

Blue-green Algae (Cyanobacteria) Fact Sheet

Introduction: The Blue Green Algae (BGA) are actually a type of bacteria called cyanobacteria that grow in water and are photosynthetic (use sunlight to create food and support life). BGA live in fresh, brackish, or marine water. They usually are too small to be seen, but sometimes can form visible colonies or “blooms.” BGA have been found among the oldest fossils on earth and are one of the largest groups of bacteria. BGA have been linked to human and animal illnesses around the world.

Most algal blooms in our region are made up of harmless green algae. However, since 2001, 9 dog deaths following contact with water bodies in Humboldt and Mendocino Counties may have been caused by BGA poisoning. The Humboldt County Division of Environmental Health hopes to prevent pet deaths and human illnesses by obtaining prompt reports of BGA incidents.

BGA blooms and how they form: BGA blooms occur when algae that are normally present grow quickly. Within a few days, a bloom can cause clear water to become cloudy. The blooms usually float to the surface and can be many inches thick, especially near the shoreline. BGA blooms can form in warm, slow-moving waters that are rich in nutrients such as fertilizer and manure runoff or septic tank overflows. Blooms can occur at any time, but most often occur in late summer or early fall. The blooms of greatest concern are the ones that occur in fresh water.

What a BGA bloom looks like: Some blooms can look like foam, scum, or mats on the surface of rivers, creeks and ponds. The blooms can be blue, bright green, brown, or red and may look like paint floating on the water. As the algae die the water may smell bad.

Harmful BGA blooms: BGA blooms can threaten animals, people, or the environment. They are dangerous because:

- Dense blooms of algae can block sunlight and use up all the oxygen in the water, harming other plants and animals.
- BGA blooms can make pets, other animals and people sick. Often, the first sign that a bloom of BGA exists is a sick dog that has been swimming in stagnant water. Animals are much more likely to be poisoned than humans because they will readily drink water that smells or tastes bad, and they will lick their fur after swimming.

BGA toxins: BGA toxins are a diverse group of chemical substances that are categorized by their specific toxic effects:

- Neurotoxins affect the nervous system.
- Hepatotoxins affect the liver.
- Tumor promoters are chemicals that can increase tumor growth with chronic exposure.
- Lipopolysaccharides are chemicals that can affect the gastrointestinal system.

Types of illnesses animals and people can get from BGA exposure:

- Inhaling water droplets from water-related recreational activities or irrigation with pond water can cause runny eyes and nose, a sore throat, asthma-like symptoms, or allergic reactions.
- Swallowing water that has BGA toxins in it can cause:
 - Acute, severe gastroenteritis (including diarrhea and vomiting).
 - Liver toxicity. Symptoms of liver poisoning may take hours or days to show up in people or animals. Symptoms include abdominal pain, diarrhea, and vomiting.
 - Kidney toxicity.

- Neurotoxicity. These symptoms can appear within 15 to 20 minutes after exposure. In dogs, the neurotoxins can cause salivation and other neurologic symptoms, including weakness, staggering, difficulty breathing, convulsions, and death. People may have numb lips, tingling fingers and toes, or they may feel dizzy.

Relatively few incidents of human poisoning from BGA in drinking water have been reported since, unlike dogs and domestic animals, people are put off by the scum and bad smell of contaminated water. In Humboldt County there have been no known human cases of illnesses caused by BGA.

Recent dog deaths in Humboldt and Mendocino Counties: In the summer and fall of 2001, five dogs died after swimming in Big Lagoon. Some of the symptoms exhibited were vomiting, bleeding, diarrhea and dehydration. Symptoms occurred within 12 hours and the animals died 2-4 days later. In summer, 2002, 3 dog deaths were reported from the South Fork of the Eel River near Standish-Hickey State Park and Tooby Park near Garberville, and in July, 2004, another dog died after swimming in the South Fork Eel River near Piercy. These dogs reportedly had seizures within 15 minutes of exposure to the water, and were dead soon thereafter. Based on stomach analyses of 2 of the dead animals, scientists currently believe that the dogs were most likely poisoned by BGA ingested while swimming in the river. The dogs also may have been exposed to high levels of BGA by licking it off their fur.

How to protect yourself, your family, and your pets from BGA exposure:

- Don't swim, water ski, or boat in areas where the water is discolored or where the water has foam, scum, or mats of algae. Keep children out of such areas at all times since they are at higher risk than adults for illness due to their smaller body weight, and their tendency to ingest water during play.
- If you or your children do swim in water that might have an algae bloom, rinse off with fresh water as soon as possible
- Don't let pets or livestock swim in or drink from areas where the water is discolored or where you see foam, scum, or mats.
- If pets (especially dogs) swim in scummy water, rinse them off immediately—do not let them lick the algae off their fur.
- Report any musty smell or taste in your drinking water to your local water utility. If you have a well system, check for algae near water intakes, and be alert for odor or taste changes in the water.
- Get medical treatment right away if you think you, your pet, or your livestock might have been poisoned by BGA toxins. Treatment usually will be only support care.

How to help reduce the occurrence of BGA blooms:

- Reduce nutrient loading of local water bodies by using only the recommended amounts of fertilizers and pesticides on your yard.
- Properly maintain your household septic system.
- Maintain a buffer of natural vegetation around ponds, streams and rivers to filter incoming water.

Please report pet deaths/illnesses following water contact, or unusual numbers of dead animals around water bodies to:

- Humboldt County – Harriet Hill, REHS, 707-445-6215 or 1-800-963-9241
- Mendocino County - David Koppel, REHS, 707-463-4466

For more information, see the CDC website: www.cdc.gov/hab/cyanobacteria