Dogs and Harmful Algal Blooms (HABs)

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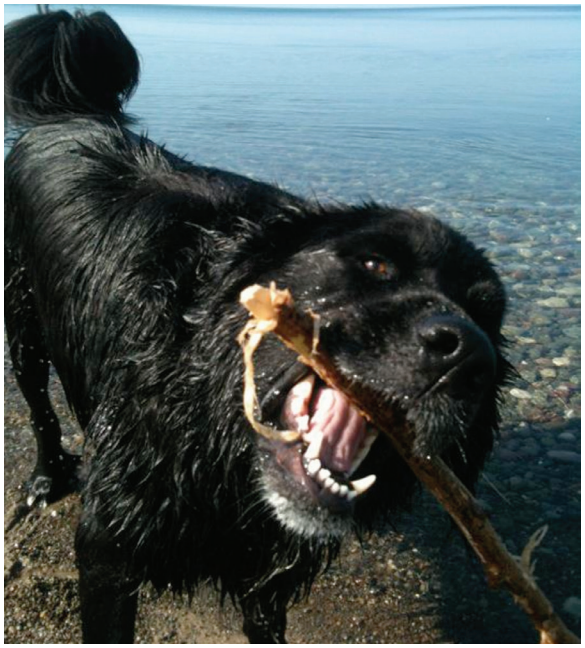
What are harmful algal blooms?

Harmful algal blooms (HABs) are overgrowths of cyanobacteria (blue-green algae) that cause water quality problems in lakes and ponds, including the occasional production of potent toxins. These toxins can poison people, household pets, waterfowl and livestock. Because HABs are increasing in many areas, the number of dog poisonings from cyanobacterial toxins is also on the rise. To keep your canine companions safe around local waterways, please add HABs to the safety checklist, especially in summer when you bring your dog to the beach or in the fall when waterfowl hunting with your favorite retriever.



Dogs like Walter love to frolic in water, but may be at health risk from algal toxins. Sadly, the number of dog poisonings from these toxins is on the rise. Photo by Maxine Appleby

When are HABs most likely to occur?

- after periods of warm, sunny and calm conditions during the summer and fall
- at water temperatures between 60-86°F
- after a large storm runoff, washing nutrients into a lake or pond

What do HABs look like?

- appear foamy or like pea soup, spilled paint, colored water; also as scum or floating mats
- most often green to blue-green colored, occasionally red or brown, (or white, as a bloom is ending)
- scums or floating mats that can wash up on shore or accumulate on the windward side of shorelines

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What about HAB toxins?

- not always present in a cyanobacterial bloom
- colorless, water soluble, powerful, fast-acting with no known antidotes
- released as toxic cyanobacteria die off, or are consumed
- at least three types: liver toxins, nerve toxins and skin toxins

A cyanobacterial bloom in Lake Erie. It's impossible to tell visually, by taste or odor whether such a bloom is toxic (a HAB). Water samples must be analyzed for the presence of toxins.
Photo by Ohio Sea Grant.

How do you know if toxins are present?

State agencies collect water samples from many lakes and ponds to determine cyanobacterial toxin concentrations. The results are posted on state natural resource agency websites so that people can be aware of possible health threats to themselves and their dogs. In cases when toxin concentrations are unknown (ie. in those lakes that either unmonitored or in monitored lakes before test results are available), pet owners should err on the side of caution and keep their dogs out of the water when suspicious looking blooms appear—until more information is available. People are encouraged to report suspected HABs to local health departments or state natural resource agencies.

How dogs can be exposed to cyanobacterial toxins?

Because of their behavior, dogs are much more susceptible than humans to cyanobacterial poisoning. When toxins are present, dogs can be exposed to toxins by drinking the water, by eating washed up mats or scum of toxic cyanobacteria and by having skin contact with water. Dogs are often attracted to algal scum odors. After leaving the water, dogs can also be poisoned by grooming their fur and paws.

Estimated Dog (40-lb) Health Risks from Exposure to Cyanobacterial Toxins (Liver and Nerve Toxins)*

Toxin concentrations are in parts-per-billion (ppb)

	Liver toxins	Nerve Toxins
Delayed health effects (Health effects from prolonged or repeated exposure over 15% of dog's lifetime)	2-40 ppb	2-100 ppb
Rapid health effects (Signs of poisoning can appear within 24 hours of exposure)	above 100 ppb	above 100 ppb

*Source: California Dept. of Environmental Protection: http://www.swrcb.ca.gov/water_issues/programs/peer_review/docs/calif_cyanotoxins/cyanotoxins053112.pdf

What concentrations of toxins are considered "safe" for dogs?

When toxin concentrations are determined, they are reported on state agency websites in units called parts-per-billion or (ppb). 1 ppb is roughly the same concentration as 1 drop of ink in a residential, in-ground swimming pool. The California Dept of Environmental Protection estimated health risks for dogs exposed to both liver and nerve toxins in water and in algal debris.

