

Harmful Algal Blooms (HABs)

Information for Veterinarians

Proliferation of some blue-green algae (cyanobacteria) can produce toxins that can cause illness and death in both humans and animals. Cyanobacterial blooms form in warm, slow-moving waters that are rich in nutrients such as fertilizer runoff or septic tank overflows. Blooms, which can look like colorful foam, scum or mats on water, most often occur when the water temperature rises. Blooms can occur in marine, estuarine, and fresh waters, but the blooms of greatest concern are the ones that occur in fresh water, such as drinking water, reservoirs or recreational waters. The algae can produce multiple toxins and they are primarily classified as either neurotoxins or hepatotoxins.

Transmission: An exposure to an algal bloom includes having had known contact with water or scum, having ingested water or scum, or having eaten any dead animal near a body of water with an algae bloom. Animals are at an increased risk for severe illness because they are not hesitant about swimming in or ingesting HAB-contaminated water. Further exposure can occur when animals lick their fur after swimming or by eating the surface scum on the beach.

Clinical signs: Onset of illness to these toxins is rapid, from minutes to hours with anatoxin or saxitoxin (neurotoxins) and from hours to days with hepatotoxins such as microcystin. In animals such as cattle, sheep, horses, pigs and dogs, there may be clinical signs and clinicopathologic data suggestive of liver failure if algal poisoning is caused by microcystin. In such cases, the liver may be enlarged or contain areas of hemorrhage, accompanied by hepatocellular necrosis. Other algal toxins, such as anatoxins, may result in no gross or microscopic morphologic lesions. Clinical signs of acute toxicity include vomiting, weakness, paralysis, rash, seizures or sudden death.

Diagnostics: Currently, there are no commercially available tests for toxins. The Ohio Department of Agriculture Animal Disease Diagnostic Lab (ODA-ADDL) can perform histopathology on sections of formalin-fixed liver, kidney and brain tissue to support a diagnosis. Contact ODA-ADDL at (614)728-6220 prior to necropsy for specifics.

Reporting: Animals often serve as sentinels for human illness; therefore, we encourage veterinarians with knowledge of an animal case or suspected case of HAB exposure and illness to report this to local health department where the animal resides. This information may be helpful in identifying harmful algae blooms so the public can take steps to prevent exposure to themselves and other animals.

Unusual mortality and morbidity in wildlife should be reported to the [county wildlife officer](#) or to the Ohio Department of Natural Resources at (800) 945-3543.

FOR MORE INFORMATION

General

[ODH: Blue-Green Algae/Cyanobacteria \(HABs\) Ohio](#)

[EPA: HABs and Algal Toxins](#)

Disease in Animals

[Harmful Algal Blooms, Disease in Animals](#)

[HABS can be deadly to pets and livestock](#)

Human illness

[ODH Health Care Provider Reference](#)

[CDC Harmful Algal Blooms \(HABs\)](#)

FOR HEALTH DEPARTMENT USE ONLY:

Veterinarian facility _____ Visit date(s) _____
Treating Veterinarian _____ Outbreak # _____

ODH USE ONLY

Date of this report _____
Interviewer initials _____
Report number _____

HARMFUL ALGAL BLOOM-RELATED ANIMAL ILLNESS REPORT

Identifying information for animal caller:

Name _____
Phone _____
Address _____
County _____
ZIP code _____
Animal Owner (if not caller) _____

Source(s) of report:

Resident Contact _____
 Healthcare Provider _____
 State Agency Phone number _____
 County Agency _____
 Poison Control Center _____
 Veterinarian _____
 Other _____

Animal description

Does the case involve a domestic animal?
 Yes No Stray Don't know
If yes, species: _____
 Canine Pet's Name: _____
 Feline Pet's Name: _____
 Other Domestic Pet's Name: _____
Breed/Description _____
Sex Male Female
Age ____ months/years
Neutered Yes No Don't know
Approximate height: _____
Approximate weight: _____
Was the exposure associated with a reported bloom?
 Yes No
 Livestock, Type _____
 Bird/Number Affected _____
 Wild/Describe _____
Species (list if more than one) _____

Exposure/Mortality Information

Date of exposure _____ Time of exposure _____
Duration of exposure _____
Was the animal found dead? Date carcass found _____
 Yes No Don't know
Condition of carcass
 Fresh Scavenged
Place of exposure _____
 Beach/shoreline Marsh/Swamp
 Lake/Pond Residence
 River/Tributary Groomer/Boarder
 Other _____
Name of place of exposure _____

Route

Dermal contact
 Ingestion
 Don't know
 Other _____

Source

Food
 Fresh water
 Drinking water
 Other _____

Areas in contact with water

Head
 Paws
 Legs
 Neck
 Trunk
 Other _____
 Don't know

Environmental conditions

Other sick or dead animals

No
 Dead fish Count _____
 Other dead animals Count _____
Count _____ species _____
 Other sick animals species _____
Count _____
 Don't know

Unusual odors

No
 Yes
If yes, describe _____

 Don't know

Water body conditions

Moving
 Stagnant
 Don't know
Color _____
Clarity _____

Scum or foam present

No
 Yes
 Don't know

Signs and Symptoms (onset is from time of first exposure, duration is from time of onset)

