



September
16, 2016



Blue-green Algae (Cyanobacteria)

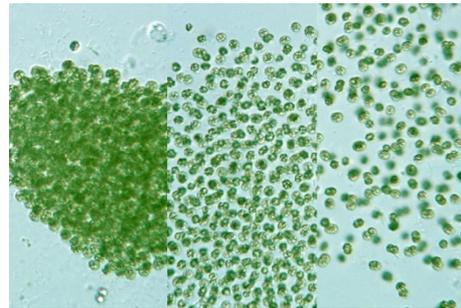
Health Dangers,
Environmental Impacts, &
the Public Health Response

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Contra Costa Environmental Health

How are Humans Exposed?

- **Oral** (accidental or deliberate ingestion)
- **Dermal** (direct contact of body with water)
- **Inhalation**
(aspiration of aerosolized water)



Health Risks from Cyanotoxin Exposure

Range from a mild skin rash to serious illness or death.

Cyanotoxins	Acute Health Effects in Humans	Most common cyanobacteria producing toxin
Microcystin-LR	Abdominal pain, Headache, Sore throat, Vomiting and nausea, Dry cough, Diarrhea, Blistering around the mouth, and Pneumonia	<i>Microcystis</i> , <i>Anabaena</i> , <i>Nodularia</i> , <i>Planktothrix</i> , <i>Fischerella</i> , <i>Nostoc</i> , <i>Oscillatoria</i> , and <i>Gloeotrichia</i>
Cylindrospermopsin	Fever, Headache, Vomiting, Bloody diarrhea, Liver inflammation, and Kidney damage	<i>Cylindrospermopsis raciborskii</i> , <i>Aphanizomenon flos-aquae</i> , <i>Aphanizomenon gracile</i> , <i>Aphanizomenon ovalisporum</i> , <i>Umezakia natans</i> , <i>Anabaena bergii</i> , <i>Anabaena lapponica</i> , <i>Anabaena planctonica</i> , <i>Lyngbya wollei</i> , <i>Raphidiopsis curvata</i> , and <i>Raphidiopsis mediterranea</i>
Anatoxin-a group	Tingling, burning, numbness, drowsiness, incoherent speech, salivation, respiratory paralysis leading to death*	<i>Chrysochlorum (Aphanizomenon) ovalisporum</i> , <i>Cuspidothrix</i> , <i>Cylindrospermopsis</i> , <i>Cylindrospermum</i> , <i>Dolichospermum</i> , <i>Microcystis</i> , <i>Oscillatoria</i> , <i>Planktothrix</i> , <i>Phormidium</i> , <i>Anabaena flos-aquae</i> , <i>A. lemmermannii</i> , <i>Raphidiopsis mediterranea</i> (strain of <i>Cylindrospermopsis raciborskii</i>), <i>Tychonema</i> and <i>Woronichinia</i>

* Symptoms observed in animals.

What are the Environmental Impacts?



- Blooms can increase the mortality rate in local fish, shellfish, invertebrate, and plant populations.
- Cyanobacteria can present taste and odor problems for drinking and recreational water bodies.

Discovery Bay

Live Where you Play (*Before*)



