

# Montana's State HAB Program



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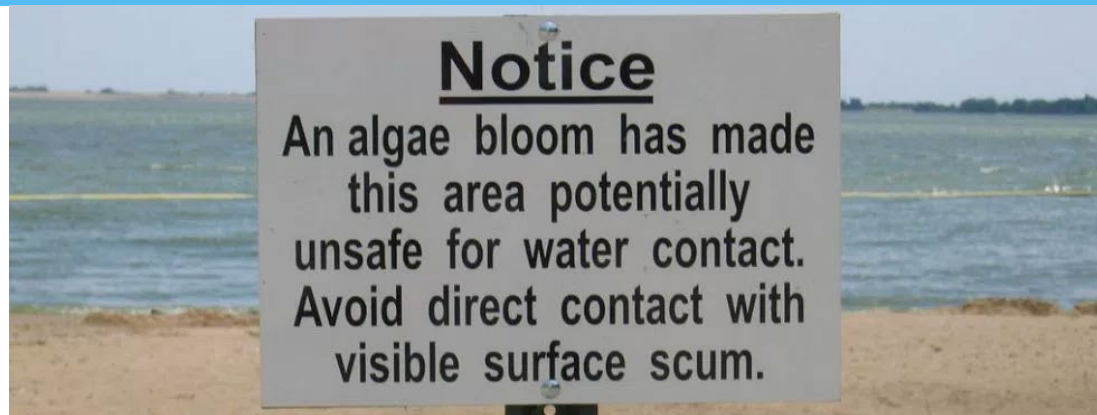
\*Much of this material drew from DEQ presentations provided by  
Melissa Schaar and Mike Suplee

An aerial photograph of a coastline. On the left, a green landmass with patches of white snow or ice meets a dark blue body of water. In the water, a large, prominent blue swirl or eddy is visible, extending from the bottom left towards the center. The overall scene is dark and moody, with the blue of the water contrasting with the green and white of the land.

# Overview

- \* What You Should Know About HABs
- \* Montana's Newish HAB Program
- \* 2018 HAB Recap
- \* Looking to 2019

# What You Should Know About Harmful Algal Blooms (HABs)



## 1. A HAB IS A MASS OF CYANBACTERIA

Not truly algae but rather **blue-green algae**, subset of phytoplankton, a single-celled algae.

## 2. CYANOBACTERIA ARE COMMON

Native constituents of freshwater, estuarine and marine environments

# What You Should Know About Harmful Algal Blooms (HABs) cont.

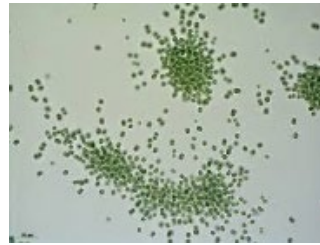
## 3. CYANOBACTERIA CAN BE TOXIC

- \* Liver, nerve, or skin toxins (cyanotoxins)
- \* Toxins are selectively produced by many genera—but not very predictable
- \* Widely distributed but not often at acutely toxic levels
- \* Exposure routes include ingestion, inhalation, and skin contact



**Anabaena or Dolichospermum**

- microcystins (liver)
- Anatoxin-a/a(s) (nerve)
- Saxitoxins (nerve)



**Microcystis**

- Microcystin (liver)
- Toxin is most common and easily measured



**Aphanizomenon**

- Anatoxin-a (nerve)
- Cylindrospermopsins (liver)
- Saxitoxins (nerve)



# What You Should Know About Harmful Algal Blooms (HABs) cont.

## 4. CLIMATE CHANGE EFFECTS HAB GROWTH

- \* HABs have been observed with increasing frequency and in more locations in US
- \* Warmer waters results in more extensive HABs lasting into the early winter months

## 5. HUMAN ACTIVITIES RESPONSIBLE FOR INCREASE

Increased nitrogen and phosphorus from sewage treatment plants, animal feeding operations, runoff from agricultural fields, roads and stormwater



# What You Should Know About Harmful Algal Blooms (HABs) cont

## 6. NO EPA STANDARDS FOR CYANOTOXINS

No Cyanotoxin Standards or Monitoring Procedures For Montana

### EPA DRINKING WATER GUIDANCE

| Cyanotoxin         | Drinking Water Health Advisory (10-day)    |                                |
|--------------------|--|--------------------------------|
|                    | Bottle-fed infants and pre-school children | School-age children and adults |
| Microcystins       | 0.3 µg/L                                   | 1.6 µg/L                       |
| Cylindrospermopsin | 0.7 µg/L                                   | 3 µg/L                         |

