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South Dakota
State University
Cooperative
Extension Service

Extension Extra

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Veterinary
Science

COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / USDA

Blue-Green Algae Poisoning

“Scums” of blue-green algae may occur in stagnant ponds or dugouts following hot, dry, calm days. Animals may die suddenly (within minutes) after drinking water heavily contaminated with this scum.

Blue-green algae (also called Cyanobacteria) occur naturally in many ponds. There are a number of different species: Some are harmless; some form toxins that affect the nervous system; others produce toxins that affect mainly the liver.

Problems with blue-green algae occur only under specific environmental conditions and are dose related, seen only when animals ingest water containing large quantities of organisms.

Hot, dry, calm days stimulate reproduction of the organism, and under normal conditions, the algae are homogeneously suspended in the water. When large numbers of algae start to die, gas is produced inside the cells, and the colonies tend to float to the pond surface.

After this, even a gentle wind will concentrate the organisms downwind to form a “scum” on or just below the pond 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 under 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.

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.

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 affected with the liver toxins may show weakness, pale colored mucous membranes, mental derangement, bloody diarrhea, and ultimately death.

If they survive blue-green poisoning, they may lose weight and become chronic poor doers. A very few may develop photosensitization—sunburn that affects lighter areas of the skin including the muzzle, udder/teats, vulva/anus, and white-colored hide areas of the back and sides. Producers usually first notice the skin of these areas sticking up, drying out, turning black, and then peeling off, leaving fresh new skin underneath.

Diagnosis

Animals affected with blue-green algae poisoning may show signs listed above. Most 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. They may be clues to the presence of the algae.

Blue-green algae poisoning may be suspected based on history and if you find blue-green staining on the hair coat. 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 making a diagnosis.

A water sample from the suspected area may be obtained and examined to determine the presence of 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.

It is recommended that 1 gallon of water be collected and frozen, and a small amount (5 ml) taken and refrigerated

and another small amount taken and diluted 50:50 with 10% formalin. These samples can be sent to the South Dakota Animal Disease Research and Diagnostic Laboratory, Box 2175, North Campus Drive, SDSU, Brookings SD 57007-1396.

Treatment of affected animals is infrequently attempted and rarely successful. Treatments aimed at evacuating gut contents or binding toxins (i.e. administration of activated charcoal) may help in mild exposures. If a neurotoxin-producing blue-green algae is suspected, atropine may be helpful, depending on the species affected.

Prevention and control

Blue-green algae poisoning is unpredictable and sporadic. Poisoning is more likely in stagnant natural waters following hot dry weather. Monitor and watch for algae blooms during hot weather. You can:

- fence off downwind drinking areas and force animals to drink from areas where concentration of blue-green organisms is unlikely.
- pump water from several yards below the surface of a fenced-off pond to a nearby livestock tank.
- use other water sources, if available, following times of high temperature.
- add copper sulfate to the water as an algicide if the site has a history of repeated blue-green algae blooms. The recommended maximum concentration in the water is 1 ppm. This is equivalent to 2.7 lb/acre-foot or 8 lbs per million gallons of water. The copper sulfate must be applied evenly over the water surface and is best applied before large concentrations of blue-green algae are present. One treatment is usually good for 2-3 weeks.

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Ex11007, by Bill Epperson, DVM, Extension Veterinarian, 2002, reviewed 2006.