

California CyanoHAB Network (CCHAB)*



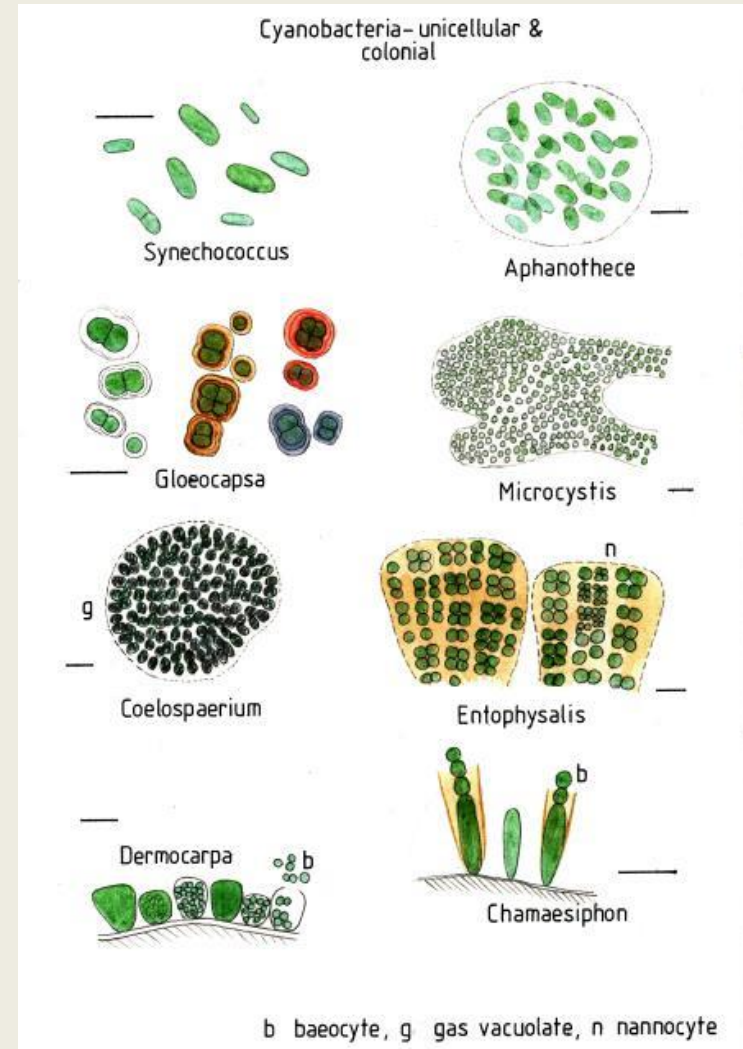
Johanna Weston
State Water Board
Ocean Unit

