



Toxic Blue-Green Algal Blooms

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Contrary to news reports, only a few species of blue-green algae are toxic. Problems with toxic blue-green blooms occur only under specific environmental conditions favoring their heavy growth and are dose related, seen only when animals ingest large amounts of the organisms. Toxic blue-green algal blooms typically appear in ponds or other standing water bodies following hot, dry, calm days. Animals may die suddenly after drinking water heavily contaminated by toxic algal surface scums. Thankfully, these are relatively uncommon events.

Hot, dry, calm days stimulate reproduction of the problem algae, typically *Anabaena*, *Microcystis*, *Aphanizomenon* or *Oscillatoria*. At first they are distributed throughout the water column but as they begin to die they float to the surface. After this, even a gentle wind will concentrate the organisms downwind to form a "scum" on or just below the surface. If animals do not die immediately from drinking in this scum, they may succumb hours or days later. Rain or any disturbance of the water tends to break up the scum and make poisoning less likely.

Blue-green algae can form large colonies and may have the appearance of "scum," "skin" or "paint" on or just below the water surface. Living blue-green algae start out as green in color and turn blue after the algae die and dry on the surface or shoreline. Blue-green algae colonies may be visible to the naked eye as very fine grains of green sand or green blobs on the water surface. Other species of blue-greens may look like tiny grass clippings, and still others cannot be identified without a microscope. Because toxic algal scums vary greatly in color and appearance, photos can be misleading - so none are included in this fact sheet. Blue-green algae are **not** the type that grows in mats of plant material along shorelines. When picked up, blue-green algae disperse in the water and do not hang together in a stringy mass.

Signs of Blue-Green Algae Poisoning

Nearly all animals – including cattle, sheep, horses, pigs, dogs, ducks, fish and wild animals – can be poisoned by blue-green algae. Humans, especially children, who swallow the water can also be poisoned. Skin exposure to the toxins can cause uncomfortable irritation. Low oral doses may produce

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vomiting and diarrhea and larger doses of the toxins can affect the liver and neurologic tissue and can cause sudden death.

Dogs generally have more severe symptoms than people, including collapse and sudden death after swallowing the contaminated water while swimming or after licking algae from their fur. There are no known antidotes to these toxins. Livestock affected with the nervous system toxins may show signs including muscle tremors, decreased movement, and difficult breathing. They will collapse and go into convulsions. In the field, many cases show no signs except sudden collapse and death. Animals afflicted with the liver toxins may show weakness, pale-colored mucous membranes, mental derangement, bloody diarrhea, and ultimately death.

If they survive blue-green poisoning, animals may lose weight and become chronic poor doers. A very few may develop photosensitization—these animals will experience sunburn on the lighter areas of the skin including the muzzle, udder/teats, vulva/anus, white-colored hide areas of the back and sides. Producers usually first notice raised skin in these areas, followed by the skin drying out, turning black, and then peeling off, leaving fresh new skin underneath. If you suspect that a water source contains toxic blue-green algae, pets, livestock and people should stay away from the water source.

Diagnosis

Animals affected with blue-green algae poisoning may show the signs listed above. Many times, however, animals are found dead with no signs observed by the producer. Check the edges of the pond; since this type of poisoning is lethal to almost all animals, you may find some carcasses along the shoreline. Animals dying along the edge of ponds may also be affected with diseases made worse by stress such as anaplasmosis.

Blue-green algae poisoning may be suspected based on history and if you find blue-green staining on the hair coat. For confirmation, a veterinarian should necropsy dead animals to rule out other causes of death. A complete set of tissue samples including liver, brain, and stomach contents from a recently dead animal assist in making a diagnosis.

A water sample from the suspected area may be obtained and examined to determine the presence of toxic blue-green algae species. Water samples should be taken from an area

with large amounts of algae. The sample must be taken as soon as possible after discovery of deaths, since winds may shift and disperse the algae.

Contact the Oklahoma Animal Disease Diagnostic Laboratory at (405) 744-6623 for guidance on necropsy and/or water sample examination. Submit a pint container of suspect water with cold pack overnight or deliver in person. The blooms will deteriorate, so fresh samples are needed. More information is available at their website: <https://cvhs.okstate.edu/oaddl>

Prevention and Control

Blue-green algae poisoning is unpredictable and sporadic. Poisoning is more likely in water bodies which receive excess nutrients from livestock holding areas, manure storage piles, fertilized lawns and poorly managed septic systems. The likelihood also increases during periods of very warm weather, especially droughts. Monitor and watch for algae blooms during warm weather. In the short term, you can:

- Fence off downwind drinking areas and force animals to drink from areas where concentration of the blue-green organisms is less likely.
- Pump water, from about 4 to 5 feet below the surface of a fenced off pond, into a nearby livestock water tank. If the deep water has an objectionable smell or appearance, readjust the intake to a somewhat shallower depth.
- Use other water sources, if available, following times of high temperatures.

- If your animal gets into water with a suspected bloom, immediately wash it off with clean water, do not let your pet lick algae off its fur.

Long term solutions involve reducing nutrient inputs, especially phosphorous, and allowing higher aquatic plants (having leaves and stems) to grow and compete against algae for light, nutrients and space.

- Move livestock feeding areas, corrals and manure storage piles out of the area that drains to the pond. This will reduce the amount of nutrients reaching the pond.
- Do not use Karmex or other herbicides to completely eliminate higher pond plants. They compete against algal blooms, helping keep them at normal, healthy levels.
- Fence the pond except for a limited access watering point or a freeze-proof watering tank as described in [NREM-2883](#), "Pond Management for Livestock, Fish, and Wildlife."

Other Resources

[The Center for Disease Control toxic algae webpage](#) contains more information:

To report a toxic blue-green algae bloom or related health event: Call the Oklahoma Department of Environmental Quality Hotline number: 1-800-522-0206.

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