

Veterinarian Reference Card

TOXIC Blue-Green Algae

Algal poisoning is often an acute, fatal condition.



This card provides clinical information to help veterinarians identify blue-green algae (cyanobacteria) exposure and poisoning signs.

Fatalities and severe illness of livestock, pets, and wildlife occur among animals drinking or swimming in algal infested freshwater. Dogs may exhibit severe signs such as collapse and death within minutes to hours after swallowing contaminated water. Poisoning usually occurs during warm seasons but can occur year round.

There are no antidotes to these toxins.

Medical care is supportive. Activated charcoal may be useful within the first hour, and atropine has efficacy with saxitoxin exposure.

What are blue-green algae (cyanobacteria)?

Blue-green algae are literally blue-green bacteria that contain specific photosynthetic pigments. Three genera of cyanobacteria account for a majority of toxic blooms: *Microcystis*, *Anabaena*, and *Aphanizomenon*.

A bloom can consist of one or a mixture of two or more genera and may contain liver and nervous system toxins.

What is a toxic bloom?

When algae grow quickly, they may rise to the surface of the water and form a surface scum. If conditions are favorable for a bloom, a lake or pond can change from clear to turbid within a few days. As cells die, toxins are released into the water. Sometimes blue-green algae produce toxins that can affect the liver and central nervous system. Not all blooms are toxic and only laboratory tests can confirm whether a bloom is toxic or not. Since cyanobacterial toxins can be lethal to animals in relatively small amounts, caution should always be taken when a bloom occurs. Advise your clients **"When in doubt, stay out."**

What causes a bloom?

No individual environmental condition causes blooms to be toxic. Factors such as light, temperature, percent oxygen saturation, nutrient availability and depletion, wind patterns, internal lake mixing, growth stage, and zooplankton predation may play a role in bloom formation.

To report an animal poisoning call the Washington Department of Health at 360-236-3330 or visit www.doh.wa.gov/algae

Blue-Green Algae Exposure and Clinical Information - There are no antidotes to these toxins. Medical care is supportive.

Exposure Route		Likely Signs		Onset to Signs	Differential Diagnosis	Possible Laboratory or Other Findings
Swallowing water with toxic blue-green algae (cyanobacteria) or other toxins Licking fur or hair contaminated with toxic blue-green algae		Hepatotoxins - Acute depression - Weakness & incoordination - Loss of appetite - Excess drooling - Vomiting and diarrhea - Abdominal tenderness - Jaundice - Dark urine		One or two hours, or more	Acetaminophen, nonsteroidal anti-inflammatories, aflatoxin, mushrooms, copper, zinc, iron, xylitol, sago palm	- Elevated bile acids & liver enzymes - Hypoglycemia - Prolonged clotting times - Proteinuria - Presence of toxin in clinical specimens (liver, gastrointestinal contents) collected from animals
		Neurotoxins - Excess drooling - Apprehension & anxiousness - Vomiting - Muscle twitching - Seizures - Respiratory failure		Minutes to hours	Organophosphate and carbamate insecticides, strychnine, metaldehyde, pyrethrins, moldy foods, chlorinated hydrocarbon pesticides, bromethalin, mushrooms	- Presence of toxin in clinical specimens from stomach contents taken from animals that became ill
Skin contact with toxic blue-green algae or other toxin(s)		Dermal Toxins - Rash, hives, allergic reaction		Minutes to hours	Other dermal allergens	- Blue-green staining of fur or hair

Monogastric animals appear less sensitive than ruminants or birds; however, the dose-response curve is very steep in dogs – up to 90% of a lethal dose may elicit no clinical signs. Surviving animals have a good chance for recovery. While therapies for cyanobacterial poisonings have not been investigated in detail, activated charcoal slurry is likely to be of benefit. Health effects from exposure are derived from reports of animal poisonings. For more information see Department of Health (www.doh.wa.gov/algae) or the Merck Veterinary Manual (www.vetmanual.com).