**California Water Quality Monitoring Collaboration
Network Webinar**
November 21, 2013

* Formally the Statewide Blue Green Algae Public Working Group

Cyanobacteria and Algal Blooms

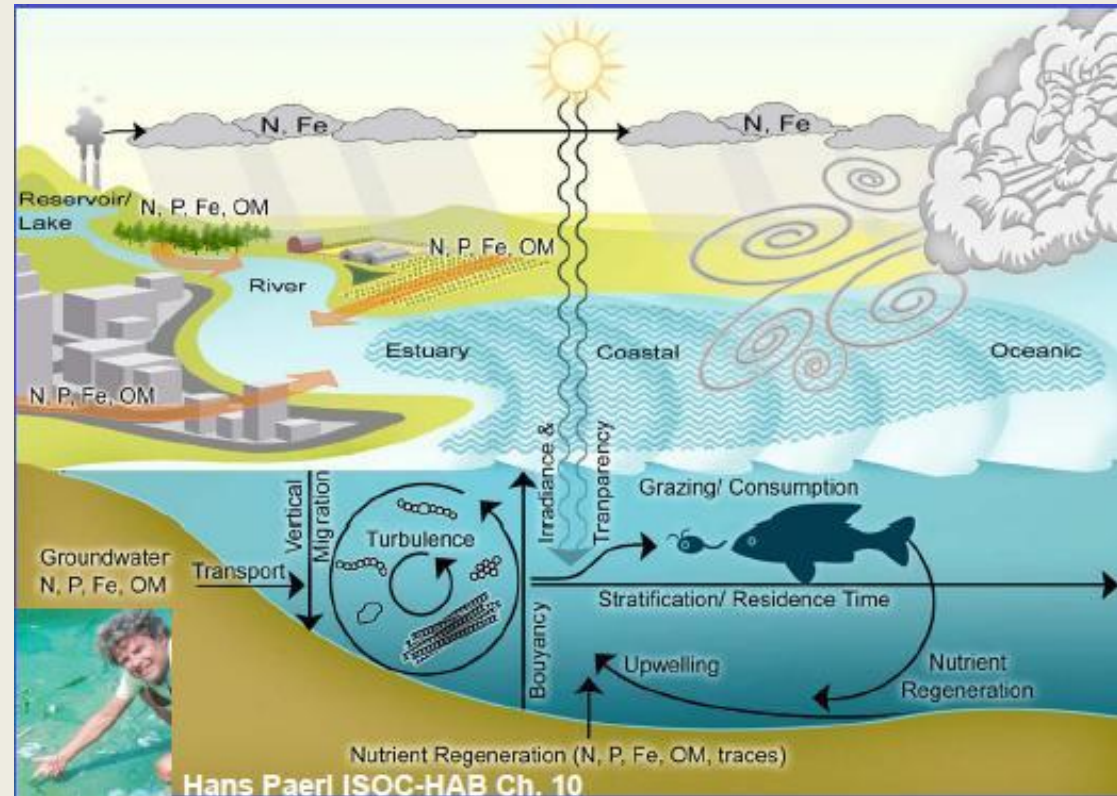
- Singled-celled bacteria that photosynthesize (i.e. have chlorophyll-a).
- Often called blue-green algae.
- Algal Blooms
 - Extremely high cell densities
 - Visible accumulation
 - Dominated by a single or few species



What Causes Algal Blooms?

Many environmental factors can influence algal blooms.

- Nutrients
- Turbidity
- Circulation Patterns
- Biological Community Interactions.



Harmful Algal Blooms

- HAB can occur when water use is impaired due to excessive accumulations of algae.
- Ecological Concerns
 - Low dissolved oxygen
- Economic Concerns
 - Recreation
 - Taste and odor
- Public Health Concerns
 - Toxicity

Animal Safety Alert

BLUE-GREEN ALGAE BLOOMS
When in doubt, it's best to keep out!



What is a blue-green algae bloom?
Cyanobacteria, sometimes called blue-green algae, are microscopic organisms found naturally in all types of water.

- Blue-green algae grow quickly, or bloom, when the water is warm, stagnant, and full of nutrients. Algae blooms usually occur during the summer and fall. However, they can occur anytime during the year.
When a bloom occurs, scum might float on the water's surface.
Blooms come in different colors, from green or blue to red or brown.
As the bloom dies off, you may smell an odor like rotting plants.

What is a toxic bloom?
Sometimes, blue-green algae produce toxins.

- The toxins can be present in the algae or in the water.
Swallowing water with algae that are producing toxins can cause serious illness.

You cannot tell if a bloom is toxic just by looking at it.

 Centers for Disease Control and Prevention
National Center for Environmental Health

