Ohio Department of Health

Rev 6-24-2019

Harmful Algal Blooms

Information for Pet Owners

What are HABs and how are they dangerous to pets?

A harmful algal bloom (HAB) occurs when cyanobacteria begin to grow quickly in a water body, creating colorful scum or "blooms". Some algal blooms are not dangerous, but HABs release dangerous toxins into the water. These toxins can pose a threat both to animals and their owners. Since pet owners often allow their animals to drink from and swim in these water bodies, pets have an increased risk of cyanotoxin exposure.

How do pets get exposed to HABs?

Symptoms depend on the type of toxin and exposure route: dermal, ingestion or inhalation. Pet exposure to cyanotoxins typically occurs after swimming or drinking from contaminated water. Other exposures occur when animals lick their fur after swimming or by eating the surface scum on the beach. The severity of the illness depends on the amount of water and algal cells ingested, the animal's body size, the amount of food in the animal's stomach, and the sensitivity of the species and individual animal.

What can I do to reduce risk of HAB-related illness in my pet?

- Use BeachGuard to track HAB advisories in Ohio: www.publicapps.odh.ohio.gov/beachguardpublic
- Keep people, pets and livestock out of water with blooms.
- If your pets do enter the water, be sure to rinse them off with clean, fresh, HAB-free water so they do not lick algae off their fur or skin where toxins may be present.
- Do not let your pet eat algae off the beach as toxins may be present.
- Do not water lawns or gardens with water from HAB-impacted lakes or ponds.
- Follow posted water body closures announced by state agencies or local public health authorities.

What are the symptoms of HAB-related illnesses?

- Depression
- Incoordination or weakness
- Loss of appetite
- Excessive drooling
- Muscle twitching
- Seizure
- Respiratory failure
- Vomiting & diarrhea
- Abdominal tenderness
- Jaundice
- Dark urine
- Rashes
- Allergic reactions
- Hives

What should I do if my pet is ill from a HAB exposure?

If your pet is ill and you suspect HAB exposure, seek immediate veterinary attention. Once your pet has been cared for, contact your local health district to report the illness using the "HAB Animal Illness Report Form" using the web address provided below.

Contact Us

Report animal illness to your local health district and the Ohio Department of Health.
Find your LHD using the web tool: www.odh.ohio.gov/GetMyLHD
Report a HAB-related illness using the form: www.odh.ohio.gov/HABAnimalForm

Ohio Department of Health, Bureau of Environmental Health and Radiation Protection
246 N High St, Columbus, Ohio 43215
Phone: (614) 644-1390 Email: BEH@odh.ohio.gov

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Harmful Algal Bloom-Related Illness in Animals

Guidance for Veterinarians

Background

A harmful algal bloom (HAB) is the result of rapid population growth of a toxin-producing phytoplankton (typically cyanobacteria). They can occur in freshwater, saltwater and brackish waters. Algal blooms can be recognized by abnormal water coloring (blue, green, brown, yellow, orange and red) and the appearance of a foam, mats or scum floating in the water. Not all algal blooms are harmful, but it is not possible to tell if a bloom is harmful just by looking at it. Since pet owners often allow their animals to drink from and swim in these water bodies, pets have an increased risk of cyanotoxin exposure.

Harmful Algal Bloom events, monitoring, and advisories in the state of Ohio can be retrieved using the BeachGuard app: www.publicapps.odh.ohio.gov/beachguardpublic

More information on HABs in Ohio can be found at: www.ohioalgeainfo.com
Information on HAB-related illness can be found at: www.odh.ohio.gov/habs

HAB Exposure Routes

Symptoms depend on the type of toxin and exposure route: dermal, ingestion or inhalation. Pet exposure to cyanotoxins typically occurs after swimming in or drinking from contaminated water. Other exposures occur when animals lick their fur after swimming or by eating the surface scum on the beach. The severity of the illness depends on the amount of water and algal cells ingested, the animal's body size, the amount of food in the animal's stomach, and the sensitivity of the species and individual animal.

Questions for Owners

Use the following questions to help determine whether an animal has been exposed:

- Has your animal been exposed to an outdoor water body within 48 hours of symptom onset?
- If known, what type of interaction did your pet have with the water source (ingestion of water, swimming, etc.)?
- Was your pet bathed following exposure to the water body?
- Did your pet ingest any health supplements that may contain blue-green algae derived ingredients?
- Is your pet experiencing any of the symptoms described in Table 1 below?

Advice for Pet Owners

Pet owners may inquire on how to reduce risk of exposure to HAB-associated illnesses:

- Use the BeachGuard app to track HAB advisories in Ohio.
- Keep people, pets and livestock out of water with blooms. "When in doubt, keep them out."
- If your pets do enter the water, be sure to rinse them off with clean, fresh, HAB-free water so they do not lick algae off their fur or skin where toxins may be present.
- Do not let your pet eat algae off the beach as toxins may be present.
- Do not water lawns, gardens, or golf course with water from HAB-impacted lakes or ponds.
- Follow posted water body closures announced by state agencies or local public health authorities.
- For additional advice, refer to the "Information for Pet Owners" fact sheet.

HAB Symptoms

Previous case reports have indicated severe illness and death in family pets from HAB ingestion. Most HAB-associated poisonings are caused by microcystin or another hepatotoxin. Toxicosis in these cases usually occurs within 30 minutes of ingestion. Early signs include; vomiting, diarrhea, anorexia, lethargy and depression. Microcystin poisonings can be fatal, causing liver failure with ALT levels ranging from 3,000-60,000 u/L. Other symptoms occur depending on time since ingestion and toxin type. More information is provided in Table 1.

