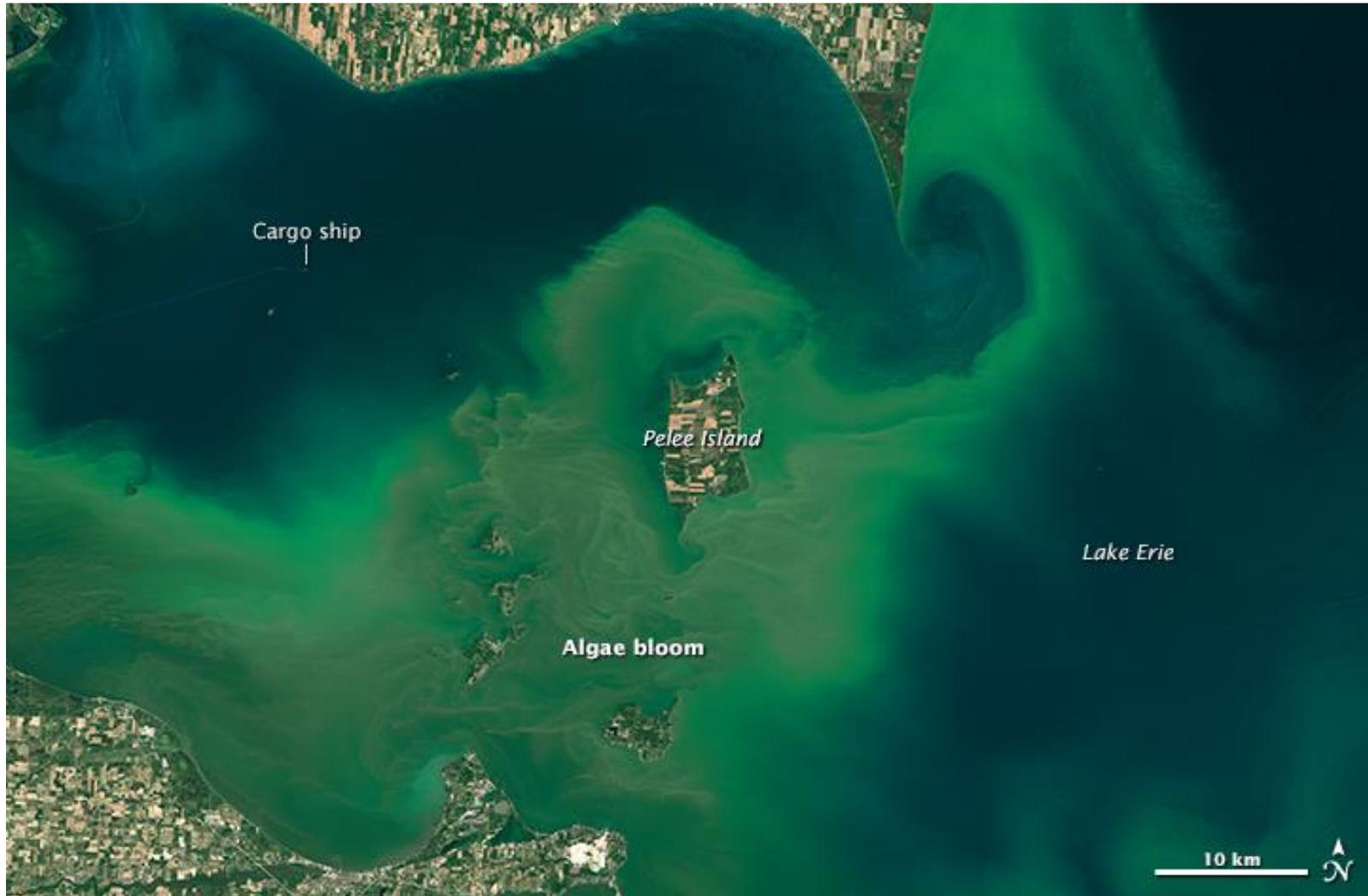
Enlarge | Buy This Photo

# 2015 PWS HAB Strategy

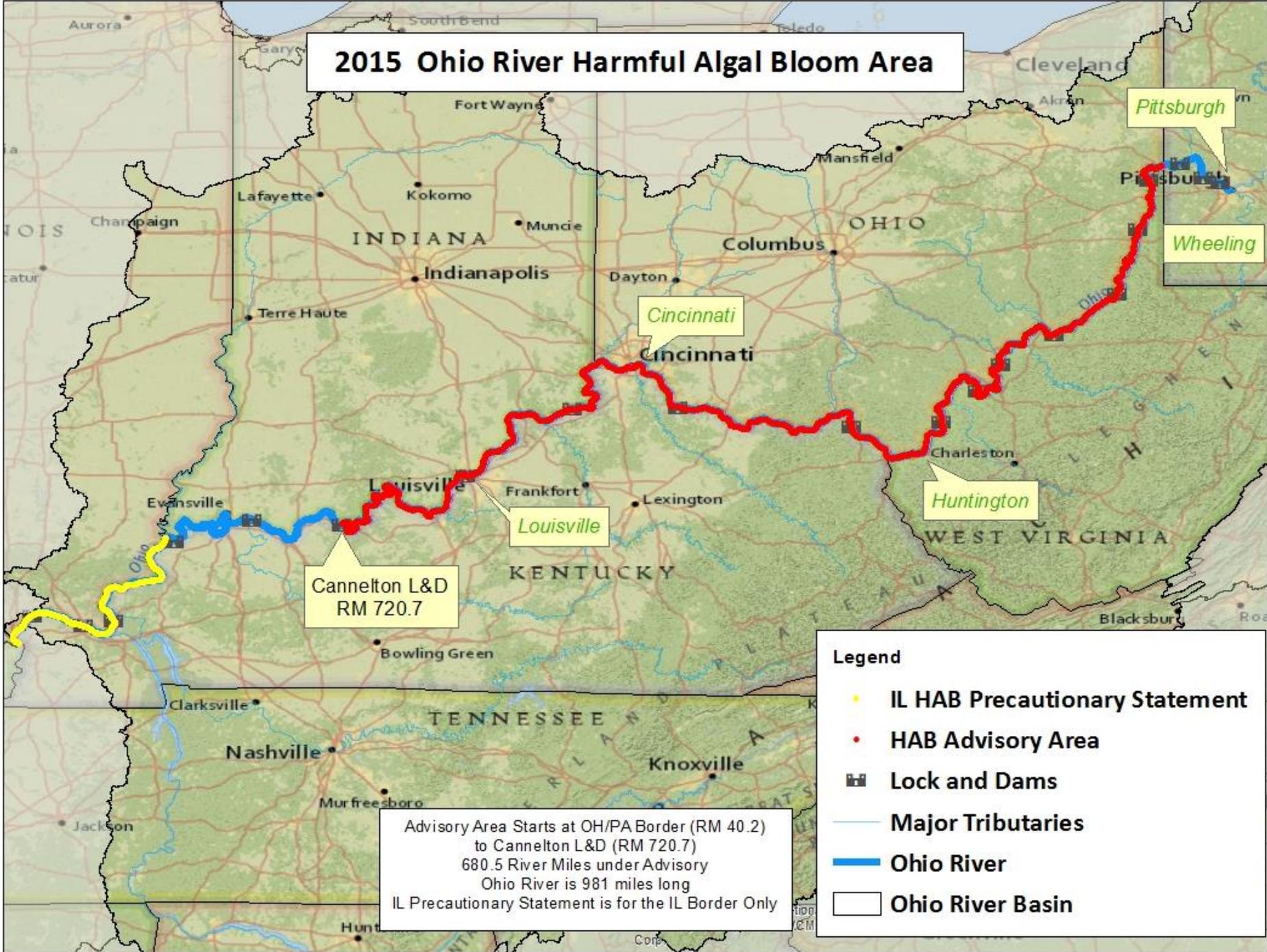
- **Incorporate US EPA's Health Advisory Levels**
- Drinking water thresholds
- Monitoring strategy
- Response to finished water exceedances
  - Public notification
  - Drinking water advisories
- Contingency Planning