Symptomatic? Yes No Unknown Date of Onset _____

What symptom(s) did the animal first experience? _____

Chief symptoms

General

<input type="checkbox"/> Lethargy	Onset _____	Duration _____	<input type="checkbox"/> Malaise	Onset _____	Duration _____
<input type="checkbox"/> Fever	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____
<input type="checkbox"/> Loss of appetite					

HEENT

<input type="checkbox"/> Ear discharge	Onset _____	Duration _____	<input type="checkbox"/> Nasal discharge	Onset _____	Duration _____
<input type="checkbox"/> Eye Irritation	Onset _____	Duration _____	<input type="checkbox"/> Pale gums	Onset _____	Duration _____
<input type="checkbox"/> Eye discharge	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____

Respiratory

<input type="checkbox"/> Cough	Onset _____	Duration _____	<input type="checkbox"/> Sneezing	Onset _____	Duration _____
<input type="checkbox"/> Rapid breathing	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____
<input type="checkbox"/> Wheezing	Onset _____	Duration _____			

Cardiovascular

<input type="checkbox"/> Irregular beat	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____
---	-------------	----------------	--------------------------------------	-------------	----------------

Gastrointestinal

<input type="checkbox"/> Excessive drooling	Onset _____	Duration _____	<input type="checkbox"/> Lip licking/Gagging	Onset _____	Duration _____
<input type="checkbox"/> Vomiting	Onset _____	Duration _____	<input type="checkbox"/> Foaming at mouth	Onset _____	Duration _____
<input type="checkbox"/> Diarrhea	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____

Genitourinary

<input type="checkbox"/> Blood in urine	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____
<input type="checkbox"/> Dark urine	Onset _____	Duration _____			

Musculoskeletal

<input type="checkbox"/> Muscle pain	Onset _____	Duration _____	<input type="checkbox"/> Limping	Onset _____	Duration _____
<input type="checkbox"/> Joint pain	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____

Neurologic

<input type="checkbox"/> Behavior change	Onset _____	Duration _____	<input type="checkbox"/> Weakness	Onset _____	Duration _____
<input type="checkbox"/> Paralysis	Onset _____	Duration _____	<input type="checkbox"/> Stumbling	Onset _____	Duration _____
<input type="checkbox"/> Seizure	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____
<input type="checkbox"/> Coma	Onset _____	Duration _____			

Dermatologic

<input type="checkbox"/> Itching	Onset _____	Duration _____	<input type="checkbox"/> Jaundice (yellow tint to skin and/or eyes)	Onset _____	Duration _____
<input type="checkbox"/> Rash	Onset _____	Duration _____	<input type="checkbox"/> Fur Loss	Onset _____	Duration _____
<input type="checkbox"/> Redness/Swelling	Onset _____	Duration _____	<input type="checkbox"/> Other _____	Onset _____	Duration _____

If a rash was visible, identify the location of the rash (check all that apply):

Left front leg Left hind leg Left front paw Left hind paw Right front leg Right hind leg
 Right front paw Right hind paw Face Trunk Neck Other _____

Describe the appearance of the rash _____

Did the animal have multiple exposures Yes No Don't know

If yes, did symptoms recur Yes No Don't know

Other symptoms _____

Other Comments _____

Medical Information

Was animal prescribed any new medication in the month before onset of symptoms Yes No Unknown

If yes, list medications _____

If dog or cat, was animal vaccinated for leptospirosis?

Yes No Unknown

If dog or cat, was animal vaccinated for DHPP?

Yes No Unknown

If dog or cat, was animal vaccinated for rabies?

Yes No Unknown

If dog or cat, was animal vaccinated for Bordetella?

Yes No Unknown

If dog or cat, was animal vaccinated for Lyme disease?

Yes No Unknown

If dog, was animal vaccinated for hepatitis?

Yes No Unknown

If dog or cat, was animal treated for flea/tick prevention?

Yes No Unknown

If yes, how was the animal treated?

Oral medication Topical treatment Unknown

Does the animal have any known pre-existing medical conditions or disabilities? Yes No Unknown

If yes, describe

Was medical care obtained for this reported event?

Yes No Unknown

Provider _____

Location _____

Phone number _____

What is the animal's current disposition?

Released (date) _____

Still hospitalized (as of date) _____

Died (date) _____

If deceased, was a necropsy performed?