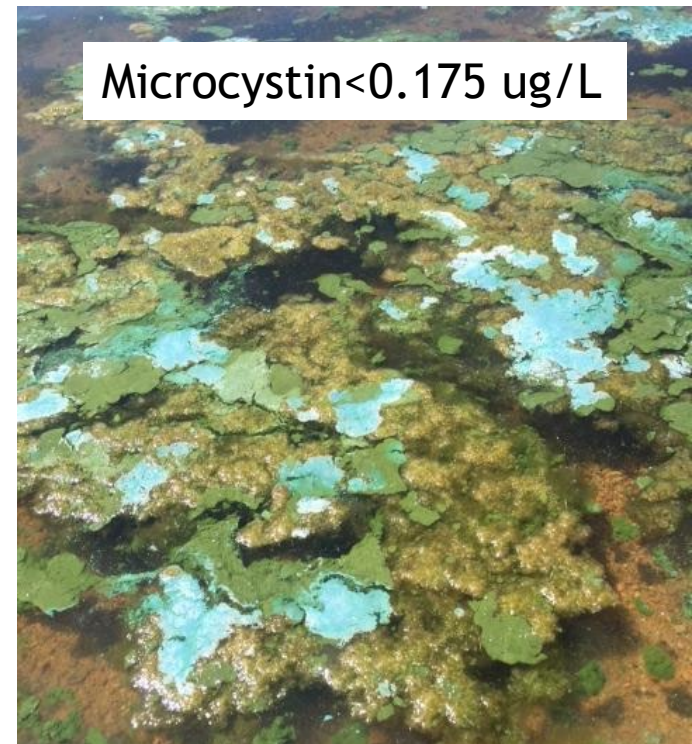
### EPA RECREATIONAL GUIDANCE

| Microcystins | Cylindrospermopsin |
|--------------|--------------------|
| 4 µg/L       | 8 µg/L             |

# What You Should Know About Harmful Algal Blooms (HABs) cont.

## 7. YOU CAN'T TELL TOXICITY BY JUST LOOKING

*Blooms can be deceiving*





# What You Should Know About Harmful Algal Blooms (HABs) cont.

## 7. YOU CAN'T TELL TOXICITY BY JUST LOOKING

- \* Samples must be collected for toxicity
- \* Toxins can remain up to a month after bloom dissipates.



## 8. NO HUMAN DEATHS IN UNITED STATES

Pets, livestock, and wildlife deaths reported

# What You Should Know About Harmful Algal Blooms (HABs) cont.

## 9. STAY AWAY FROM ALGAL BLOOMS

- \* Do not drink, swim, touch or inhale water affected by cyanobacteria
- \* If you or your pets do go in water that has an algal bloom, wash yourself or your pets off immediately afterwards with tap water





DEQ  
MONTANA

HAB.MT.GOV



*Montana Fish,  
Wildlife & Parks*



- \* Coordination between DPHHS, DEQ, and FWP
- \* Launched July 2017- Online HAB reporting system
- \* Public participation in reporting HABs through visual identification
- \* Developing **effective communication** with managing jurisdiction

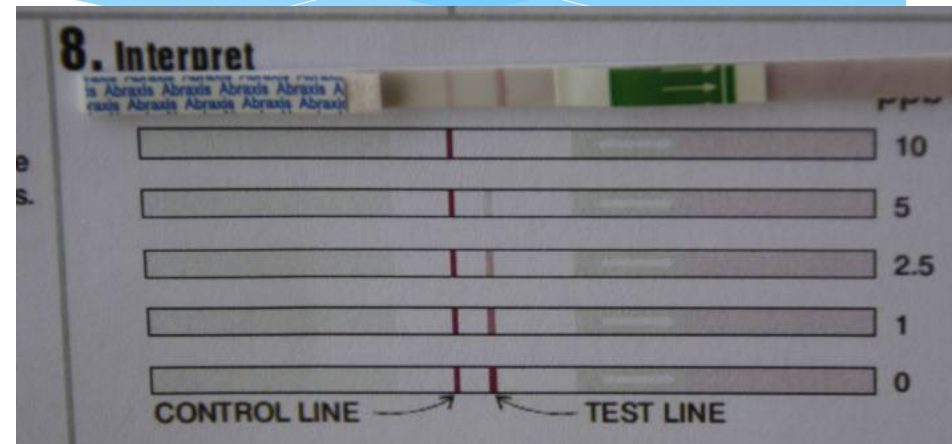


# Managing Jurisdictions

- \* Can be local Health Boards, local water user organizations, state and federal agencies, and private landowners
- \* Extensive blooms affecting multiple jurisdictions should coordinate with the State HAB Team to issue a unified message
- \* Passively monitor (“eyes on the ground” monitoring approach) for HABs within jurisdictions and report to [HAB.MT.gov](http://HAB.MT.gov)
- \* Responsible to monitor, test, issue advisories, and notify media