# 2015 – Lake Erie Experiences Second Largest Bloom on Record



# 2015 Ohio River Harmful Algal Bloom Area



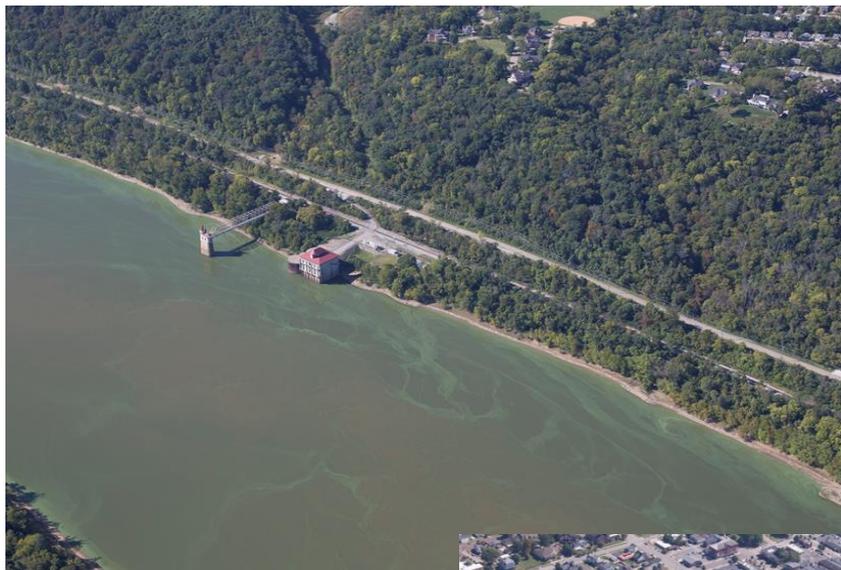
Cannelton L&D  
RM 720.7

Advisory Area Starts at OH/PA Border (RM 40.2)  
to Cannelton L&D (RM 720.7)  
680.5 River Miles under Advisory  
Ohio River is 981 miles long  
IL Precautionary Statement is for the IL Border Only

## Legend

- IL HAB Precautionary Statement
- HAB Advisory Area
- Lock and Dams
- Major Tributaries
- Ohio River
- Ohio River Basin

