



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
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Commissioner

2022 Veterinary Alert # 9

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 or the central nervous system.
- Veterinarians should warn owners to keep dogs away from water with HABs.
- The New York State Department of Environmental Conservation (DEC) routinely samples bodies of water in New York. Test results and updates on affected areas can be found on the [DEC website](#) and an interactive map of HABs can be viewed [here](#).
- Since the start of 2022, HABs have been identified in Central Park Lake, Turtle Pond, Morningside Pond, Prospect Park Lake, Kissena Lake, Silver Lake, Clove Lake, Meadow Lake, and several smaller waterbodies.

September 23, 2022

Dear Colleagues,

Routine surveillance and water sampling by the New York State Department of Environmental Conservation (DEC) in 2022 confirmed the presence of harmful algal blooms (HAB) in bodies of water across New York City, including Central Park Lake, Turtle Pond, Morningside Pond, Prospect Park Lake, Kissena Lake, Silver Lake, Clove Lake, Meadow Lake, and several smaller waterbodies. Veterinarians should be aware of signs of cyanobacterial toxicosis in dogs. Visit the [DEC website](#) for information and updates on HABs. An interactive map can be viewed [here](#).

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. Under certain conditions, some types of algae can grow quickly into large blooms that cover all or large portions of a lake or a marine environment. Bright green-appearing blooms in freshwater, and occasionally in marine water, are usually a result of cyanobacteria (sometimes referred to as blue-green algae).^{1,2} Certain varieties of cyanobacteria produce toxins that can make humans and animals sick. Blooms caused by toxin-producing cyanobacteria are called HABs. Dinoflagellates are the most common cause of HABs in marine waters, though 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 through 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 neurotoxins, as well as irritants that can cause a dermatologic allergic reaction. Clinical manifestation depends on the route of exposure (consumption and/or contact). 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 it immediately and do not allow the dog to lick its fur or paws.
- Rinse/wash the dog thoroughly with soap and fresh water using rubber gloves. Otherwise, a towel or rag can be used to remove algal debris.
- Dog owners should immediately wash their hands afterwards with soap and fresh water.
- Monitor the animal closely for any signs of illness.

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 has been used to treat microcystin toxicosis with varying success.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 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 submit the online Suspicious Algae Bloom Report Form. You may also send an email to HABsInfo@dec.ny.gov.

Reporting HAB Poisoning in Animals

To report suspected HAB poisoning in a dog or other animal, please call the New York City Department of Health at (347) 396-2600 and ask to speak with someone with the Zoonotic, Influenza and Vector-borne Disease Unit (ZIVDU).

Helpful Resources

CDC health promotion web pages and materials

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

- https://www.cdc.gov/habs/es/pdf/Referencia-para-los-veterinarios-sobre-las-proliferaciones-cianobacterianas_P.pdf (Spanish)
- Animal Safety Poster <https://www.cdc.gov/habs/materials/posters.html>

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

Asha Abdool, MPH; Christina Ng, MPH; Renee King, MPH; Kevin Lovingood, MPH; Joseph Edward Real, MPH; Ryan MacDonald, MPH; Sally Slavinski, DVM, MPH, DACVPM

Zoonotic and Vector-borne Disease
Bureau of Communicable Disease
ZIVDU@health.nyc.gov
347-396-2600

References

1. Dogs and Harmful Algal Blooms SeaGrant Brochure http://www.albany.edu/sph/cphce/behp_habs_seagrant.pdf
2. CDC HAB Veterinarian Reference Card https://www.cdc.gov/habs/pdf/habsveterinarian_card.pdf
3. NYS DEC HAB Webpage <http://www.dec.ny.gov/chemical/77118.html>
4. NYS DEC HAB Program Guide https://www.dec.ny.gov/docs/water_pdf/habsprogramguide.pdf
5. Figgatt M; Hyde J; Dziejewski D; Wiegert E; Kishbaugh S; Zelin G; Wilson L; (n.d.). Harmful algal bloom-associated illnesses in humans and dogs identified through a pilot Surveillance System - New York, 2015. MMWR. Morbidity and mortality weekly report. Retrieved September 7, 2022, from <https://pubmed.ncbi.nlm.nih.gov/29095808/>
6. Merck Veterinary Manual <https://www.merckvetmanual.com/toxicology/algal-poisoning/algal-poisoning-of-animal>
7. Rankin, K., Alroy, K., Kudela, R., Oates, S., Murray, M., & Miller, M. (2013). Treatment of cyanobacterial (microcystin) toxicosis using oral cholestyramine: Case report of a dog from Montana. *Toxins*, 5(6), 1051–1063. <https://doi.org/10.3390/toxins5061051>

-Visit our webpage for more information and resources for veterinarians: [Zoonotic and Vector-borne Diseases: Information for Providers](#)

-If you do not receive these alerts via email and would like to be added to the distribution list, please email zivdu@health.nyc.gov