

Arkansas Harmful Algal Bloom (HABs) Workgroup

A photograph showing a person's hand holding a small amount of green water, likely containing a harmful algal bloom (HAB), against a background of green water. The hand is positioned on the left side of the frame, and the water is a vibrant green color. The background is a larger body of water with a similar green hue, suggesting a natural setting. The overall image is used as a background for a presentation slide.

**Arkansas AFS Annual Meeting
Fairfield Bay, AR
February 10-12, 2016**

HABs

- What is a HAB?
- What we know...
 - Increased frequency and with some predictability
 - Conditions affecting blooms
 - Temperature
 - Competition/Taxa
 - Light
 - Mixing



Nutrient pollution can have various effects on human health, the environment and the economy.

<http://www.epa.gov/nutrientpollution/effects>

Table 2. Common cyanobacterial toxins, toxicity (based on intraperitoneal mouse assays), and common effects of exposure.

[Most toxin groups have several variants with a range of toxicities. Although known chronic effects are listed, the chronic effects of exposure to cyanotoxins currently (2008) are not well understood. LD₅₀, lethal dose required to kill half of the members of a tested population; µg/kg, micrograms per kilogram of body weight; -, no data available; >, greater than]

Class	Toxin	Toxicity (LD ₅₀)	Acute effects	Chronic effects
Neurotoxins	Anatoxins	20 – 250 µg/kg	Seizure, paralysis, respiratory failure, death	unknown
	Saxitoxins ¹	10 µg/kg	Tingling or numbness in extremities, paralysis, respiratory failure, death	unknown
	β-N-methylamino-L-alanine (BMAA)	-	-	neurodegenerative disease
Hepatotoxins	Microcystins	25 – > 1,000 µg/kg	Acute hepatoenteritis, shortness of breath, interhepatic hemorrhage hemorrhagic shock, heart failure, death	chronic liver injury, tumor promoter
	Cylindrospermopsins	200 – 2,100 µg/kg	Acute hepatoenteritis, renal, lung, heart, spleen, thymus, and adrenal damage, death	potential carcinogen, mutagen
	Nodularins ²	50 µg/kg	Similar to microcystins	tumor promoter
Dermatotoxins	Lyngbyatoxins	300 µg/kg	Severe dermatitis, gastroenteritis	tumor promoter
	Aplysiatoxins	300 µg/kg	Severe dermatitis, gastroenteritis	tumor promoter
	Lipopolysaccharides	-	Dermatitis, gastroenteritis	unknown

¹Also known as paralytic shellfish poisons (PSPs).

²To date, nodularins have only been detected in brackish waters.

HABs in the News



DETROIT

CLEVELAND



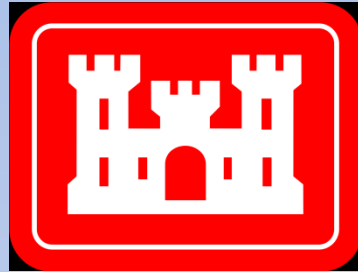


Arkansas HAB Workgroup



“We are a anarco-syndicous commune. We take it in turn, to act as sort of an officer for the week.”

Arkansas HAB Workgroup



Where do we go from here?



Next Steps

- August 31, 2015 -----HAB Introduction
- November 9, 2015----Recreation/Source Water HAB monitoring
Law and Policy
- January 2016----- Data Availability/Modeling
CAW/BWD –Source Water
ADH Swim Beach Program
- April 2016-----Citizen Program Development
Develop Recreation/S.W. Monitoring Flow
Chart (based on assimilation of common themes)
HAB Triggers
- June 2016-----skip
- July 2016-----AWRC Annual Conference/Workshop

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Major points

- 1) Education - public awareness, public perception, how are we going to disseminate information, advisories, etc?
- 2) Funding for monitoring - Monitoring is going to be a must, how is this going to be funded/coordinated?
- 3) Standards/triggers--What are the triggers that are going to require an alert, advisory, swim beach closure, etc?
- 4) Communication - How are we going to communicate among groups HAB related information?

Next Steps

- Arkansas Water Resource Center
 - Regional HAB Workshop/Meeting

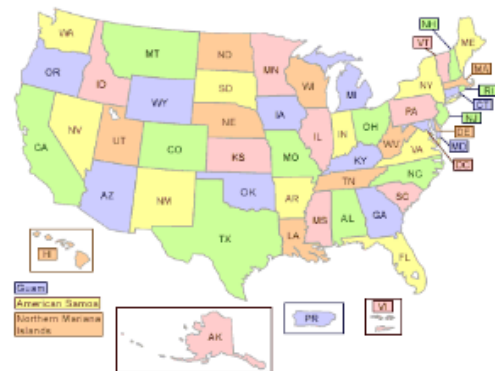
Resources

- USEPA – Harmful Algal Blooms (<http://www2.epa.gov/nutrientpollution/harmful-algal-blooms>)
- USEPA – CyanoHABs (<http://www2.epa.gov/nutrient-policy-data/cyanoHABs>)
- USEPA – Harmful Algal Blooms & Cyanobacteria (<http://www2.epa.gov/water-research/harmful-algal-blooms-cyanobacteria>)
- USEPA – Drinking Water Guidelines (<http://www2.epa.gov/nutrient-policy-data/guidelines-and-recommendations>)
- WHO Guidelines (http://www.who.int/water_sanitation_health/bathing/srwe1execsum/en/index7.html)
- HABHRCA (<http://coastalscience.noaa.gov/research/habs/habhrca>)
- USGS sampling guidelines (<http://pubs.usgs.gov/sir/2008/5038/>)

Related Topics: [Nutrient Policy and Data](#)

State Resources

To find information for a particular state on cyanobacteria and/or cyanotoxins, including a list of laboratories* that conduct sample analysis, please select your state on the map.



* The list of laboratories it's not exhaustive and will be revised as new laboratories are made known or if ar presented herein changes. The U.S. EPA does not endorse the laboratories presented on this page.

Alabama

State Resources:

No available information

Laboratories:

[Alabama Department of Public Health](#)

Bureau of Clinical Laboratories

Mobile Regional Laboratory

757 Museum Drive

Mobile, AL 36608

(251) 344-6049

- [Cyanobacter](#)
- [Detection](#)
- [Health and I](#)
- [Research an](#)
- [Causes and](#)
- [Control and](#)
- [Guidelines a](#)
- [State Reso](#)
- [More Inform](#)
- [CyanoHABs](#)

Specific services: phytoplankton monitoring of shellfish growing waters, microscopy identification of dinoflagellates, many diatoms, flagellates, and some cyanobacteria

[Cyanopros](#)

203 Swingle Hall

Auburn, AL 36849

Phone: (334) 246-1120

Specific Services: Algal identification and enumeration, cyanotoxin analysis

Alaska

State Resources:

No available information

Laboratories:

No available information

Top of Page

Arizona

State Resources:

No available information

Laboratories:

No available information

Top of Page

Arkansas

State Resources:

No available information

Laboratories:

No available information

Top of Page

Resources

Arkansas HAB Google Drive

Contacts

Reed Green

wrgreen@usgs.gov

Tate Wentz

wentz@adeq.state.ar.us