# Monitoring and Testing

- \* Not mandated but recommended
- \* Monitoring
  - \* Visual
  - \* Field Test Strips
  - \* Laboratory Analysis (EPA)
- \* Monitoring, sampling, and testing outlined in guidance
- \* Test kits and laboratory assistance is available at no cost on a limited basis
- \* All monitoring and testing results report to the state HAB team: [HAB@mt.gov](mailto:HAB@mt.gov)





Sheila Hogan, Director

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For more information on one of the following topics:

- [DEQ: HAB Questions](#)
- [EPA: Harmful Algal Blooms](#)
- [CDC: Harmful Algal Blooms Associated with Shellfish](#)

Bring yourself up to speed on watching these

1. Nutrient Pollution 101
2. The Choice Is Yours: Green or Clean Water (1 minute version)
3. Protect Your Pooch From Harmful Algal Blooms

Harmful Algal Bloom Report

An online form to report potential harmful algal blooms in Montana.

Name

E-mail

Phone

Date Observed



## Harmful Algal Bloom (HAB) Guidance Document for Montana



July 2018

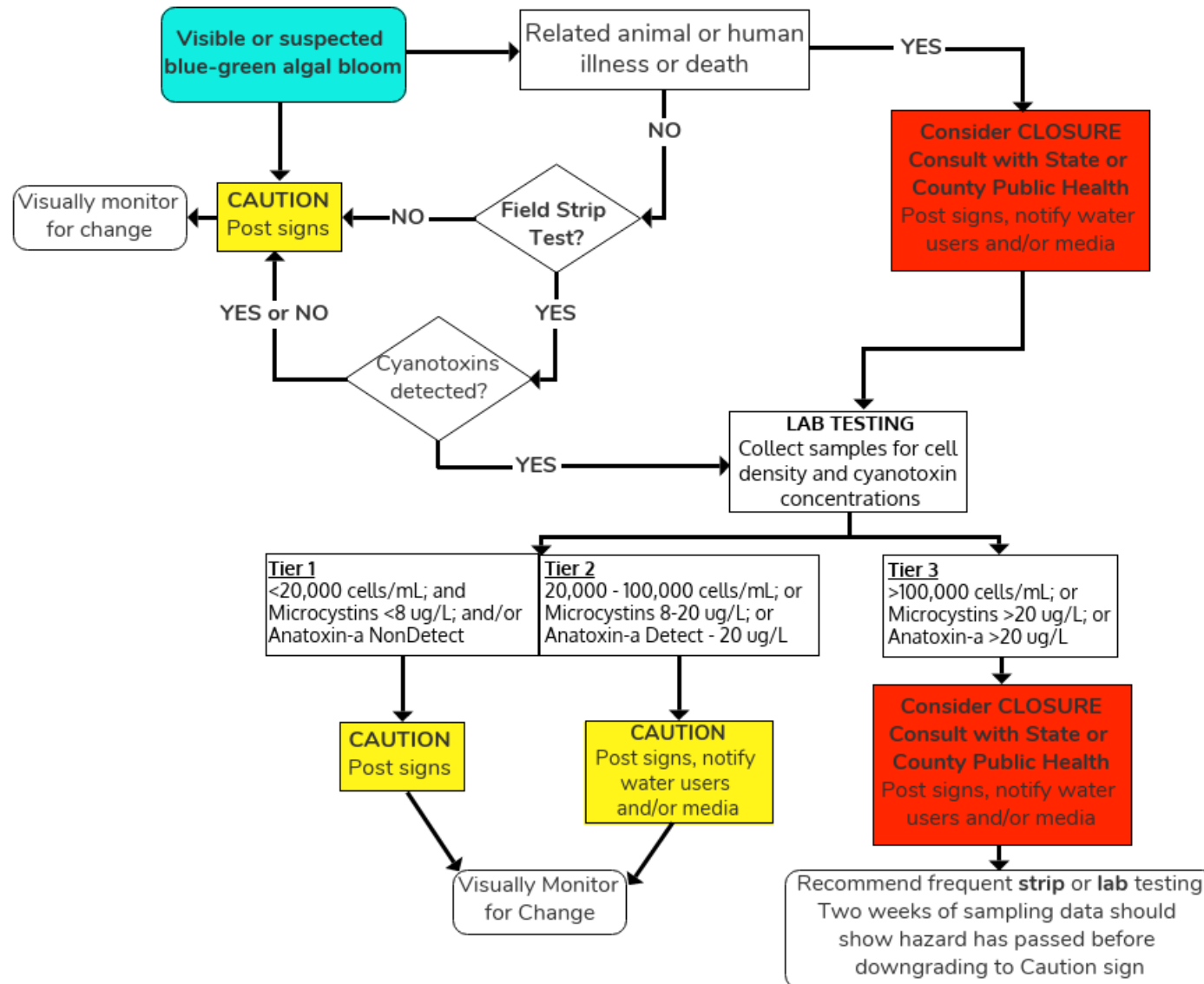


# HAB Guidance

[HAB.MT.gov](http://HAB.MT.gov)



# Decision Flow Chart for HABs in Recreational Water



# CAUTION

# CLOSURE

## TOXIC ALGAE MAY BE PRESENT

Water may be unsafe for people and pets

## TOXIC ALGAE PRESENT

Lake is **CLOSED**

If blue-green algae is present:



**DO NOT** swim or recreate in areas with blue-green algae

**DO NOT** drink water

Keep all pets, livestock, and horses away from blue-green algae

Clean fish well and discard guts

Avoid areas with blue-green algae when boating