# Occurrence – The Ohio River



Cincinnati Intake

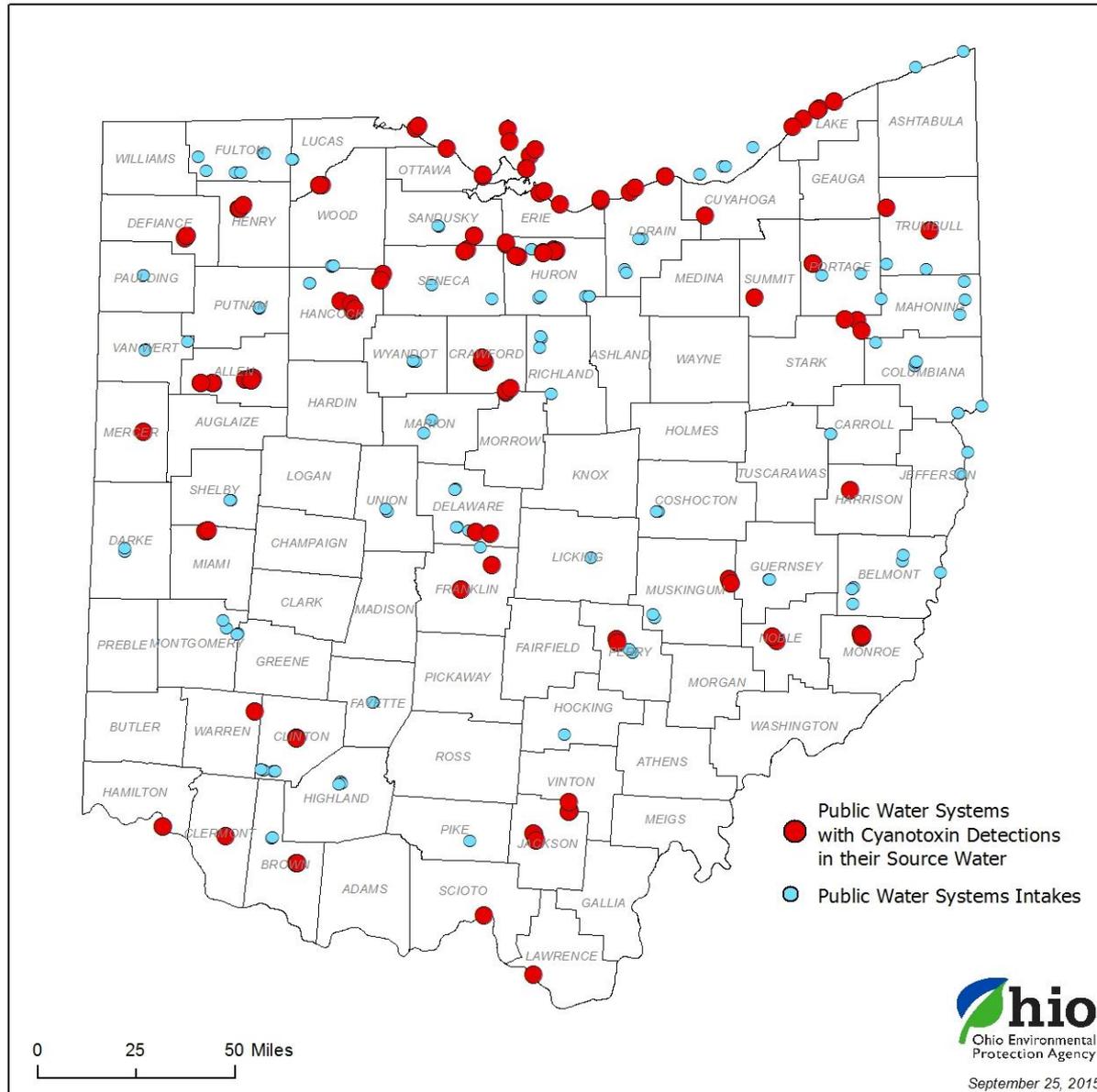


Maysville, KY



Ironton

# HABs Reported Across the State (2010 – 2015)



Public Water Systems with Cyanotoxin Detections in Source Water (54 Total)

Sampled 72 SW PWSs (59%)

# July 2015 Ohio Lawmakers Pass SB 1

## Key Drinking Water Provisions

- Ohio Revised Code 3745.50
- Director Ohio EPA HAB management and response Coordinator
- Develop and implement protocols and actions including:
  - Analytical protocols
  - Health advisories
  - Public notification protocols
  - Training, testing, treatment and other support
  - Reporting requirements



Image courtesy of the Capitol Square Review and Advisory Board

# HAB Rules – Overview

## Effective June 1, 2016

- PWS requirements - new rules in OAC Chapter 3745-90
  - Microcystins action levels in drinking water
  - Monitoring requirements
  - Treatment technique requirements
  - Public notification and Consumer Confidence Report (CCR) requirements
  - Recordkeeping requirements
- Laboratory Certification requirements – new OAC rule 3745-90-04 and amended rules in Chapter 3745-89

# Applicability

- Surface water systems
  - All requirements apply
- Consecutive (purchased) surface water systems from out-of-state sources
  - Finished water microcystins monitoring only
- In-State consecutive (purchased) surface water systems
  - Routine monitoring and treatment technique requirements do not apply; distribution monitoring if wholesale system has Action Level exceedance

# Microcystins Action Levels

- Based on U.S. EPA's health advisory levels
  - Based on oral ingestion of drinking water at these levels for up to **ten days**
  - \*Includes nursing and pregnant women, individuals with liver disease and those on dialysis

Action Level	Total Microcystins (µg/L)
Children under 6 and sensitive populations*	0.3
Children 6 and older and adults	1.6

- Exceedance in a finished water sample will trigger:
  - Additional monitoring
  - Treatment optimization
  - Potentially other actions (e.g. public notification)

# Monitoring Requirements

## Microcystins

Routine monitoring for total microcystins

May – October:

- Weekly raw and finished water
- Raw water detections  $>5$  ug/L and any finished water detections trigger additional sampling

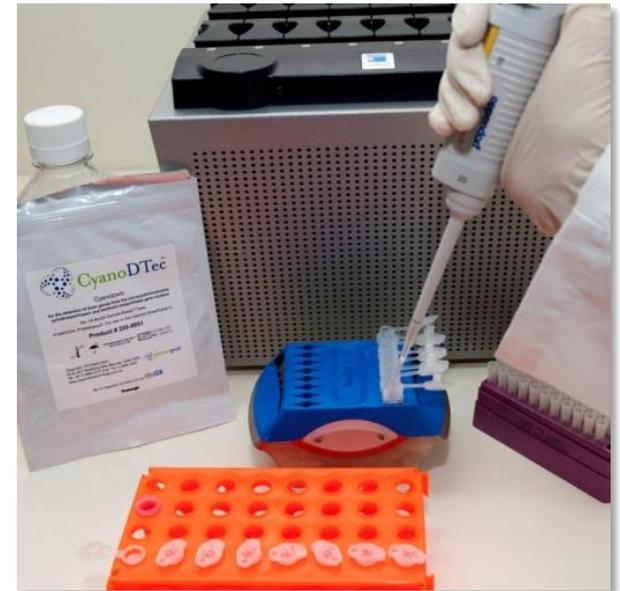
November – April:

