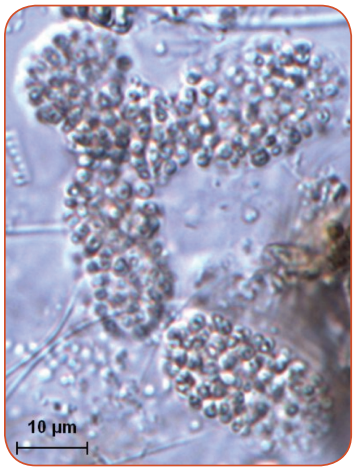
SWAMP
Surface Water Ambient Monitoring Program

CYANOTOXIN SCREENING STUDY IN DIFFERENT WATER BODIES OF THE SAN DIEGO REGION

What is it?

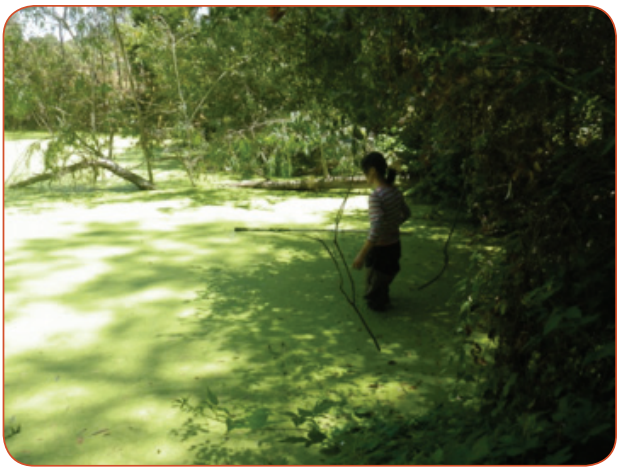
Cyanobacteria (also known as blue-green algae) are photosynthetic bacteria found naturally in a variety of freshwater habitats throughout California that can produce toxins (cyanotoxins) under certain conditions. Exposure to cyanotoxins can occur by ingestion, inhalation, and dermal contact. Cyanotoxins 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, 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 cyanobacteria blooms or associated cyanotoxins in water or organisms in freshwater habitats.



Microcystis (Photo courtesy of R. Hristova, CSUSM).

In 2012, the San Diego Water Board began screening several different water body types in the San Diego region for cyanotoxins. In the first year, a SWAMP-funded cyanotoxin screening was conducted in streams and depressional wetlands. Samples for the screenings were obtained using discrete (i.e., grab sample) and continuous passive (i.e., Solid Phase Adsorption Toxin Tracking [SPATT] bag) methods. Additional parameters, such as nutrients, chlorophyll, alkalinity, and dissolved oxygen, were also sampled. The first results from the study showed that over one third of all stream samples and over half of the depressional freshwater wetland sites

sampled contained cyanotoxins (mostly microcystin). Coastal estuaries, reservoirs, and lakes in the San Diego region will be screened for cyanotoxins in 2013.



Cyanotoxin sampling in depressional wetlands (Photo courtesy of M. Baroldi).

Why is it important?

Cyanotoxins are an emerging contaminant of concern that may potentially impact many beneficial uses of water, including aquatic life, recreation, and water supply. The study will determine the extent and occurrence of cyanotoxins, and will provide evidence of their impact to surface waters in the San Diego region. The results from the study will help decision makers better assess the threat of cyanobacteria blooms and cyanotoxin production. It will also help water quality managers carry out informed management actions to reduce sources of cyanotoxins and improve water quality.

How will this information be used?

The data produced by this project will be used in water body assessments required under the Clean Water Act (CWA) Section 305(b). It may also inform future monitoring and regulatory actions. The data will be available to the public through the California Environmental Data Exchange Network (CEDEN). The technical report and a fact sheet of this study will be shared and communicated to stakeholders and other interested parties.

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