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 and Harmful Algal Blooms (HABs)

What are harmful algal blooms?

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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

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

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 (i.e. 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 can dogs 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.

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

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

<table>
<thead>
<tr>
<th>Toxin concentrations are in parts-per-billion (ppb)</th>
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<tbody>
<tr>
<td><strong>Liver toxins</strong></td>
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<tr>
<td>Delayed health effects (Health effects from prolonged or repeated exposure over 15% of dog’s lifetime)</td>
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<tr>
<td>2-40 ppb</td>
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<td>Rapid health effects (Signs of poisoning can appear within 24 hours of exposure)</td>
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*Source: California Dept. of Environmental Protection: http://www.swrcb.ca.gov/water_issues/programs/peer_review/docs/calif_cyanotoxins/cyanotoxins053112.pdf