HARMFUL ALGAL BLOOM-RELATED ILLNESS IN ANIMALS

Ohio Department of Health

HAB EXPOSURE AND SYMPTOMS

There are three common routes for pet exposure to cyanotoxins:
• Dermal contact • Ingestion • Inhalation

Early signs that an animal was exposed to a HAB could include:
• Vomiting • Diarrhea • Anorexia • Lethargy • Depression

The severity of a HAB-related illness depends on multiple factors:
• Amount of water and algal cells ingested • Animal's body size
• Amount of food in the animal's stomach • Sensitivity of the species and individual animal

TABLE 1. POSSIBLE SIGNS AND SYMPTOMS BASED ON TOXIN TYPE AND EXPOSURE

Toxin	Exposure Route	Onset Time	Likely Symptoms	Differential Diagnosis	Possible Laboratory or Other Findings
Hepatotoxins Microcystin Cylindrospermopsin	Ingestion	Minutes to days	Acute depression Weakness and incoordination Loss of appetite Excessive drooling Vomiting and 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 and 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 and 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 following are general recommendations used to reduce symptoms and support recovery:

- Induce vomiting.
- Administer activated charcoal slurry to reduce toxin absorption[1].
- 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].
- Injection of cyclosporin A, rifampin, or silymarin prior to microcystin dosing may prevent hepatotoxicity[1].
- Intravenous milk thistle application has demonstrated 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.

REPORTING HAB-RELATED ANIMAL 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: **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: **odh.ohio.gov/GetMyLHD**

To check latest advisories, use the BeachGuard app: **publicapps.odh.ohio.gov/beachguardpublic**

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

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**

REFERENCES:

1. The Merck Veterinary Manual, "Overview of Algal Poisoning": **https://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 **http://www.health.state.mn.us/divs/idepc/diseases/hab/vet/index.html**
5. Ohio Department of Health, Harmful Algal Blooms **https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/harmful-algal-blooms**
6. Ohio Department of Health Zoonotic Diseases: **https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/zoonotic-disease-program/zdp**
7. One Health Harmful Algal Bloom System (OHHABS) **https://www.cdc.gov/habs/ohhabs.html**
8. State of Ohio, Harmful Algal Blooms, **www.ohioalgaeinfo.com**

Rev 6/25/2019