Table 1. Possible signs and symptoms based on toxin type and exposure route

Toxin	Exposure Route	Onset Time	Likely Symptoms	Differential Diagnosis	Possible Laboratory or Other Findings
Hepatotoxins Microcystin Cylindrospermopsin	Ingestion	Minutes to days	Acute depression Weakness & incoordination Loss of appetite Excessive drooling Vomiting & diarrhea Abdominal tenderness Jaundice Dark urine	Acetaminophen Nonsteroidal anti-inflammatories Aflatoxin Mushrooms Sago/cycad palm Metals: copper, zinc, iron Xylitol (dogs only) Rodenticides Other hepatotoxins	Elevated bile acids & liver enzymes Hypoglycemia Hyperkalemia Proteinuria Prolonged clotting times Presence of toxin in biological specimens collected from ill animals Blue-green staining of fur or hair
Neurotoxins Anatoxin-a Saxitoxin	Ingestion	Minutes to hours	Excessive drooling Apprehension & anxiousness Vomiting Muscle twitching Seizures Respiratory failure	Organophosphates Carbamates Chlorinated hydrocarbon Bromethalin Metaldehyde Mushrooms Other neurotoxins	Presence of toxin in biological specimens collected from ill animals Blue-green staining of fur or hair
Dermatoxins Lyngbyatoxin	Skin Contact	Minutes to hours	Rash Hives Allergic reactions	Other dermal allergens	Blue-green staining of fur or hair

Treatment Options

There is no antidote when treating cyanotoxins, all medical care is supportive. The contaminated water source should be identified, and access to it removed.

The common cyanotoxins have a steep dose-response curve, increasing recovery chance of affected animals[1]. Treatment approaches vary by toxin and animal. The following are general recommendations used to reduce symptoms and support recovery:

- Induce vomiting.
  - If done within first two hours of ingestion, may minimize absorption of toxins.
- Administer activated charcoal slurry[1].
  - This will bind toxins in the gut to reduce absorption of toxins.
- Monitor liver function.
- Be aggressive with fluids and corticosteroids to support liver function and prevent shock[4].
- Neurological symptoms may require seizure control and ventilator support.
- Oral Cholestyramine may be effective at treating microcystin poisoning in addition to supportive care[2], but this treatment is considered experimental.
- Bile acid transport blockers such as cyclosporin A, rifampin, and silymarin have effectively prevented hepatotoxicity when injected prior to microcystin dosing[1].
- Intravenous milk thistle (*Silybum mariamum*) application has demonstrated experimental success in general liver protection from hepatotoxins[3].
- Animals should have fur or other exposed areas cleaned and be removed from places of direct sunlight.

Testing for Cyanotoxins

The Pennsylvania Animal Diagnostic Laboratory System (PADLS) conducts testing on GI contents for microcystin, nodulin, and anatoxins. Additionally, liver tissue extracted from deceased patients may be analyzed for microcystin presence. Visit the PADLS website for more information: www.PADLS.org

Reporting HAB Illnesses

To report a suspected, probable, or confirmed harmful algal bloom related illness, please complete the "HAB Animal Illness Reporting Form" found on the ODH website at: www.odh.ohio.gov/HABAnimalForm. Report any suspected, probable, or confirmed cases to your local health department and the Ohio Department of Health.

For LHD contact information, use the search tool here:
www.odh.ohio.gov/GetMyLHD

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Staff and Owner Safety

As with animals, human exposure to water with HAB toxins can cause a variety of symptoms depending on the amount, type, and the toxin exposure time. Symptoms usually begin within hours of exposure and can last for a few days.

If an owner suspects they have been exposed to a HAB or is experiencing HAB-associated illness, the owner should seek **medical advice** and contact their **local health department**.

General signs and symptoms associated with HABs in humans

- Direct contact may lead to skin and eye irritation
- Inhaling of HAB contaminated water may result in respiratory irritation or illness.
- Ingestion of HAB waters can cause abdominal pain, vomiting, and neurologic effects

If an owner suspects they have been exposed to a HAB or is experiencing a HAB-associated illness, the owner should seek medical advice and contact their local health department.

Animal care professionals treating animals exposed to HAB-associated illnesses should wash exposed areas with soap and water. Allergic reactions to some toxins may cause skin irritation. Medical professionals should be contacted if symptoms develop.

More information on human health effects can be found at www.odh.ohio.gov/habs

References

1. The Merck Veterinary Manual, "Overview of Algal Poisoning": www.merckvetmanual.com/toxicology/algal-poisoning/overview-of-algal-poisoning
2. Rankin KA, Alroy KA, Kudela RM, Oates SC, Murray MJ, Miller MA. Treatment of cyanobacterial (microcystin) toxicosis using oral cholestyramine: case report of a dog from Montana. *Toxins (Basel).* 2013; 5(6):1051-1063.
3. Hackett ES, Twedt DC, Gustafson DL. Milk thistle and its derivative compounds: a review of opportunities for treatment of liver disease. *Journal of Veterinary Internal Medicine.* 2013; 27(1):10-16.
4. Minnesota Department of Health, Harmful Algal Blooms and Pets: www.health.state.mn.us/divs/idepc/diseases/hab/vet/index.html
5. Ohio Department of Health, Harmful Algal Blooms: www.odh.ohio.gov/habs
6. Ohio Department of Health Zoonotic Diseases: www.odh.ohio.gov/wps/portal/gov/odh/know-our-programs/zoonotic-disease-program
7. One Health Harmful Algal Bloom System (OHHABS): www.cdc.gov/habs/ohhabs
8. State of Ohio, Harmful Algal Blooms: www.ohioalgaeinfo.com