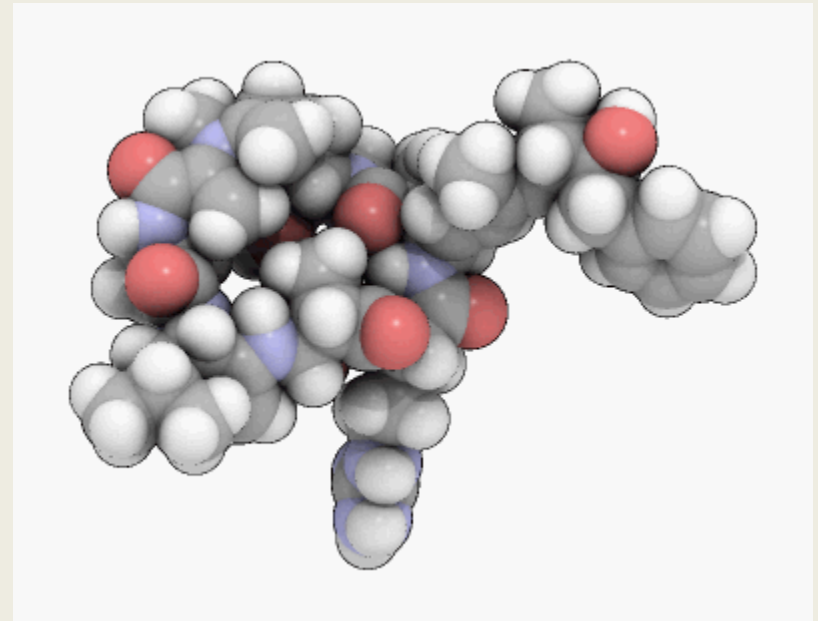
Cyanobacteria and Toxins

- **Cyanotoxins** – Chemicals produced by some cyanobacteria species that may affect the liver, nervous system, and/or skin.
 - **Microcystin** (*Microcystis*)
 - **Anatoxin-a** (*Anabaena*, *Aphanizonmenon*)
 - **Clindrospermopsin** (*Anabaena*, *Aphanizonmenon*, *Clyindrospermopsis*)
 - **Saxitoxin**

