

APPENDIX A

KDHE Policy: Guidelines for Addressing Harmful Algal Blooms in Kansas Recreational Waters

Division of Environment
Curtis State Office Building
1000 SW Jackson St., Suite 400
Topeka, KS 66612-1367



Phone: 785-296-1535
Fax: 785-559-4264
www.kdheks.gov

Lee A. Norman, M.D., Secretary

Laura Kelly, Governor

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Subject: Policy: Guidelines for Addressing Harmful Algal Blooms in Kansas Recreational Waters

1. PURPOSE.

The KDHE mission is to protect and improve the health and environment of all Kansans. This policy considers the health and environmental risks of Harmful Algal Blooms (HABs) in recreational waterbodies, as well as the economic impact on resources within our agency. As HABs are both pervasive and relatively unpredictable, this issue presents unique challenges in health risk assessment. The basis for this policy is the epidemiologic and scientific study of HAB data collected by KDHE in Kansas as well as the analysis of established scientific and medical research, including studies conducted by the US Environmental Protection Agency (USEPA) and the World Health Organization (WHO).

2. BACKGROUND.

Cyanobacteria, also known as blue-green algae, can produce toxins in recreational waters and have been implicated in human and animal illness in Kansas. The threat to health is related to the prevalence of cyanotoxins and cyanobacterial cell concentrations in recreational water and corresponding contact with or ingestion of the cyanobacterial cells or cyanotoxins. Exposure may occur via contact, ingestion, or inhalation and may be from affected water, spray, aerosols, or dried algae. There are no known antidotes for cyanotoxins.

During a HAB, children are at a greater risk than adults, due to their lower body weight. In addition, behavior of children when exploring recreational water may create more opportunities for exposure than adults; they typically swallow a higher volume of water, exposing them to a higher volume of toxin. Individuals with compromised immune systems, liver disease, kidney damage, and women who are pregnant or nursing may also be more vulnerable to HABs than the general population. The most common complaints after recreational exposure to cyanobacteria and associated toxins include vomiting, diarrhea, skin rashes, eye irritation, and respiratory symptoms. As the concentration of cyanobacterial cells increases, the probability of adverse health effects also increases.

Science on cyanobacteria and their associated toxins is rapidly advancing, and the USEPA has recently (2019) set recommended ambient water quality criteria for cyanotoxins in recreational water, for microcystin at no greater than 8 µg/L and cylindrospermopsin at no greater than 15 µg/L. Microcystin is the cyanotoxin most commonly found in Kansas waterbodies. Microcystin toxin is the foundation of this policy but KDHE retains the right to develop supplemental policy should other cyanotoxins become prevalent and problematic at Kansas waterbodies.

3. PROCEDURES.

Once a credible HAB complaint has been submitted for a public waterbody, KDHE samples the waterbody for cyanobacteria. Samples are taken at established public access points, such as swim beaches, fishing piers, and boat ramps. KDHE has the capability to test for microcystin toxin and to identify and quantify the type of cyanobacteria present. The issuing of a public health advisory is based on the concentration of microcystin toxin, cyanobacterial cell density, or verified visual evidence.

When a HAB has been confirmed in a Kansas public lake, KDHE will issue a Public Health Watch, Warning, or Hazard advisory, depending on the level of risk associated with the HAB, as determined through water sampling or visual confirmation. Under emergency conditions, when staff and analytical resources are severely limited, visual confirmation of possible HABs can be the primary means of determining that a Public Health Warning is to be issued for a given lake. While conservative, this contingency approach alerts the public to possible issues at a recreation lake without delay.

4. ACTION.

The primary distinctions among a Public Health Watch, a Public Health Warning, and a Public Health Hazard are:

- a. the level of risk that needs to be communicated to the public; and
- b. the actions recommended to the governing authority of the affected waterbody, to discourage exposure.

Implementation of appropriate measures to restrict exposure will be the responsibility of the governing authority of the affected waterbody. If the governing authority chooses to post or close the waterbody, KDHE can provide examples of Watch, Warning, and Hazard signs, as well as informational signs.

A Public Health Watch serves as an advisory to notify the public that hazardous conditions are possible or present. A Watch will be issued when the microcystin toxin concentration is detectable at a concentration above 4 µg/L and/or when cyanobacterial cell counts are above 80,000 cells/mL.

The following guidance is provided for a Public Health Watch:

- KDHE will post Public Health Watch advisories on its website and issue a press release.
- KDHE will notify any public water suppliers with intakes in the affected waterbody or downstream of the waterbody will be notified.
- Signs should be posted at beaches, marinas, boat ramps, and other points of public access to the waterbody.
- Local Health departments, physicians, veterinarians, and hospitals are advised to report adverse health events associated with HAB exposure or cyanobacterial toxin poisoning to the KDHE Bureau of Epidemiology and Public Health Informatics.
- Members of the public should be advised of the symptoms of cyanobacterial poisoning, what to do in case of exposure to a cyanobacteria bloom, and whom to call in case of illness potentially associated with exposure.
- Members of the public should be advised of the following:
 - Harmful algae may be present, and the waterbody may be unsafe for people and animals.
 - Swimming, wading, and jet skiing are discouraged near visible blooms.
 - Boating and fishing are acceptable, provided that contact with the water is minimized, and any exposure to contaminated water is followed by washing with clean water.

