



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
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Commissioner

2021 Veterinary Alert # 3

Harmful Algal Blooms a Potential Source of Toxins to Dogs

- Harmful algal blooms (HAB) are caused by bacteria called cyanobacteria.
- Cyanobacteria can produce toxins that are harmful to the liver, central nervous system and skin.
- The New York State Department of Environmental Conservation conducts surveillance for HABs and routinely samples bodies of water in New York for the presence of toxins. Recent results can be viewed on their [website](#).
 - To date in 2021, HABs have been identified in Prospect Park Lake.
 - Visit this site regularly for updates on affected areas, and the addition of new sites with a HAB.
- Veterinarians should warn owners to keep dogs away from water with HABs.

June 8, 2021

Dear Colleagues,

Routine surveillance by the New York State Department of Environmental Conservation (DEC) has confirmed the presence of a widespread harmful algal bloom (HAB) in Prospect Park Lake. Veterinarians should be aware of signs of cyanobacterial toxicosis in dogs. Visit the NYS DEC website for information and regular updates <https://www.dec.ny.gov/chemical/83310.html> and an interactive map that allows filtering by county and shows photographs from recently identified HABs <https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=ae91142c812a4ab997ba739ed9723e6e>.

BACKGROUND:

Most algae and algal blooms occur naturally and are not harmful to people or animals. Green algae produce oxygen and are necessary for a healthy ecosystem, however some species of algae can produce harmful toxins. Under certain conditions, certain types of algae can grow quickly into large blooms that cover all or large portions of a lake or a marine environment. Blooms caused by algae that produce toxins are called HABs. Cyanobacteria, also known as blue-green algae, are often the cause of algal blooms in fresh water and occasionally in marine water.^{1,2} Dinoflagellates are the most common cause of HABs in marine waters. Diatoms have also been found in marine and brackish waters, including estuaries.³ Factors associated with the occurrence of HABs include warmer temperatures, stagnation, the use of fertilizer and nutrients (e.g., nitrogen and phosphorus), and sewage which can contaminate a body of water either as runoff or leaching (failing septic tanks). Warmer weather and a changing climate contribute to the increase in HAB occurrences. Since 2012, HABs have been documented in several hundred waterbodies in New York, and it is likely the true extent of bloom occurrence is substantially greater.⁴ A HAB-associated illness surveillance system piloted in New York in 2015 identified 51 human and 3 canine suspect cases. All three dogs had gastrointestinal symptoms, and two were hospitalized; the third dog's symptoms resolved without intervention. None of the dogs died and the owners reported the dogs may have ingested water or algae.⁵

TOXICITY AND CLINICAL ILLNESS:

Cyanobacteria can produce hepatotoxins and nephrotoxins, such as microcystins, neurotoxins such as anatoxin, as well as irritants that can cause a dermatologic allergic reaction. The clinical manifestation depends on the route of exposure (ingestion, contact and inhalation) and can appear within minutes to hours of the exposure. Dogs are especially susceptible because they are more likely to drink and swim in the water. They may also ingest cyanobacterial toxins

when grooming themselves after being in the water. A tentative diagnosis is based primarily on history (recent contact with cyanobacteria) and signs of toxicosis.

Common signs of HAB toxicosis can include:

HEPATOTOXINS AND NEPHROTOXINS

- Excess drooling, vomiting, diarrhea, foaming at mouth
- Jaundice, hepatomegaly
- Bleeding abnormalities, blood in urine or dark urine
- Malaise
- Stumbling
- Loss of appetite
- Photosensitization in recovering animals
- Abdominal tenderness

NEUROTOXINS

- Progression of muscle twitches
- For saxitoxin, high doses may lead to respiratory paralysis and death if artificial ventilation is not provided

DERMAL TOXINS

- • Skin rashes, hives

PREVENTION:

If a HAB has been identified or is suspected in a body of water, owners can reduce the risk of cyanobacterial toxicosis in dogs by doing the following:

- Keep dogs on a leash near shoreline to keep them from wading, swimming or drinking the water.
- If a dog goes in the water, remove them immediately and do not allow the dog to lick its fur or paws.
- Rinse/wash it thoroughly with soap and fresh water using rubber gloves. Otherwise a towel or rag can be used to remove algal debris.
- The dog owner should immediately wash their hands with fresh water.
- The dog owner should observe closely for any symptoms in their pet.

TREATMENT:

While no therapies have been investigated in detail, activated charcoal slurry is likely to be of benefit in addition to palliative care tailored to the individual patient according to the Merck Veterinary Manual.⁶ Additionally, cholestyramine was used to treat microcystin toxicosis with questionable success in a paper by Rankin, et al.⁷ Veterinarians can call the ASPCA Animal Poison Control Center at 1-888-426-4435 for assistance. Because there is a strong dose dependent curve, dogs that survive the initial exposure are more likely to survive illness from neurotoxins. This is less clear with the hepatotoxins, as secondary effects (e.g., fibrosis) can result in more long-term sequelae.

REPORTING A HAB TO NYS DEC:

Water containing HABs may look foamy, like scum floating on the surface of the water, or have the appearance of pea soup, spilled paint or colored water. Most often they are green to blue-green colored, though are occasionally red or brown (or white, as a bloom is ending). As the bloom dies off, you may smell an odor like rotting plants. To report a suspected HAB, visit the NYS DEC website at <http://www.dec.ny.gov/chemical/77118.html> to find the online Suspicious Algae Bloom Report Form. You may also send an email to HABsInfo@dec.ny.gov.

REPORTING HAB POISONING IN A DOG OR OTHER ANIMAL:

To report suspected HAB poisoning in a dog or other animal, please call the New York City Department of Health at (347) 396-2600 during normal business hours, and ask to speak with someone with the Zoonotic, Influenza and Vectorborne Disease Unit (ZIVDU), or contact the New York State Department of Health by emailing harmfulalgae@health.ny.gov.

RESOURCES

CDC health promotion web pages and materials

- Informational poster for animal owners:
 - a. https://www.cdc.gov/habs/pdf/algal_bloom_tall_card.pdf
 - b. https://www.cdc.gov/habs/es/pdf/Alerta-para-la-seguridad-de-los-animales_P.pdf (Spanish)
- CDC Veterinary HAB Reference Card for Veterinarians with information on recognizing cyanotoxin related illness in

animals

- a. https://www.cdc.gov/habs/pdf/habsveterinarian_card.pdf
 - b. https://www.cdc.gov/habs/es/pdf/Referencia-para-los-veterinarios-sobre-las-proliferaciones-cianobacterianas_P.pdf (Spanish)
- CDC Animal safety poster: [Posters | Harmful Algal Blooms | CDC](#)

As always, we appreciate your continued collaboration with our efforts to monitor public health issues in New York City.

Sincerely,

The Zoonotic, Influenza and Vectorborne Disease Unit

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REFERENCES

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