Discovery Bay

Live Where you Play *(Now)*

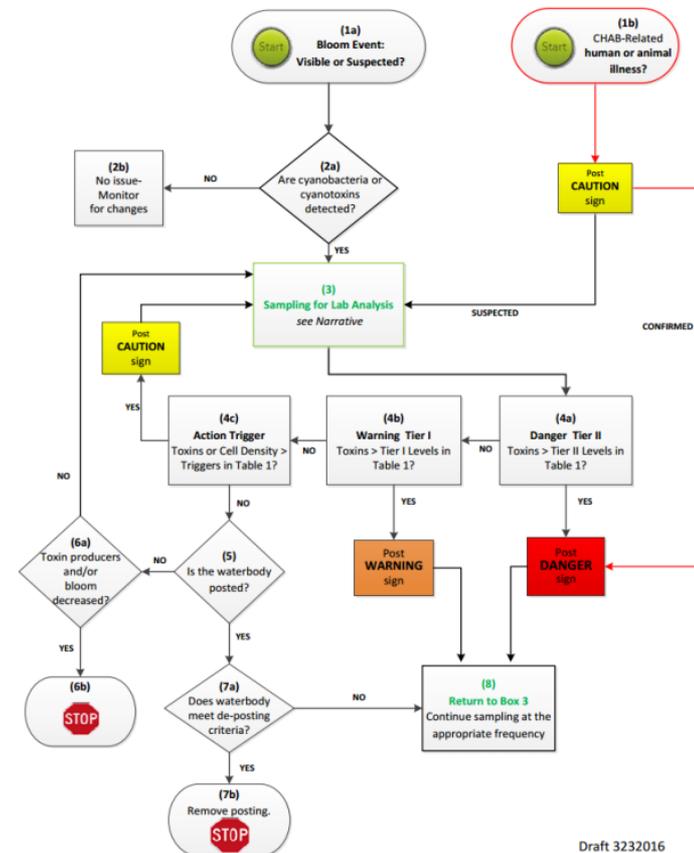


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Harmful Algal Bloom Public Health Response

- No federal or state stds for cyanotoxins in recreational waters.
- State Water Board, OEHHA, & CDPH – 2010 Voluntary Guidance Document

Figure 1. Decision Tree for Posting and De-posting Health Advisories for CyanoHABs
Proposed changes to consider for Voluntary CHAB Guidance



CyanoHAB Trigger Levels for Human Health

	Caution Action Trigger	Warning TIER I	Danger TIER II
Primary Triggers^a			
Total Microcystins^b	0.8 µg/L	6 µg/L	20 µg/L
Anatoxin-a	Detection ^c	20 µg/L	90 µg/L
Cylindrospermopsin	1 µg/L	4 µg/L	17 µg/L
Secondary Triggers			
Cell Density (Toxin Producers)	4,000 cells/mL	--	--
Site Specific Indicators of Cyanobacteria	Blooms, scums, mats, ect.	--	--

^a The primary triggers are met when ANY toxin exceeds criteria.

^b Microcystins refers to the sum of all measured microcystin variants. (See Box 3)

^c Must use an analytical method that detects ≤ 1µg/L Anatoxin-a.

CyanoHAB Postings

CAUTION

**Harmful algae may be present in this water.
For your family's safety:**



You can swim in this water, but **stay away from algae and scum** in the water.



Do not let pets and other animals go into or drink the water, or eat scum on the shore.



Keep children away from algae in the water or on the shore.



Do not drink this water or use it for cooking.



For fish caught here, **throw away guts and clean fillets** with tap water or bottled water before cooking.



Do not eat shellfish from this water.

Call your doctor or veterinarian if you or your pet get sick after going in the water.

For information on harmful algae, go to mywaterquality.ca.gov/monitoring_council/cyanohab_network

For local information, contact: Enter your contact information in this text box

WARNING

Toxins from algae in this water can harm people and kill animals



No swimming.



Do not let pets or other animals go into or drink the water, or go near the scum.



Stay away from scum, and cloudy or discolored water.



Do not eat shellfish from this water.



Do not use this water for drinking or cooking. Boiling or filtering will not make the water safe.



For fish caught here, **throw away guts and clean fillets** with tap water or bottled water before cooking.

For people, the toxins can cause:

- Skin rashes, eye irritation
- Diarrhea, vomiting

For animals, the toxins can cause:

- Diarrhea, vomiting
- Convulsions and death

Call your doctor or veterinarian if you or your pet get sick after going in the water.

For information on harmful algae, go to mywaterquality.ca.gov/monitoring_council/cyanohab_network

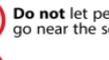
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DANGER

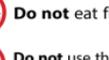
Toxins from algae in this water can harm people and kill animals



Stay out of the water until further notice. Do not touch scum in the water or on shore.



Do not let pets or other animals drink or go into the water or go near the scum.



Do not eat fish or shellfish from this water.



Do not use this water for drinking or cooking. Boiling or filtering will not make the water safe.