- Raw water only every other week
- Detections trigger additional monitoring



# Cyanobacteria Screening: qPCR

- qPCR = Quantitative polymerase chain reaction
  - Identify total cyanobacteria and cyanotoxin producing genes
  - Biweekly sampling at all PWS
  - Tells us when other toxins may be present
  - Ohio EPA to respond based on results
  - Ohio EPA conducting all analysis
  - Must be filtered w/in 48 hrs and analysed w/in 7 days of collection



# Response to Microcystin Detections

- **Raw water > 5 ug/L** = increase monitoring to 3 days/week
- **Finished water detect** = increase to daily monitoring
  - OEPA initiate immediate response with PWS
- **Finished water detect exceeds Action Level** = Resample and Repeat Sample
  - **Resample.** Collect raw/finished resample asap but no later than 24 hours after notified of exceedance. Analysis w/in 24 hours of collection.
  - **Repeat.** Collect raw/finished repeat samples within 24 hours of collecting the resample. Analysis w/in 24 hrs of collection.

# Resample and Repeat Samples

- If finished water **Resample** or **Repeat** samples exceed the action level:
  - PWS notifies consecutive systems
    - within 3 hrs. of receiving results that exceed Action Level
  - PWS and consecutive systems collect distribution samples
    - within 24 hrs. of receiving results that exceed Action Level
- If finished water **Repeat** sample exceeds the action level:
  - PWS conduct public notification

Quick treatment optimization and source management are critical and can prevent advisories.

# Treatment Technique Requirements

- **Treatment Optimization Protocol** (short term)
  - Microcystins detected in raw or finished water
  - Optimize existing treatment
- **Cyanotoxin General Plan** (long term)
  - Microcystins detected in finished water or raw at high levels
  - Holistic assessment of treatment effectiveness and needs
  - Source water protection, reservoir management and in-plant treatment



# Tier 1 Public Notification

- Tier 1 PN issued
  - **Repeat** finished water sample exceeds an action level
  - Failure to collect repeat samples
- May limit distribution of public notice
  - Demonstrate cyanotoxins remain below the action level in portions of the distribution system
  - Ongoing daily distribution monitoring
  - Procedures for making this demonstration identified in Contingency Plan

# Public Notice Language

## **DRINKING WATER WARNING**

Microcystins are present in [name] water system

Microcystins, compounds produced by blue-green algae, have been detected in the finished drinking water from [name] water system. A sample collected on [date] shows microcystins at [level] micrograms/liter ( $\mu\text{g/L}$ ). U.S. EPA has established a national health advisory level for bottle-fed infants and children younger than school age based on drinking water for 10 days. The Ohio Environmental Protection Agency recommends that bottle-fed infants and children younger than school age do not drink the water at microcystins levels above  $0.3 \mu\text{g/L}$ .

What should I do?

\* THE FOLLOWING INDIVIDUALS SHOULD NOT DRINK THE WATER: Bottle-fed infants and children younger than school age, pregnant women, nursing mothers, those with pre-existing liver conditions and those receiving dialysis treatment. These individuals may be more susceptible than the general population to the health effects of microcystins. Alternative water should be used for drinking, making infant formula, making ice, brushing teeth, and preparing food.

[Additional Guidance for specific populations... included]

# Tiers 2 & 3 PN, CCR and Recordkeeping

- Tier 2 PN
  - Failure to submit treatment optimization protocols
  - Failure to submit or implement cyanotoxin general plan
- Tier 3 PN
  - Failure to monitor or report
- CCR
  - Include any finished water action level exceedance (including distribution sites)
- Recordkeeping
  - Keep records for 10 years



# Certified Laboratory Requirements

- Microcystins and cyanobacteria screening are being incorporated into the existing laboratory certification program
- Laboratory certification fee (\$1,550) will be deferred until June 1, 2017
- Microcystins
  - Analytical method “Ohio EPA Total (Extracellular and Intracellular) Microcystins - ADDA by ELISA Analytical Methodology” version 2.2 (August 2015)
  - Samples must be analyzed within 5 days of collection, except in limited circumstances which require analysis within 24 hours

