

Cyanotoxin Management Plan (June 2018)

Lake County CSA 21 North Lakeport, PWS No. 1710021

Step 1. Visual Inspection and Monitoring Schedule	
<p>Visually inspect source waters for algae blooms (typically April through Nov). Inform customers of monitoring in May (see appendix for FAQ). Observations include algae at surface, presence of toxic producing genera present in microscopy, algae build up on raw pH probe. Sample for microcystins¹ in raw and finished water on a biweekly basis during presence of algae using ADDA specific - ELISA.</p> <p><i>If microcystin concentration exceeds 0.3 ug/L in 3 of 4 finish water samples, continue to Step 2.</i></p>	
Cyanotoxin Monitoring	Treatment Optimization
<p>Step 2. Confirmation Sample (within 24 hours) Notify stakeholders and collect a confirmation sample at the entrance to the distribution system (with Karola 707-295-8577 or Bend Genetics, 916-550-1048).</p> <p><i>If samples at entrance to distribution are >0.3 ug/L microcystin, continue to Step 3 and notify stakeholders.</i></p>	<p>Monitor raw pH, microcystins and use NTU/UV 254 readings to track plant performance. Monitor ozone dosage, pending extra- and intra-cellular results and microscopy (if <i>Lyngbya</i> or <i>Anabaena</i> – lower dosage). If bloom is in growth stage, consider reducing ozone to less than 2.7 mg/L. If bloom is in decay stage, maximize ozone.</p> <p>Use bench top charge analyzer to optimize coagulation/flocculation process and evaluate condition of GAC media. Monitor sludge accumulation at locations with drinking water contact.</p> <p>Use CT sheet to determine appropriate chlorine dosage. Increase filter backwash operations.</p> <p>Evaluate possibility of coag aid and filter aid operations.</p>
<p>Step 3. Positive Lab Sample Distribute public notice and conduct daily sampling at entrance to the distribution system.</p> <p>Consider sampling at the source for extra- and intra-cellular toxins.</p> <p><i>If microcystin concentration is less than 0.3 ug/L at entrance to distribution system, continue to Step 4.</i></p>	
<p>Step 4. Confirmation and Lifting notice Collect samples at locations in distribution system specified in Cyanotoxin Sampling Schedule and at the entrance to the distribution system.</p> <p><i>If any samples are positive, sample at Entry Point of Distribution System. If all laboratory samples are absent microcystins, lift notice and conduct weekly monitoring.</i></p>	<p>Resume normal operations</p>

¹ Consider sampling for *Cylindrospermopsis* or other toxins if corresponding genera are present.

Cyanotoxin Sampling Schedule

	Step 1. Routine Monitoring	Notify stakeholders, prepare PN	Step 2 @ WTP <i>confirm</i>	Step 3 +MC	Step 4 OFF (DAY1)	Step 4 OFF (DAY2)	
Frequency	BIWEEKLY			TRIGGERED	DAILY	DAY1	DAY2
Test-Type	ADDA ELISA			ADDA ELISA	ADDA ELISA	ADDA ELISA	ADDA ELISA
LOCATION:							
RAW	X			O ^F	O ^F		O
postOzone				O	O		
postClarifier				O	O		
postFilter				O	O		
postGAC				O	O		
EntryToDist	3/4 Step 2			X	X	X	X
North Tank				O	O	X	X
South Tank					O	X	X
CL Acres Tank					O	X	X
Total coliform sites				O	X	X	
Other				Distribute PN	Flush		

O = optional, pending cost; PN – public notification; F = fractionate source sample to look at extra- and intra-cellular distribution of toxin in source water

STAKEHOLDERS:

Public Health Officer, Sara Goldgraben: (707) 263-1090

District Office, Sheri Miller (707) 576-2145

Tribal Communication (707)295-8577 (Karola) (707) 263-3924 x132 (Sarah)

Hospitals: Sutter Lakeside Hospital (707) 262-5000

Veterinarians: Main Street: 263-6232 Wasson: 263-5380 Northlake: 263-1800

City of Lakeport: Paul Harris:

Nice MWC: Dave Fultz:

Cyanotoxin Public Notices

Adapted from page 33 of <http://www.waterrf.org/PublicReportLibrary/4697.pdf>

NOTICE #1: DOOR TO DOOR HANGER/FLYER NOTICE IF MICROCYSTINS

(Insert Date)

DO NOT DRINK OR COOK WITH TAP WATER – UNTIL FURTHER NOTICE

To protect your health, Lake County CSA 21 – North Lakeport with recommendations from the State Water Resources Control Board – Division of Drinking Water and Lake County Health Department, is issuing this water advisory. The tap water is currently only safe for external use. Do not swallow the water. Do not boil the water. Showering, bathing and brushing teeth are fine if you and your child do not swallow the water. You can wash fruit and vegetables and wash dishes with tap water if you let them dry before eating. If you swallow water, you may experience nausea, diarrhea or vomiting. You should seek medical attention if you become ill, and report the illness to the county health department. For more information and advice, please contact us at (707) XXX-XXXX. We will keep you updated and let you know when you can drink your drinking water again.

