The New SWAMP Cyanobacteria Harmful Algal Bloom (CyanoHAB) Program

What is it?

Since 2011, SWAMP coordinators from the San Francisco Bay, Central Coast, and San Diego Regional Water Boards have been developing and implementing projects to address the need for a cyanobacteria monitoring program in California. Past projects have included 1) a national workshop on cyanobacteria and cyanotoxins, 2) collaboration with the National Oceanic and Atmospheric Administration (NOAA) to pilot use of satellite imagery to monitor cyanobacteria blooms, and 3) development of a cyanobacteria monitoring, assessment, and reporting strategy.

In 2014, SWAMP set aside funding to develop a cyanobacteria monitoring program for the State of California (SWAMP CyanoHAB Program). This program, being developed in 2015, will include:

1) guidance documents for sampling and analysis of cyanobacteria and cyanotoxins that address health and safety considerations and include a performance-based quality assurance system and a decision tree for sampling and analysis;
2) the use of satellite imagery to detect cyanobacteria blooms in the waters of California;
3) a database for lab data and bloom information;
4) a website that will include satellite imagery, laboratory data, bloom information, and incident reports of illnesses and deaths;
5) a newsletter/bulletin (biweekly during bloom season, monthly otherwise);
6) a report on status and trends of cyanobacteria in California; and

7) trainings at four locations in the State, for agencies and other stakeholders responsible for water quality, on:

   a) sampling and identifying cyanobacteria,
   b) an overview of methods for analyzing toxins,
   c) management options for addressing blooms, and
   d) using SWAMP tools.

   The trainings will also provide a forum for developing a network to coordinate monitoring and management of cyanobacteria blooms throughout the State.

Why is it important?

Cyanobacteria (also known as blue-green algae) are photosynthetic bacteria found naturally in fresh water systems which include species that, under certain conditions, can produce toxins. Systems over-enriched by nutrients–with elevated temperature, sufficient light intensity, and decreased water flow–provide conditions which can foster toxic blooms. Cyanobacteria blooms are not a recent phenomenon, but their frequency and geographic distribution seem to have dramatically increased in the United States and around the world. This increase is expected to continue due to climate change. Exposure to cyanobacteria toxins can cause symptoms that range widely and include rashes, allergic reaction, blistering of the mouth, headache, gastrointestinal distress, vomiting, pneumonia, diarrhea, liver damage, and death.

How will this information be used?

Information collected through this program will be used by a network of public health and environmental agencies, responsible parties, veterinarians, health professionals, and the public to ensure that public health and the health of pets, livestock, and wildlife are protected. SWAMP will be the hub of this network, providing bloom information and trainings. Through the SWAMP website, bloom information will be reported, stored, and visualized. Bloom locations and incident reports of illnesses or deaths will assist health professionals and veterinarians in determining the

probable cause of symptoms when humans or animals are exposed to water bodies with cyanobacteria blooms, hastening treatment.

When a bloom is detected by satellite imagery, SWAMP will contact those responsible for the water body where the bloom is detected so that they can quickly respond to the bloom through follow-up monitoring, cyanotoxin analysis, and posting and management of the bloom. This information will be reported back through the SWAMP website, and through newsletter/bulletins, so that all of those in the SWAMP network, as well as interested members of the public, legislators, NGOs, academics, agency staff, health professionals, and veterinarians will have up to date information.

SWAMP coordinators of the SF Bay, Central Coast, and San Diego Regional Water Boards are also on the CCHAB, the California Cyanotoxin HAB (Harmful Algal Bloom) committee, and a coordinating committee of local, state, and federal agencies and tribes. This committee is currently updating a voluntary guidance document on managing cyanobacteria blooms in California. SWAMP's goal, by providing bloom information and a framework for monitoring and managing blooms, is to protect humans and animals from cyanotoxin poisoning.