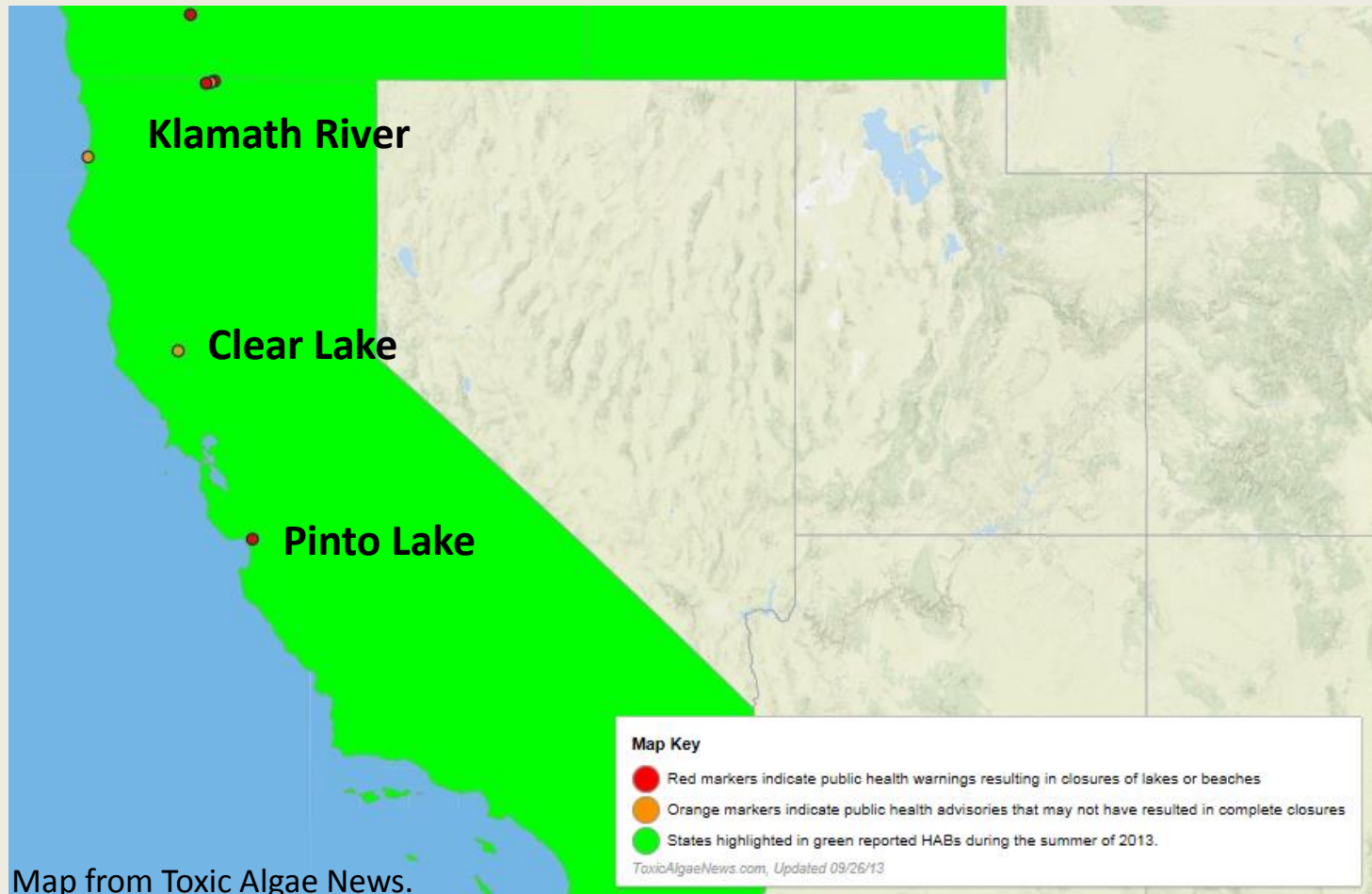


Microcystin

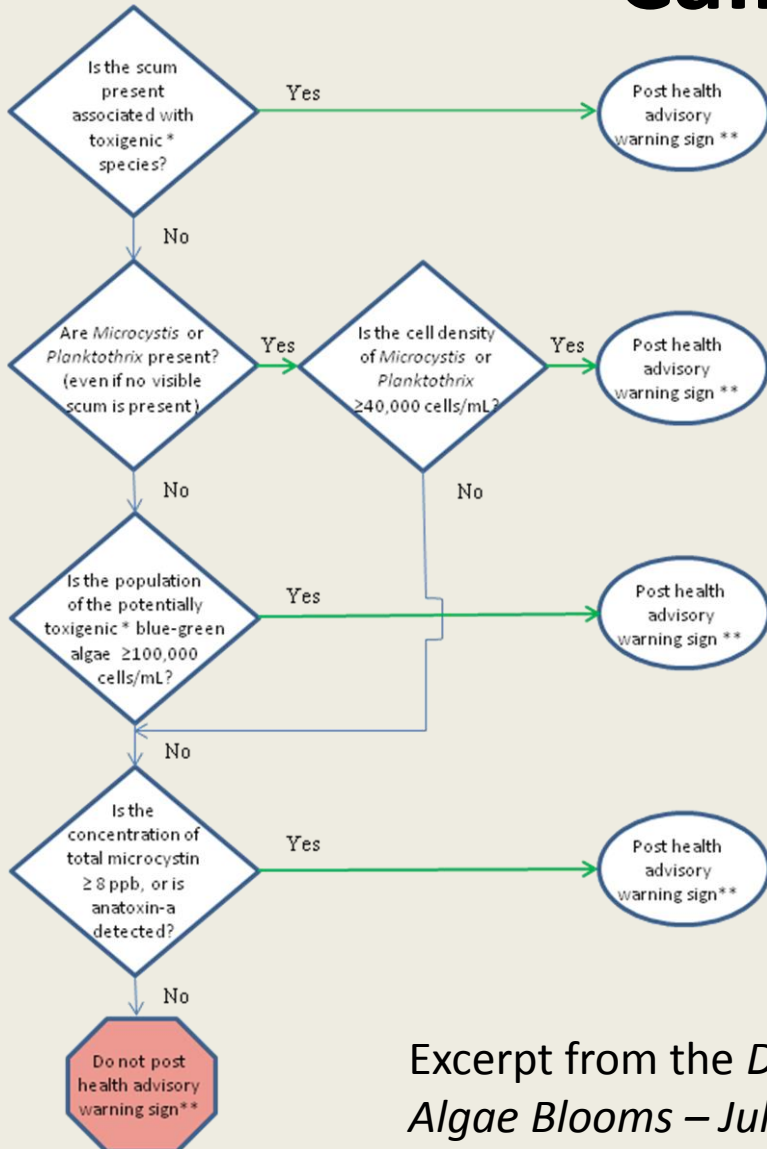
- Most commonly detected cyanotoxin.
 - > 70 variants
 - Microcystin-LR
- Exposure - Ingestion
- Impacts the liver.
 - No Human Deaths.
- WHO Tolerable Daily Intake - 1 $\mu\text{g}/\text{L}$



Where are CyanoHABs in California?