Yes No Pending Unknown

(If yes, attach copy)

Don't know

Notes _____

Were lab tests conducted? Yes No Unknown

If yes, type and results (attach results)

Blood tests (CBC profile) _____

Cultures _____

Fecal smears _____

Histopathology _____

Skin biopsies _____

Toxins _____

Urinalysis _____

X-ray _____

FOR HEALTH DEPARTMENT USE ONLY:

Assessment and Follow-up

Status Complete

Follow-up required (describe in follow-up section below)

Diagnosis

Not a HAB-related case

Suspect HAB-related case*

Probable HAB-related case*

Confirmed HAB-related case*

Disease(s) associated with this report

Primarily associated with freshwater:

Anatoxin-a poisoning

Anatoxin-a(s) poisoning

Cylindrospermopsin

poisoning

Lyngbyatoxin poisoning

Microcystin poisoning

Saxitoxin poisoning

(Paralytic shellfish poisoning – PSP)

Other _____

Primarily associated with marine water:

Azaspiracid poisoning

Brevetoxin poisoning

Ciguatera fish poisoning

Domoic acid poisoning

(amnesic shellfish poisoning - ASP)

Lyngbyatoxin poisoning

Saxitoxin poisoning (Paralytic shellfish poisoning – PSP)

Okadaic acid poisoning

Diarrhetic shellfish

poisoning-DSP)

Other _____

If not HAB-related, what diagnosis _____

Follow-up needed _____

Date of Action described _____

Photos Yes No

Report by (name) _____

Comments

*based on CDC case definitions on page 4

Any exposed people? _____

Description _____

CDC case definition summary for selected toxins:

NOTE: We do not have definite case definitions for these poisonings. We cannot rule out that a person may present with symptoms immediately after exposure or days after exposure.

Suspect Case

Exposure to water or to seafood with a confirmed algal bloom AND onset of associated signs and symptoms within a reasonable time after exposure AND without identification of another cause of illness

Probable Case

Meets criteria for *Suspect Case* AND there is laboratory documentation of a HAB toxin(s) in the water

Confirmed Case

Meets criteria for a *Probable Case* and documentation of a HAB toxin(s) in a clinical specimen provided appropriate testing is available.

Cyanotoxins	Type of Toxin	Causative organism	Vector
Anatoxin-a	Neurotoxin	<i>Anabaena</i> spp. <i>Aphanizomenon</i> spp. <i>Planktothrix</i> spp.	Contaminated fresh water
Anatoxin-a(s)	Neurotoxin	<i>Anabaena flos-aquae</i>	Contaminated fresh water
Azspiracid	Neurotoxin	<i>Protoperidinium</i>	Shellfish: clams, scallops, mussels, oysters
Brevetoxin	Neurotoxin	Dinoflagellates <i>Karenia brevis</i> Other <i>Karenia</i> spp.	Contaminated marine waters and shellfish
Ciguatoxins	Neurotoxin	Dinoflagellates <i>Gambierdiscus toxicus</i> <i>Gambierdiscus</i> spp	Many fish species: eel, grouper, mackerel, snapper...
Cylindrospermopsin	Hepatotoxin	<i>Cylindrospermopsis raciborskii</i> , <i>Aphanizomenon ovalisporum</i>	Contaminated fresh water and possibly fish
Domoic acid	Neurotoxin	<i>Pseudo-nitzschia</i> spp. <i>Nitzschia pungens</i>	Shellfish: crab, clams, scallops, mussels, oysters
Lyngbyatoxin	Dermal toxin	<i>Lyngbya</i> sp.	Contaminated marine water
Microcystin	Hepatotoxin	<i>M. aeruginosa</i> <i>Anabaena</i> spp. <i>Planktothrix</i> spp.	Contaminated fresh water
Okadaic acid	Neurotoxin	Dinophysis sp.	Shellfish: crab, clams, scallops, mussels, oysters
Saxitoxin	Neurotoxin	Dinoflagellates and Cyanobacteria <i>Anabaena circinalis</i> <i>Lyngbya wolle</i>	Shellfish: clams, cockles, mussels, oysters, whelks, puffer fish Contaminated fresh water

Numeric Thresholds for Ohio Public Water and Ohio Recreational Water

The recommended thresholds would be protective of human exposures. The thresholds given here may or may not be protective of animals such as dogs or livestock.

Threshold (µg/L)	Microcystin***	Anatoxin-a	Cylindrospermopsin	Saxitoxin***
Recreational Public Health Advisory	6	80	5	0.8
Recreational No Contact Advisory	20	300	20	3
Drinking Water-Do Not Drink	0.3*	20	0.7*	0.2
Drinking Water-Do Not Use**	20	300	20	3

* Numeric thresholds are referenced from the U.S. EPA Health Advisories (<http://yosemite.epa.gov/opa/admpress.nsf/0/547dc50c15c82aaf85257e3d004d7f67?OpenDocument>)

** The Drinking Water 'Do Not Use' thresholds are based on the Recreational No Contact Advisory thresholds from the Ohio EPA Public Water System Harmful Algal Bloom Response Strategy (<http://epa.ohio.gov/ddagw/HAB.aspx>)

***Microcystin and Saxitoxin thresholds are intended to be applied to total concentrations of all reported congeners of those toxins.

Veterinarians: Please fax form to the local health department of the residence of the ill animal. A list may be found at:

<http://www.odh.ohio.gov/~media/ODH/ASSETS/Files/lhd/OHIO-LHDcontact.ashx>

If you are unable to identify the residence, please send to your local health department.

Local health departments please fax forms to: (614) 564-2437

Harmful Algal Blooms (HAB)
Zoonotic Disease Program (ZDP)
Ohio Department of Health (ODH)



May 2015