SLAM CYANOBACTERIA PROTOCOL

Background on Cyanobacteria

Cyanobacteria blooms are aesthetically displeasing in sight, odor and taste, as well as potentially toxic to domestic animals, livestock, wildlife and humans. Cyanobacteria are a potential public health danger because they may produce toxins, collectively referred to as "cyanotoxins," that can be consumed by organisms in the food chain and released into the water when cells die. However, the amount and type of toxin produced varies over time and from lake to lake. A cyanobacterial bloom may produce very little to no toxin in one lake while a later bloom in the same lake could produce a large toxin concentration.

Cyanotoxins can cause both acute and chronic illnesses, as these toxins target the liver, kidney and central nervous system, and can irritate the skin. Acute effects, such as skin and mucous membrane irritations, can occur after short-term exposure with water containing cyanotoxins. Chronic effects, such as liver, kidney and central nervous system damage, can occur over a long period of time from ingesting water containing toxins.

It is best to be cautious about entering a lake area with a possible bloom until the nature of the bloom has been definitively determined:

- Don't wade or swim or drink the water
- Keep pets and livestock out
- Wash your hands if you've made contact

Cyanobacteria harmful algal blooms (CyanoHABs) can look very different. Cyanobacteria can look like scum, mats, spilled paint or paint chips. The color of the water can turn blue, green, white, yellow or brownish.

The green stuff you see floating on the lake might not be cyanobacteria. Here are a few qualifiers:

- If you see leaves or roots, or distinguishable parts, it is likely a tiny (and harmless) aquatic plant like duckweed
- If it is a stringy, silky substances that can be draped over your finger or a stick it is probably filamentous green algae
- If it is yellow and almost "dusty" in texture, floating or suspended in the water column (but seems to act like cyanobacteria) it may be tree pollen, especially mid-May to mid-June

Step 1: Contact Sample Takers

Contact one or more of the SLAM volunteer sample takers to collect a sample:

Joanna Lucy
Cell: 603/730-7940
E-mail: jmlucy@gmail.com

Dave Scarborough
Cell: 541/490-1280
E-mail: dwscarborough@gmail.com

Matt Vavro
Cell: 724/822-1974
E-mail: mattvavro@mav-llc.com

Step 2: Collect A Sample

To collect a sample, you will need:

Smart phone – for taking pictures and capturing the GPS location
Nalgene bottle or glass jar with lid
Adhesive label and pen or permanent marker
Protective gloves
N95 mask or similar
5 gal pail filled with fresh water
Extendable grabber for holding the bottle and collecting the sample
Drying towel

1. Take a variety of photos and capture the GPS location. You can accomplish this in one step using an app such as Solocator or GPS Camera 55 or you can manually note the GPS

location as follows: On an iPhone, open the Maps app, press the blue dot denoting your location, and slide the My Location pop-up screen up to see the GPS coordinates. On an Android phone, open the Google Maps app, press the blue dot denoting your location and the coordinates will appear on a pop-up screen.

2. With gloves and mask on, carefully dip the container into the bloom to capture a sample of the algal mass.

3. Firmly close the container and thoroughly wash off the surfaces in the pail of clean water.

4. Dry the sample container off and adhere a label with the following information on it:

   Name of lake and town
   Name and phone # of sample taker
   GPS coordinates
   Date and time

5. Store the sample in a fridge (do not freeze) or keep cold in a cooler until it is delivered to DES.

Step 3: Notify DES

All definitive identifications of any cyanobacteria are made in a lab with microscopes at HAB (the Harmful Algae Bloom program) at DES. The first step in interacting with DES is to complete the Cyanobacteria Bloom Report. To get to the report form, scan the QR code below or simply go to this URL: https://survey123.arcgis.com/share/151c9fc3c8214c2e93325f77e0f1d578

The contact at the HAB at DES is:

Kate Hastings
HAB Coordinator
Cell: 603/848-8094
E-mail: HAB@des.NH.gov

After completing the form, whoever has provided their email address on the form will likely receive a reply from Kate.

Step 4: Deliver Sample to DES

It's possible that DES will have someone in the area who can pick up the sample but if not, the sample will need to be delivered to this location:

NHDES Jody Connor Limnology Center
Watershed Management Bureau
Water Division, NH Department of Environmental Services Hazen Drive (P.O. Box 95) Concord, NH 03302-0095

The entrance that faces the DMV has several black bins out on the sidewalk and they are labeled with "cyanobacteria, blooms, algae."

Call or text Kate (603-848-8094) to confirm sample drop off.

Step 5: Await DES Testing Results

All definitive identifications of any cyanobacteria need to be made in a lab with microscopes at NHDES @ HAB. While waiting for results, Kate states: "Do not try to mark or contain the bloom...letting the material move where it would naturally is better than gathering and concentrating it. When it "disappears" it is just getting mixed back into the water column and becomes more dilute. Eventually the cells will die, degrade, and sink to the bottom of the waterbody. We post waterbody wide advisories, not statewide advisories. We do not disclose or include specifics about where the bloom was initially observed because the concentrated material can move around a waterbody so quickly. It can be frustrating for people to not visually see a bloom, but to have an advisory in place. It is a challenging and dynamic situation. A week in between sampling tends to give the event long enough to see if it will fully pass or continue to persist. When we resample, I try to connect with community members to see if they're observing accumulations in different parts of the water body, and we focus on sampling the most severe part to determine advisories."

Step 6: Communication of Results

Kate will be in contact with SLAM leadership about the results within 24 hours. An alert may be issued if cyanobacteria is found below advisory levels. An advisory will be issued if cyanobacteria density exceeds the state's recreational threshold. If an advisory is issued, Kate will also contact the Health Officer for Madison to post signs at public access points.

1. Notify the Madison town selectman if an alert or advisory is issued.

Website: https://www.madison-nh.org
Phone: (603) 367-4332

2. Send a SLAM email newsletter notifying members of the alert or advisory.

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