Current List of approved microcystin labs

<http://epa.ohio.gov/Portals/28/documents/labcert/TotalMicrocystins.pdf>



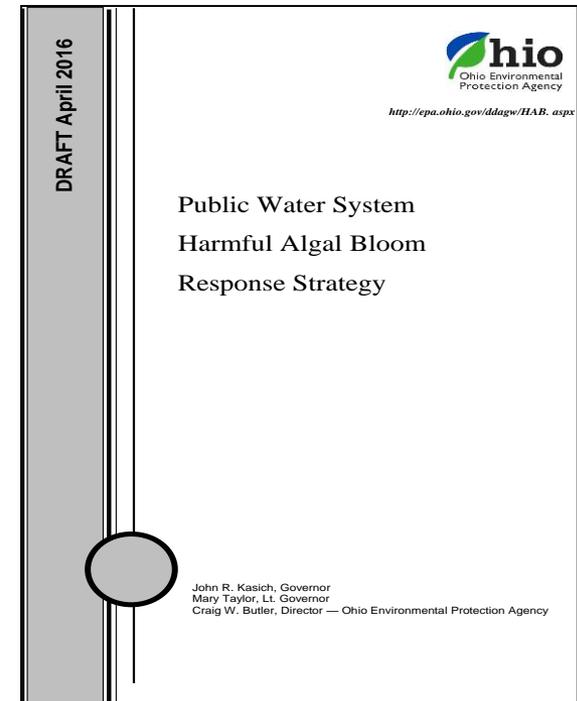
# Reporting Deadlines

- Report by the end of the next business day to OEPA and PWS
  - all detections of microcystins in finished water samples
  - all results above 5  $\mu\text{g}/\text{L}$  microcystins in raw water samples
  - all daily, resamples and repeat samples
  - all results of cyanobacteria screening that indicate the potential for cylindrospermopsin, saxitoxins
- All others, report by the 10th day following the month in which the sample was collected.



# 2016 PWS HAB Strategy

- Incorporate new HAB rules
- Drinking water thresholds
- Monitoring strategy
  - OEPA response to qPCR screening
- Response to finished water exceedances



# OEPA/ODH Coordination during Drinking Water HAB Event

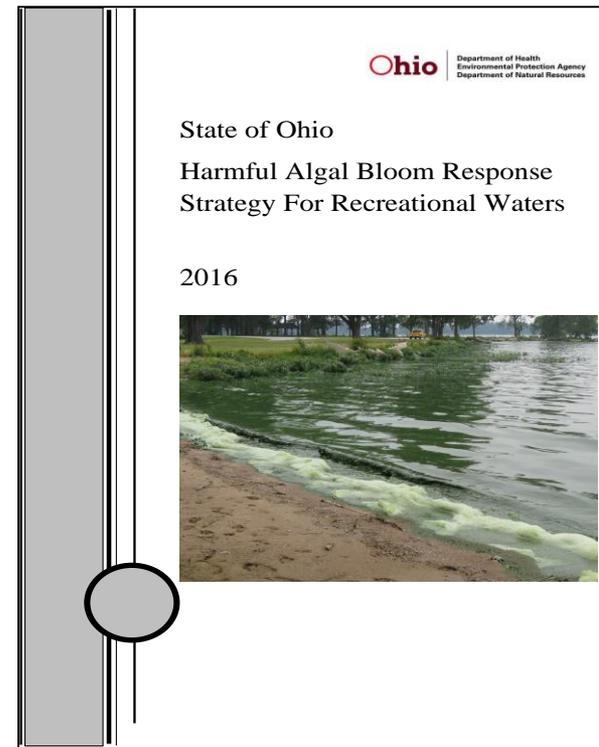
- Initial result above action level
  - Ohio EMA Watch Desk and others notified (ODH)
- Resample above action level
  - Ohio EMA notifies broader list (incl. local officials)
- Repeat exceeds action level
  - Ohio EMA activated Emergency Operations Center (EOC)
  - Public Notification Issued

# 2016 Ohio HAB Strategy for Recreational Waters

- Multi-agency effort
  - Ohio EPA, ODNR, ODH
  - Public waters focus
  - Numeric thresholds
  - Advisory language and signage
  - Sampling guidance

**ODH recorded video presentation**

<http://progressive.powerstream.net/008/00153/HAB2016/HAB2016.html>



# Where are Advisories Posted?

## Drinking Water

[http://www.epa.state.oh.us/ddagw/pws/advisory\\_map.aspx](http://www.epa.state.oh.us/ddagw/pws/advisory_map.aspx)

[www.Ohioalgaeinfo.com](http://www.Ohioalgaeinfo.com)

## Recreational (Beachguard)

<http://www.odh.ohio.gov/healthybeaches>

**Ohio.gov** State Agencies | Online Services

Search...