NOTICE #2: PHONE CALL NOTICE

DO NOT DRINK OR COOK WITH TAP WATER – [DATE] UNTIL FURTHER NOTICE

To protect your health, Lake County CSA 21 – North Lakeport has issued this water advisory. The tap water is only safe for external use. Do not swallow the water. Do not boil the water, because boiling makes it worse. If you swallow the water, you may experience nausea, diarrhea or vomiting. You should seek medical attention if you become ill, and report the illness to the county health department. For more information and advice, please [CONTACT MEANS]. We will keep you updated and let you know when you can drink your drinking water again by [CONTACT MEANS].

NOTICE #3: UPDATING MESSAGE

The Do Not Drink the Water advisory remains in place at this time, [DATE AND TIME]. We are working as quickly as possible to bring our community drinking water back to our high standards for health. We will provide an additional update in 6 hours at [X] o'clock.

NOTICE #4: LIFTING MESSAGE

TAP WATER IS SAFE TO DRINK – [DATE] Your drinking water provider, Lake County CSA 21 – North Lakeport, has tested the water and tests confirm that it is drinkable. All water advisories have been lifted. Thank you for your patience and understanding. For further information about this water advisory or any aspect of drinking water safety or delivery please visit our website [WEBSITE URL] or call our customer service line [123-456-7890].

NOTICE #5: INFORM CUSTOMERS AHEAD OF TIME

What you need to know about potentially harmful Cyanobacteria

First, you need to know that your drinking water meets all state and federal standards. If at any time there is an issue with your drinking water we will notify you as soon as possible.

Second, it is interesting to know that cyanobacteria – although they look like algae, bloom like algae, and occur naturally like algae – are not really algae at all!

Cyanobacteria produce cyanotoxins which can, if a cyanobacteria bloom is large enough, pose health risks to humans and animals.

This fact sheet provides you with information about naturally occurring cyanobacteria and cyanotoxins, how our community can work together to reduce the conditions that contribute to large, long lasting blooms, and how we at Lake County Special Districts are working to ensure your safety is never compromised due to cyanotoxins.

What are cyanobacteria?

Cyanobacteria, formerly referred to as blue-green algae, are microscopic organisms found naturally in all types of water; fresh, brackish (combined salt and fresh water), and marine water. These organisms use sunlight to make their own food. Unfortunately, cyanobacteria can produce cyanotoxins which can be harmful to humans and animals.

What are cyanotoxins?

Cyanobacteria are capable of producing toxins known as cyanotoxins.

How are cyanobacteria blooms formed?

Cyanobacteria can multiply quickly in warm, nutrient-rich water (high in phosphorus and nitrogen), creating blooms that spread across the water's surface. The blooms are sometimes, but not always, visible. Blooms are most likely to form in warm, slow-moving waters that are rich in nutrients from sources such as fertilizer runoff or failing septic tanks. Cyanobacteria blooms need nutrients to survive, so the more nutrients in the water the larger the bloom can grow. The blooms can form at any time, but most often form in late summer or early fall. However, the environmental conditions that cause cyanobacteria to produce cyanotoxins are not fully understood and can vary from year to year within the same waterbody.

What does a cyanobacteria bloom look like?

You may or may not be able to see cyanobacteria blooms. They sometimes stay below the water's surface, and they sometimes float to the surface. Some cyanobacteria blooms can look like foam, scum, or mats, particularly when the wind blows them toward a shoreline. The blooms can be blue, bright green, brown, or red. Blooms sometimes look like paint floating on the water's surface. As cyanobacteria in a bloom die, the water may smell bad, similar to rotting plants. You cannot tell from looking at a cyanobacterial bloom if it is or is not producing harmful cyanotoxins.

Are some cyanobacteria blooms harmful?

Yes! Harmful cyanobacteria blooms have the potential to affect people, animals, or the environment in two ways: 1. By blocking the sunlight that most organisms need to live. Cyanobacteria blooms steal the oxygen and nutrients other organisms need to live. 2. By producing toxins, called cyanotoxins. Cyanotoxins can make people, their pets, and other animals sick through contact, touching, and through

ingestion, untreated drinking contaminated water. Cyanobacteria blooms that harm people, animals, or the environment are called cyanobacterial harmful algal blooms (HABs). Additionally, cyanobacteria can create taste and odor problems in drinking water, such as an earthy and musty smell. However, there are many causes for taste and other problems and the presence of taste or odors does not necessarily indicate the presence of cyanotoxins.

How do people and animals come in contact with cyanobacteria or cyanotoxins?

There are two primary ways in which people and animals can come in contact with cyanobacteria and cyanotoxins that are in the environment:

1. Through drinking untreated water that comes from a lake or reservoir that is experiencing a large cyanobacteria bloom. Your water utility will contact you immediately if there is ever a concern from contact with treated drinking water.
2. Through direct contact with water (e.g., wading, swimming, playing) where a cyanobacteria bloom is producing cyanotoxin.