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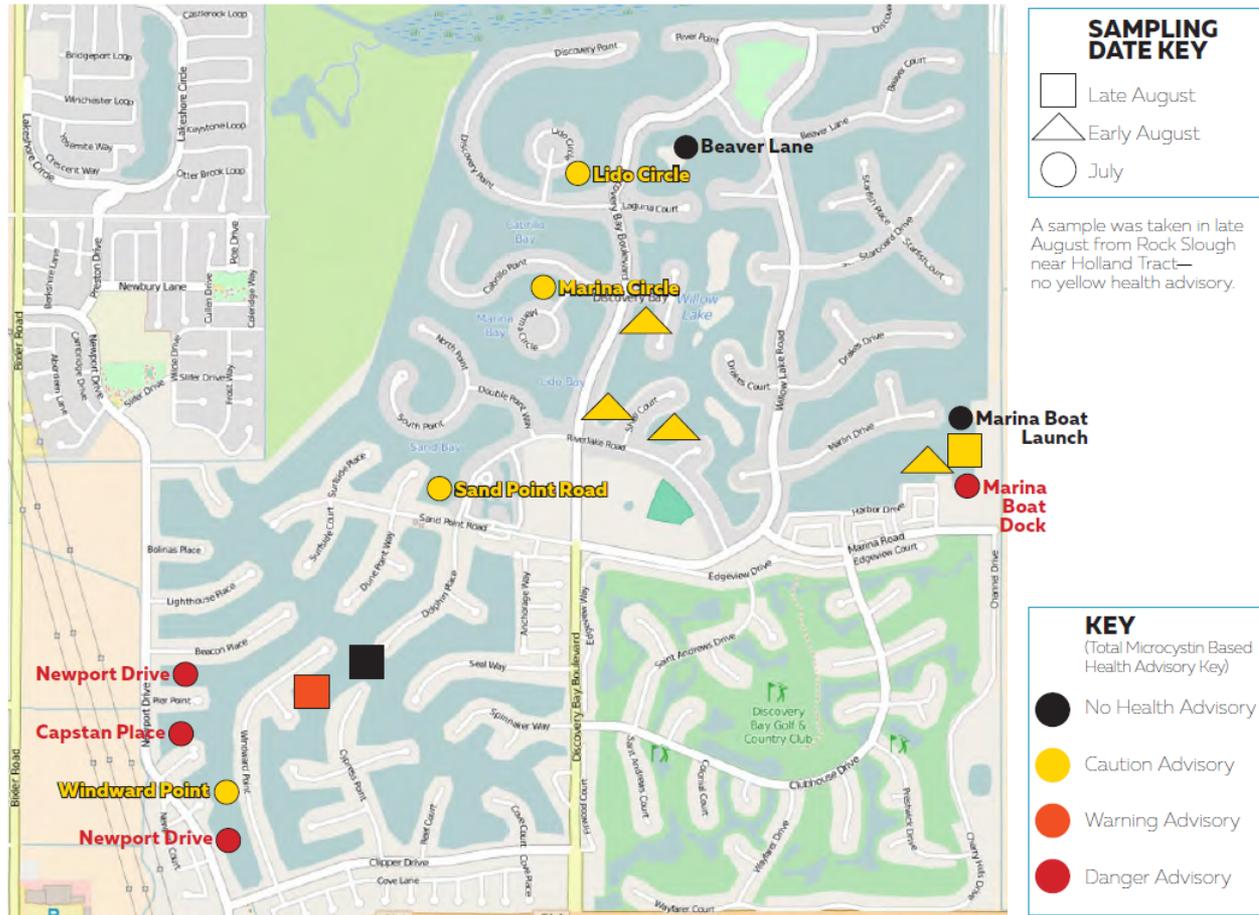
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Public Outreach & Information

Discovery Bay—Sample Locations—2016



Questions?

California Cyanobacteria and Harmful Algal Bloom (CCHAB) Network

www.mywaterquality.ca.gov/monitoring_council/cyanoHab_network/

Contra Costa Environmental Health – Discovery Bay Blue-green Algae

cchealth.org/eh/blue-green-algae.php