Until further notice:

**DO NOT** swim or recreate in water

**DO NOT** water ski, jet ski, or paddle board

**DO NOT** drink water

Keep all pets, livestock, and horses away from water

Fishing not advised

Boating not advised



Call your doctor or veterinarian immediately if you or your animals have sudden or unexplained sickness or signs of poisoning

Report new algae blooms to: [hab.mt.gov](http://hab.mt.gov) or 1-888-849-2938

Sign posted by: \_\_\_\_\_



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# Canyon Ferry Reservoir





# 2018 Challenges

- \* Staying up-to-date on toxin levels requires frequent and large scale quantitative testing
- \* Communicating to the public without creating a big scare
- \* Acting quickly
- \* Who is responsible?



# Next Steps

- \* Continual public outreach
- \* Posting signs early at known HAB locations
- \* Continue to refine public map of verified HAB locations
- \* Nutrient criteria and monitoring

2019





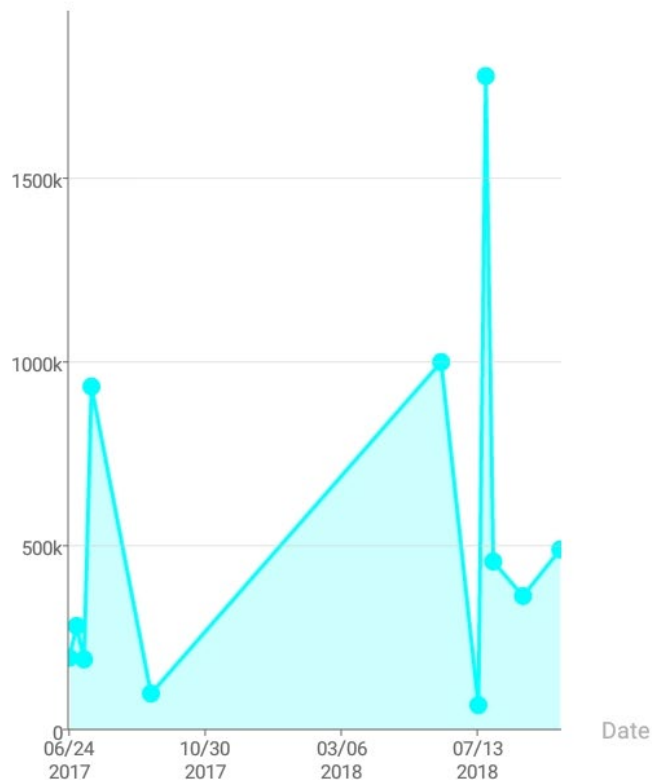
### **Basic Question:**

In Canyon Ferry Lake, what are the highest concentrations of phosphorus and/or nitrogen that will not cause algal blooms to reach nuisance levels?

# CyAN



Cyano (cells/mL)



- \* Tool produced in partnership with EPA, NOAA, USGS, and NASA
- \* Uses spectral signatures from satellite imagery to quantify max cyanobacterial cell densities
  - \* ~1 measurement/day
- \* Data available through:
  - \* Android App
  - \* SeaDAS, a desktop software
  - \* RSTools, a GIS Plug-in



# QUESTIONS?

**HAB.MT.gov**

**CyAN**

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