



SWAMP WORKSHOP ON FRESHWATER CYANOTOXIN MONITORING IN CALIFORNIA

What is it?

Cyanotoxins from harmful algal blooms have been causing problems in a number of water bodies in California, and have resulted in drinking water supply concerns, wildlife and domestic animal deaths (including the death of 30 endangered sea otters in the last few years), human health risks, and restrictions on shellfish harvesting. In spite of these well-documented problems, no monitoring efforts are yet in place to routinely screen for harmful algal blooms or associated cyanotoxins in water or organisms in California's freshwater habitats and therefore do not know the true extent of the problem.



Thirty sea otters have died since 2007 due to microcystin transported from lakes with blue green algae blooms downstream to Monterey Bay. Liver damage resulting in jaundice is one symptom of the toxicity.

To address these issues, the Bioaccumulation Oversight Group (BOG) of the Surface Water Ambient Monitoring Program (SWAMP) hosted a two-day workshop on November 28-29, 2012 at the San Francisco Regional Water Quality Control Board in Oakland, CA.

On the first day, a series of presentations by managers and scientists at the forefront of this issue educated approximately 156 Water Board staff and other water quality managers and scientists about the potential harmful effects of cyanotoxins, the factors leading to cyanotoxin production, and cyanotoxin monitoring approaches. PowerPoint presentations from Day 1 are available at the [BOG web site](#).

The second day of the workshop was limited to an invited group of approximately 40 participants, and was designed to determine priority management questions, discuss options for a comprehensive screening assessment and monitoring program for CyanoHABs and cyanotoxins in California, and begin forming partnerships to facilitate program implementation. A summary document describing the key findings and outcomes of Day 2 is available at the [BOG web site](#).

Why is it important?

During recent decades, harmful algal blooms (HABs) seem to have dramatically increased in California's freshwater habitats, reflecting overall trends nationwide and globally. HABs involving cyanobacteria (CyanoHABs) have been especially problematic in water bodies in California and elsewhere.



Known problem areas for biotoxins in California include

- Klamath Basin
- Big Lagoon and Eel River
- Clear Lake
- Bay-Delta
- Stockton Channel
- Pinto Lake/Monterey Bay
- Lake Isabella
- Crowley Lake
- Lake Elsinore
- Sonoma County
- The entire coast (annual mussel quarantine)

Cyanotoxins have been the focus of much concern in the Klamath River system, including concerns for human exposure due to accumulation in mussels and fish. They have been found in the Sacramento/San Joaquin watershed and Bay-Delta, and in a number of lakes throughout California, including Crowley Lake, Clear Lake, Lake Isabella, Big Bear Lake, Lake Elsinore, Pinto Lake, Lake San Marcos, and others. In some cases, cyanobacteria blooms have resulted in health advisory postings. Recently, 30 sea otter deaths were confirmed from microcystin intoxication, with evidence of an upstream source of toxins that were transferred to coastal waters and into

invertebrate food items as the most likely route of exposure. Over a dozen dog deaths have been attributed to cyanobacteria toxicity in California in the last decade. Human exposure is another concern due to the accumulation of cyanotoxins in fish and shellfish.

How will this information be used?

The workshop generated strong support for addressing this important issue. Close coordination of existing and future efforts will be essential. The workshop participants concluded that a strategy needs to be developed to guide the implementation of a statewide biotoxin monitoring network. Participants also concluded that a coordination strategy should be developed, and that the initial groundwork should include:

1. identification and prioritization of management questions
2. assessment of existing data and gaps
3. evaluation of available communication tools and incident tracking frameworks.

A follow-up meeting to form a steering committee to guide this work will take place in the spring of 2013.

For more information:

- Visit the [Bioaccumulation Oversight Group](#) web site for workshop presentations and proceedings.
- Visit the [California Department of Public Health](#) web site for general information on HABs.
- Contact Thomas Jabusch, SFEI (thomasj@sfei.org).