This advisory is based on health risks to a 40-lb dog that could drink up to 2 quarts of lake water per day (drinking and grooming their fur) and eat up to 1 pound of algal scum or mats per day. Dog health risks depend on the type of toxin, toxin concentrations, amount consumed, and length of time a dog is exposed to the toxins and size of the dog. Health effects from toxins can be seen within 24 hours of exposure to high toxin concentrations; OR, at lower toxin concentration, health effects can be delayed by a longer or repeated exposure over 15% of the dog's lifetime. Smaller dogs (less than 40-lb) are expected to have a higher health risks at these toxin concentrations. (See table for details).

What are signs of possible cyanobacterial toxin poisoning in dogs?

If your dog has been swimming in a lake or pond with a suspected or identified HAB, please closely monitor your dog for any signs of cyanobacterial poisoning (listed below). These signs can occur within 30 minutes to a few hours after exposure, depending on the size of the dog, the type of toxin, the toxin concentration and how much toxin the dog has ingested. In severe cases, dogs can show signs of cyanobacterial poisoning within a few minutes and can die within an hour of toxin exposure. Common signs of cyanobacterial poisonings in dogs are listed below. These signs may not always appear together.

COMMON SIGNS OF HAB TOXIN POISONINGS:

Liver toxins

- repeated vomiting (green liquid)
- diarrhea or tarry (bloody) stool
- loss of appetite, anorexia
- jaundice (yellowing of eye whites, gums)
- abdominal swelling may be tender to the touch
- cyanosis (bluish coloration) of skin
- dark urine or reduced/ no urine output

Nerve toxins

- stumbling, seizures, convulsions, paralysis
- excessive salivation/drooling
- disorientation, inactivity or depression
- elevated heart rate, difficulty breathing

Skin toxins

- skin rashes, hives

If you suspect your dog has been exposed to cyanobacterial toxins, seek immediate veterinary care. You can also contact various pet poison hotlines (listed in this brochure) for more information. Untreated, cyanobacterial poisonings are usually fatal in dogs. Even in cases where a poisoned dog receives prompt veterinary care, the outlook for a dog is often poor and the dog may not fully recover. Veterinary care can last a few days to several weeks.

What are the economic costs associated with dog poisonings from HABs?

Veterinary treatment: American dog owners spend around $800 per year for normal veterinary check ups. With HAB events becoming more frequent veterinary expenses could increase. A dog suffering from HAB poisoning may require several days to a week or more of needed veterinary care.

Waterfowl hunting: USFWS estimates that each waterfowl hunter spends about $700 per year, totaling $900 million ($20 M in NYS) in hunting related expenses (including dog outfitting), creating an economic impact of $2.4 billion in the U.S . A typical retriever dog can also cost from $500 to more than $2000. HAB outbreaks can also sicken/kill waterfowl, reducing hunting effort.

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Axel, a 16 month old black lab was swimming in a river, downstream from a reservoir experiencing a HAB event. Axel later collapsed and was taken to a veterinarian. Despite treatment, Axel died five hours later. Photo courtesy of his owner, Jerry Benedick via KVAL.com.

"An ounce of prevention is worth a pound of cure"

Be aware if your dog has come in contact with a suspected toxic algal bloom (visible scums) in a pond, lake or puddle or in water with known cyanobacterial concentrations that are in the range posted by the health risk table. Remember that repeated exposure to low levels of toxins can have health consequences for your dog down the road.

How can you reduce the risk of dog poisoning by cyanobacterial toxins?

- *If possible, keep your dog on a leash near shorelines.*
- *Don't let dogs wade, drink the water or eat/walk in beach debris.*
- *If your dog goes in the water please remove them immediately.*
- *Don't let them lick their fur or paws after getting out of the water.*
- *Rinse/wash them thoroughly with fresh water from a safe source if available. (i.e. bottled water or household garden hose). Otherwise a towel or rag can be used to remove algal debris.*
- *Use rubber gloves during pet cleaning, if possible.*
- *Dry them thoroughly with a clean towel or rag.*
- *Wash your hands with fresh water.*
- *Look closely for any symptoms described.*
- *Please notify the public health department or state natural resource management agency if you observe a suspected HAB.*

- **To report a possible HAB in NYS:**
- NYSDEC: http://www.dec.ny.gov/chemical/77118.html.
  An on-line reporting form is available at: http://www.dec.ny.gov/water_pdf/algaereportform.pdf
- NYS Dept of Health: 1-866-881-2809 (Use this number nights and weekends for public health emergencies); OR, http://www.health.ny.gov/environmental/water/drinking/distphn.htm
- For information on HABs from NYS Department of Health: http://www. health.ny.gov/environmental/water/drinking/bluegreenalgae.htm
- For information on statewide water monitoring programs in NY; Citizens Statewide Lake Assessment Program (CSLAP) ***http://www.dec.ny.gov/chemical/81576.html***

24-Hour Pet Poison Hotlines

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- **Animal Poison Control Center:**
  (800)-213-6680. $39 per incident fee
  http://www.petpoisonhelpline.com/
  Also available as iPhone app
- **ASPCA (888) 426-4435.**
  $65 consultation fee
  http://www.aspca.org/pet-care/animal-poison-control
- **Cornell Veterinary Emergency Hotline (607)-253-3060**

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