Home | About | Divisions and Offices | Do Business | Citizens and Educators | News | How Do I? | Contact

### Current Drinking Water Advisories for Ohio Public Water Systems

Use the list boxes to filter records.  
Scroll down to view a summary or the details of the selected drinking water advisories.

Search Current Advisories

This site is updated Monday - Friday, except Holidays.  
Please Read the Disclaimer

68 advisories

**Reason for Advisory**

- 53 Contamination
- 12 Other
- 2 Drought
- 1 Depressurization

**Contaminant/Objective**

- 28 Fluoride
- 11 Trihalomethanes, total
- 10 Lead
- 7 Water Conservation
- 6 Arsenic
- 3 Total Coliform Bacteria
- 2 Fecal coliform or E. coli
- 1 Haloacetic Acids (HAAS)

**Public Water System Type**

- 41 Community
- 21 Nontransient Noncommunity
- 6 Transient Noncommunity

**Systems with Advisories**

- ALL-STAR PRESCHOOL
- Bainbridge Center Bldg.
- Bluffton Village Water
- Bowersville Vlg
- Brunersburg WD - Tinora
- Canaan Middle School
- Canal Winchester
- Cardinal Operating Company 1 / 2
- City of Westerville

**County**

- Allen
- Auglaize
- Carroll

**Ohio.gov** Department of Health

Ohio Beach Monitoring

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## BeachGuard

Search

**Welcome**

Ohio conducts a monitoring and notification program of selected public and semi-private beaches located along the Ohio/Lake Erie border. The purpose of beach monitoring is to test the water quality of the state's swimming beach waters and to notify the public whenever bacteria levels present a potential health risk to those engaged in water activities. Beach Guard provides data on advisories as well as monitoring activity.

**Advisory Posting: What does it mean. Can I swim?**

If a beach has a water advisory posting it means the level of bad bacteria in the water has reached unsafe levels and could make you sick.

Advisories mean children, the elderly and those in ill health or weakened immune systems are advised not to swim.

Select a county from the map below to see beach information for that county. Use the search box in the navigation bar at the top of the page to find a beach or water body by name.

**Ohio Beaches**

- 134 Public Beaches
- 0 Private Beaches
- Advisories
- No Current Advisories

# Key Agency Roles (Recreational HABs)

- ODNR
  - Monitor and post advisories at State beaches and boat ramps
- ODH
  - Coordinate with LHDs when responding to HABs (LHD sample and post advisories)
  - Maintain BeachGuard web site
  - Evaluate/classify illness reports, support local investigations
- OEPA
  - Collect, review and forward Algal Bloom Reports
  - Maintain database of state-reported HAB data and [ohioalgaefinfo.com](http://ohioalgaefinfo.com)
  - Monitor satellite imagery
  - Monitor PWS, Inland Lakes, Lake Erie, and other waters
  - Provide sampling guidance and training

# Outreach

- Public water systems: 4 outreach sessions
- Local Government Officials: 6 regional meetings planned



# Next Steps

- **Funding Assistance**

- WSRLA HAB Infrastructure Loans (0% Interest/20 yrs) - \$50M was allocated this year (3<sup>rd</sup> year) and approximately \$20M unallocated.
- Monitoring Equipment Grants – Ohio EPA anticipates additional funds will become available after July 1, 2016; recommend that entities apply now to get on the waiting list (up to \$30K per PWS, lifetime max).

- **Ongoing Research**

- Ohio Board of Higher Education HAB Grants
- Collaboration with USEPA and AWWA on Methods
- Collaboration with NOAA and USGS on HAB Surveillance

- **Post-Season full evaluation of 2016**



# Questions?

## Ohio EPA HAB Section

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[www.ohioalgaeinfo.com](http://www.ohioalgaeinfo.com)