How do I protect myself, my family, and my pets from cyanobacteria water contact risks?

To protect yourself, your family and your pets from cyanobacteria blooms in the environment, do not allow direct skin to contact if you are concerned there might be a cyanobacteria bloom. Cyanotoxin poisoning occurs by ingesting the water, not through contact with water, but contact with water that has high concentrations of cyanotoxins can result in skin rashes and itching.

Here are some tips to help keep you, your family, friends and animal's safe:

- Don't swim, water ski, or boat in areas where the water is discolored or where you see foam, scum, or mats of algae on the water's surface.
- Do not allow children or pets to play in or drink scummy water.
- If you do swim in water that might contain harmful cyanobacteria, rinse off with fresh water as soon as possible afterward.
- Seek immediate medical attention if you or your children drink the water and show any of these symptoms of cyanotoxin poisoning: loss of energy, loss of appetite, vomiting, stumbling and falling, foaming at the mouth, diarrhea, convulsions, excessive drooling.
- Do not let your pets or livestock graze near, drink, or swim in water where you see cyanobacteria blooms, foam, or scum on the surface.
- If your animal gets in water with a bloom, immediately wash it off with clean water.
- Do not let animals drink the water or lick cyanobacteria off its fur.

- Call a veterinarian if your animal shows any of these symptoms of cyanobacteria poisoning: loss of energy, loss of appetite, vomiting, stumbling and falling, foaming at the mouth, diarrhea, convulsions, excessive drooling.

How is the drinking water utility protecting me, my family and our pets from the risk of cyanotoxins in our drinking water?

Our drinking water treatment system at Lake County Special Districts removes the risks to humans and pets from drinking water with cyanotoxins in all conditions except those that may occur during an extremely large and long duration cyanobacteria bloom. It is only the blooms that are very large and last a long time that create a risk from drinking the water, because under all other conditions our treatment processes, which are designed to meet all Federal and State Drinking Water health protection mandates, provide multiple layers of protection. If conditions indicate a large or long-lasting cyanobacteria bloom is likely to occur, our agency will take the following additional actions as necessary:

- Implement additional monitoring and testing protocols
- Implement additional treatment processes
- If necessary, issue a Do Not Ingest the Water notice

Can I help?

Yes! Reducing fertilizer runoff and keeping septic systems pumped so they don't overflow are two significant ways to reduce the amount of nutrients available for the cyanobacteria to eat. To help reduce cyanobacteria from forming:

- Use only the recommended amounts of fertilizers on your yard and gardens to reduce the amount that runs off into the environment.
- Properly maintain your household septic system.
- Maintain a buffer of natural vegetation around ponds and lakes to filter incoming water.
- Spread the word! Share these best practices with friends, neighbors and colleagues.

MORE INFORMATION For a set of Frequently Asked Questions see <https://mywaterquality.ca.gov/habs/what/drinking.html>. For more information about cyanobacteria and cyanotoxins see: www.epa.gov/cyanohabs. For more information about potential health effects of exposure to cyanotoxins, see www.cdc.gov/habs.

Veterinary Fact Sheet

Blue-Green Algae: A Veterinarian Reference

IDENTIFYING ILLNESS DUE TO BLUE-GREEN ALGAE

✓ Exposure History ✓ Clinical Signs ✓ Diagnosis ✓ Treatment ✓ Reporting

DESCRIPTION OF THE PROBLEM

Blue-green algae (also known as cyanobacteria) are non-pathogenic photosynthetic bacteria that grow in outdoor water bodies and produce toxins such as microcystins, cylindrospermopsin and anatoxin-a. They can grow quickly and form large blooms, especially in warm weather.

Scope of the problem in California:

- Toxic blooms occur throughout California and are increasing in number, frequency and severity.
- Dog and livestock deaths in California have been linked to blue-green algal toxins.

EXPOSURE

Animals can be exposed to blue-green algae and its toxins by:

- Contacting any infected water body including lakes, rivers, ponds, etc. Because animals are attracted to blue-green algae, they drink the water and eat algal material. Dogs in particular lick algae caught in their fur after being in the water.
- Consuming water and algae from residential pools or decorative ponds.
- Ingesting blue-green algae health supplements.

CLINICAL SIGNS, DIAGNOSIS and TREATMENT: See page 2. *Limited funding may be available to cover physical examination of ill dogs with suspected poisoning (see page 3).*

BIOSPECIMEN COLLECTION, HANDLING and SHIPPING: See pages 3 and 4. *Limited funding may be available to collect and analyze some of the suggested canine specimens (see page 3).*

REPORTING: Reporting confirmed or suspected cases will help prevent other animal and human exposures to blue-green algal toxins. Please complete the Illness Information Section on the Report Form available at <https://drinc.ca.gov/cyano/ahab/>. For questions call the State Water Resources Control Board at (844) 729-6466.



From the California Cyanobacteria and Harmful Algal Blooms Network. For more information see: www.mywaterquality.ca.gov/habs/

Prepared by:



