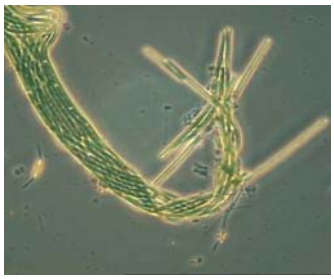
Blue Green Algae and Harmful Algae Blooms

Blue Green Algae Bloom



Cyanobacteria (Blue Green Algae)
Microscopic View

Phytoplankton (Diatom)

Harmful Algal Blooms

Phytoplankton (single-celled microscopic algae) exist at the base of the food chain in most freshwater and marine ecosystems. They capture solar energy and provide food to aquatic animals. There are hundreds of varieties of these microorganisms, and most are harmless. But certain forms can turn toxic if conditions are right. Algal blooms occur when an oversupply of nutrients trigger large increases in phytoplankton. An algal bloom which threatens or damages the environment, human health or surrounding economies is considered a harmful algal bloom, or HAB. Algal blooms can occur naturally, or result from pollution.

Marine Algal Blooms

Dinoflagellates or diatoms are two common groups of phytoplankton in marine waters. They are essential food for marine life. Much of the oxygen we breathe also originates from these life forms. However out-of-control growth of dinoflagellates and diatoms can cause enormous, smelly blooms covering miles of ocean and coastal waters. These blooms include so-called red and brown tides, so named because of the color of the phytoplankton seen on the surface. These outbreaks can decimate large areas by robbing the water of oxygen and suffocating life forms found there. Certain varieties can form toxins that may be accumulated by fish and shellfish, which can then pass the toxins on to humans or marine wildlife which eat those creatures. That poisoning can become evident

in humans as stomach and respiratory problems, brain damage or paralysis. Occasionally, depending on the specific algal species, the results can be fatal. In some cases contact can cause human respiratory and skin problems.

Blue Green Algae

Blue green algae are a form of bacteria. These algae are thought to be among the first life forms on Earth. They may also be colors other than blue or green. They are very common and may be found naturally in saltwater and fresh water environments. In California certain forms of blue green algae have been a particular problem in the Klamath River watershed. Blooms of these bacteria can poison livestock, wildlife and humans. Certain other nontoxic forms can impart an unpleasant taste to water, and fish. They also give off an unpleasant smell as they die off and decay.

The Water Boards and Algal Blooms

The Water Boards regulate the nutrients in manmade runoff that contribute to bloom development. We have a responsibility to maintain standards to protect water quality and beneficial uses. We do so by regulating point and nonpoint source dischargers through permits or other enforceable requirements.

For example, the State Water Board sets water quality objectives for the Ocean in the California Ocean Plan. The Ocean Plan algal bloom objectives include requirements that discharges will not cause undesirable discoloration of the ocean surface, objectionable or dangerous growths (blooms) or concentrate organic materials in seafood at levels dangerous to humans. These objectives are then translated into requirements placed in discharge permits for facilities like wastewater treatment plants and storm drains.

In addition, the Water Boards support research and monitoring to better understand algal blooms. The Water Boards work with the State Department of Public Health and the county health departments to post contaminated water bodies when blue green algal blooms pose a health threat.