How are CyanoHABs Addressed in California?



Excerpt from the *Draft Voluntary Statewide Guidance for Blue-Green Algae Blooms – July 2010*

Challenges to CyanoHABs

- Complex set of environmental factors.
- Diverse set of stakeholders.
- Multiple regulatory agencies.
 - US EPA
 - Department of Public Health
 - Water Board
- Based on World Health Organization guidance levels.
- Lack of statewide consistency in monitoring.
- Challenges to posting and public use of water bodies.

Every month beginning April 2013

Free Carp Competition

Pinto Lake City Park
Watsonville
www.pintolakepark.com
831-722-8129

Collect a bounty!
We pay \$.25/lb

Win Prizes!

- Flip In The Bird™ bass lures
www.flipinthebird.com
- Coupons for free boat rental
- Cash prizes

Requirements:
Posses a valid F&G license
Use legal methods of take
No bow fishing
No snag fishing
Kill fish quickly and humanely
Fish only during Park Open Hours

No Age Limit

The Process
Register the same day you fish
Fish any (or all) days, from bank or boat
Bring all fish to park office for photo and weigh-in.
Month's cumulative weight for all catches wins
Each month's tally occurs on the last Saturday of the month.
Prizes awarded on last Saturday of the month.
(You do not need to be present)
All fish become the property of Pinto Lake.

Sponsored by
City of Watsonville



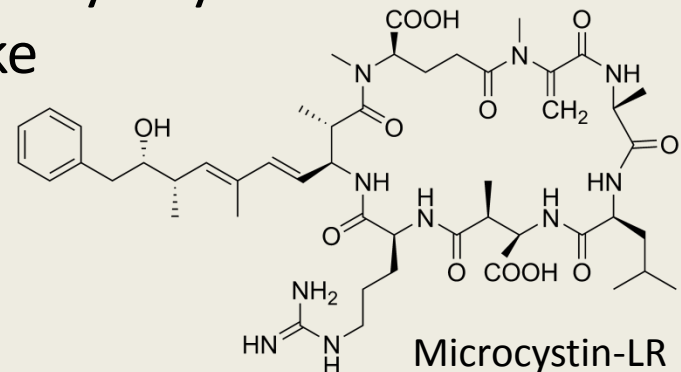
Fall 2005: State Water Board Workshop on Record-Setting Toxigenic Blooms on Klamath River Reservoirs

- High Levels of Persistent & Bioaccumulative Microcystin Toxins Produced By Reservoir Blooms.
- USEPA, SWRCB, and RWQCB Coordination & Information-Sharing With Tribal Representatives, Local Agencies, And Other Interested Parties.
- Establishment of Statewide BGA Working Group.



Accomplishments

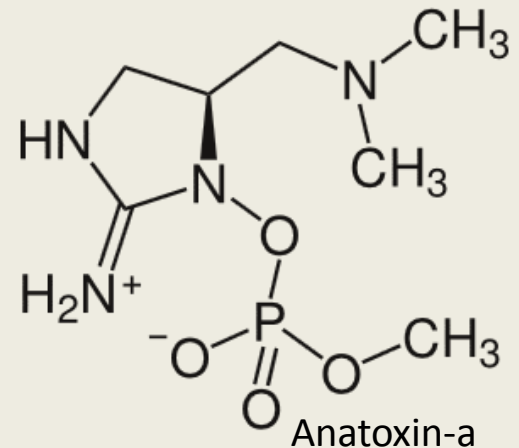
- Meets twice a year.
- Draft Voluntary Guidance about Harmful Algal Blooms
- OEHHA Report on Suggested Action Levels for Blue Green Algae Toxins (Cyanotoxins)
- Two Trainings on HABs identification and sampling
- State Water Board Funded:
 - Water quality investigation on Klamath River Reservoirs
 - Development of LC-MS/MS methods for analysis of cyanotoxins
 - Sea Otter Poisoning Cases near Monterey Bay
 - Nonpoint Source Project for Pinto Lake