- Pets and livestock should not be allowed to drink the water, swim in it, or touch or eat dried algae on the shoreline.
- Fish caught during a Public Health Watch should first be cleaned and the entrails discarded, and only the fillet portion should be eaten.
- Irrigation water affected by a HAB could pose a risk; avoid the spray and thoroughly wash fruits or vegetables in clean water.

A Public Health Warning supersedes a Watch and serves as an advisory to notify the public that conditions are expected to be unsafe for human and animal exposure. A Warning will be issued when microcystin toxin concentrations are greater than 8 µg/L and/or when cyanobacterial counts are greater than 250,000 cells/mL. A Warning may also be issued if there is verified documentation of a visible, pervasive cyanobacterial scum present, particularly when emergency conditions limit the availability of staff and resources to conduct a quantitative analysis.

The following recommendations are provided for a Public Health Warning:

- KDHE will post Public Health Warning advisories on its website and issue a press release.
- KDHE will notify any public water suppliers with intakes in the affected waterbody or downstream of the waterbody.
- Signs should be posted at beaches, marinas, boat ramps, and other points of public access to the waterbody.
- Local Health departments, physicians, veterinarians, and hospitals are advised to report adverse health events associated with HAB exposure or cyanobacterial toxin poisoning to the KDHE Bureau of Epidemiology and Public Health Informatics.
- Members of the public should be advised of the symptoms of cyanobacterial poisoning, what to do in case of exposure to a cyanobacteria bloom, and whom to call in case of illness potentially associated with exposure.
- Members of the public should be advised of the following:
 - Harmful algae are present at a level considered unsafe for people and animals.
 - Any contact with water is considered a high risk and should be restricted, including swimming, wading, boating, water skiing, or jet skiing.
 - Pets and livestock should not be allowed to drink the water, swim in it, or touch dried algae on the shoreline.
 - Fish caught during a Public Health Warning should first be cleaned and the entrails discarded, and only the fillet portion should be eaten.
 - Irrigation water affected by a HAB could pose a risk; avoid the spray and thoroughly wash fruits or vegetables in clean water.

A Public Health Hazard supersedes a Warning and serves as an advisory to notify the public that extreme conditions exist. A Hazard will be issued when microcystin toxin concentrations exceed 2,000 µg/L and/or cyanobacteria cell counts are greater than 10,000,000 cells/mL.

The following recommendations are provided for a Public Health Hazard:

- KDHE will post Public Health Hazard advisories on its website and issue a press release.
- KDHE will notify any public water suppliers with intakes in the affected waterbody or downstream of the waterbody.

- Local Health departments, physicians, veterinarians, and hospitals are advised to report adverse health events associated with cyanobacteria toxin poisoning to the KDHE Bureau of Epidemiology and Public Health Informatics.
- It is recommended that all in-lake recreation cease.
- In many cases, it is also recommended that picnic, camping and other public land activities directly adjacent to affected waters be closed.

5. FOLLOW UP SAMPLING.

A waterbody with any type of active HAB advisory, whether Watch, Warning, or Hazard, will be tested by KDHE on a regular basis and in a consistent manner, provided adequate staffing and analytical resources are available.

A Public Health Watch will remain in effect until the cyanobacterial concentrations are 80,000 cells/mL or lower at all sample sites and microcystin toxin concentrations are 4 µg/L or lower at all sample sites, at which point the Watch will be lifted.

A Public Health Warning based on cell counts will remain in effect until the cyanobacterial concentrations are 250,000 cells/mL or lower at all sample sites for at least one week. A Public Health Warning based on microcystin toxin concentrations will remain in effect until microcystin toxin concentrations are 8 µg/L or lower at all sample sites for a given week and for the next consecutive sample, taken the following week or later. Waterbodies meeting these criteria may have the Warning lifted or may be reduced to a Watch level, depending on results. Any Warning advisory that was issued based on visual evidence alone will remain in effect until the bloom dissipates and either: (a) toxin analysis confirms the absence of health risk or, (b) the recreation season ends.

A Public Health Hazard will remain in effect until the cyanobacterial concentrations are 10,000,000 cells/mL or lower and concentrations of microcystin toxin concentrations are 2000 µg/l or lower at all sample sites for at least one week. Waterbodies meeting these criteria may have the Hazard lifted or may be reduced to a Warning or Watch level, depending on results.



Leo Henning
Deputy Secretary and Director of Environment
Kansas Department of Health and Environment

3-31-2020

Date