Collaborations

DIVERSE group of members

- Agencies (State Water Board, Regional Water Boards, OEHHA, DFW, CDPH, DWR, U.S. EPA, USGS, FWS)
- Tribal Governments (Karuk Tribe and Yurok Tribe)
- Local Health Departments (Siskiyou County, Humboldt County, Del Norte County)
- Cities (City of Watsonville, San Mateo)
- Academics and Researchers (UC Davis, UC Santa Cruz, Cal State MLML, SCCWRP, SFEI)
- Metropolitan Water and PacifiCorps
- Many others



Freshwater Cyanobacteria Workshop

2012 Outcomes

- Hosted by Surface Water Ambient Monitoring Group (SWAMP).
- Develop long-term vision and strategic plan for cyanotoxins in California.
 - Identify and prioritize management questions
 - Synthesize existing data and identify data gaps
 - Develop communication tools
- Form a coordinated network through collaborations between federal, tribal, state, regional, and local agencies.



Moving Forward

- Define the Mission
- Establish a Steering Committee
- Establish Subgroups
- Establish Short-Term Goals
- Meetings: March 22 & May 6, 2013



HEALTH ADVISORY



**AVOID WATER CONTACT IN
IRON GATE AND COPCO RESERVOIRS**

Due to high levels of blue-green algae that can produce harmful toxins.

- Do not use this water for drinking or cooking.
- Do not consume fish livers or digestive organs, and wash fillets with drinking water.

Children and pets are at greatest risk.

For more information contact:
North Coast Regional Water Quality Control Board
(707) 576-2225

Goals

1. Promote improvements of **coordination, monitoring, and management** of harmful cyanobacteria blooms and effects in freshwater and marine ecosystems throughout California.
2. Develop **collaborative relationships** among entities (e.g. federal, tribal, state, and local agencies) responsible for addressing cyanobacteria concerns and impacts to beneficial uses.
3. Make **efficient use** of federal, tribal, state, regional, and academic resources to address cyanobacteria concerns by sharing information, avoiding duplicative efforts, promoting research, monitoring, and assessment, identifying technical and policy gaps, and communicating cyanobacteria concerns to the public.

Steering Committee

- One *Facilitator* – Johanna Weston, State Water Board
- One representative from a *Federal Agency*
- One representative from a *State Agency*
- One representative from a *Local Agency*
- One representative from the *User/Regulated Community*
- One *Tribal* representative
- One *HABMAP* representative
- One representative from the *Academic Community*
- One representative from the *Environmental Community*



Subgroups



1. Statewide Guidance

- Establish criteria to support regulatory agencies.
- Revise statewide draft guide to reflect input of the group and future guidance.

2. Communication (Education and Outreach)

- Centralized website.
- List server for CCHAB – cchab@sccwrp.org
- Updated signage and outreach tools.
- Develop a training academy course to help outreach.
- Contact list for Regional Boards and other agencies for whom to contact when the public calls regarding bloom concerns.
- Educational pamphlet .

Subgroups (cont.)

3. Data Compilation

- Cyanotoxin data compilation.

4. Research

- Library of peer-review journal articles and current state of science.

5. Monitoring, Assessment, and Reporting

- Statewide map of BGA blooms and cyanotoxin data.

6. Strategic Plan and Funding

The objective of CCHAB is to continue to work collaboratively to address cyanobacteria concerns in California.



http://www.swrcb.ca.gov/water_issues/programs/bluegreen_algae/index.shtml

<http://www.cdph.ca.gov/healthinfo/environhealth/water/Pages/Bluegreenalgae.aspx>

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