



# Kansas 2017 Harmful Algal Bloom Summary

Harmful algal blooms affect public waters in Kansas each year. These blooms can cause illness in humans, livestock, and pets. This report shares information about algal bloom surveillance in Kansas and a summary of the 2017 algal bloom season. This report was developed by the Kansas Environmental Public Health Tracking Program (KS-EPHT), which is part of the Kansas Department of Health and Environment (KDHE). KS-EPHT is committed to the advancement of environmental health in the state to support KDHE's goal, "*to protect and improve the health and environment of all Kansans.*"

## What are Harmful Algal Blooms?

Blue-green algae, called cyanobacteria, are aquatic bacteria that naturally exist in rivers, lakes, ponds, and marine water in the US (1). When certain conditions are present, such as high nutrient and light levels, rapid reproduction of these cyanobacteria can create harmful algal blooms (HABs) that produce toxins (1). These toxins can target the liver and nervous system. Microcystin, a toxin produced by cyanobacteria that targets the liver, is the most widespread HAB toxin in Kansas public waters.

Microcystin is harmful to both humans and animals. Health effects from a toxin such as microcystin depend on the route of exposure and the amount of toxin (2). These toxins can be inhaled, ingested, and can cause effects from skin (dermal) contact (2). Symptoms can appear as soon as a few minutes after exposure or as long as a couple days after exposure and, in humans, can include nausea, vomiting, diarrhea, coughing, sore throat, headache, rash, and liver damage (2). In animals, exposure can lead to weakness, vomiting, diarrhea, seizures, disorientation, difficulty breathing, excessive drooling, and can result in death (3).



# Kansas Harmful Algal Blooms Surveillance

The Kansas Department of Health and Environment (KDHE) and several partners have developed a response team for HABs in Kansas. The team has response procedures for HABs that affect Kansas public waters. For the most part, the team will only respond to public waters or private lakes and ponds with public access. The KDHE Bureau of Environmental Field Services (BEFS) and the Bureau of Water (BOW) coordinate water sample collection and analysis. The water is tested for the number of blue-green algae cells in the sample and the level of microcystin toxin.

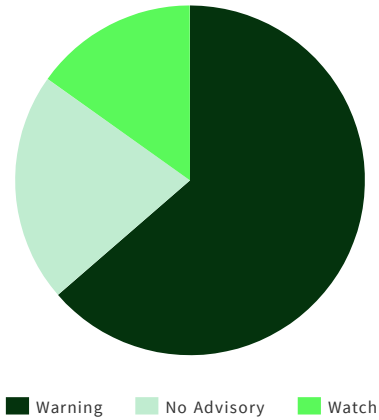
Water sampling is not conducted on a routine basis; sampling is initiated from incoming blue-green algae bloom complaints that these bureaus collect. Blue-green algae bloom complaints can be submitted online at: [algae bloom report form](#).

After reviewing water sample results, if warranted, BEFS and BOW will issue a public health recommendation consistent with KDHE's HAB policy. The public health recommendations are made to the managers of that lake or pond who ultimately decide whether to adopt them or not. The KDHE HAB policy can be accessed at: [KDHE HAB policy](#). During HAB season (June-October), BEFS and BOW hold weekly calls with stakeholders and lake managers to go through water sample results and discuss any public health recommendations. The public health recommendations include Watch, Warning, and Closure. A Watch status notifies the public that water may be unsafe for humans and animals and water contact is discouraged while a Warning status notifies the public that water conditions are unsafe and water contact should not occur. A Closure notifies the public that water conditions are unsafe, and entry is closed at public access locations. If a public water body is affected by HABs, managers of that lake or pond post appropriate signage.

In addition to reporting blue-green algae bloom complaints, human and animal algae-related illnesses are reported to KDHE. The KDHE Bureau of Epidemiology and Public Health Informatics (BEPHI) investigates reports of illness from blue-green algae exposure. If an illness complaint states that exposure occurred at a Kansas body of water that has not been sampled for HABs, BEPHI completes a blue-green algae bloom investigation request for BEFS and BOW. When a case has been exposed at a public water body that has been found to have HAB toxins, BEPHI works to establish a temporal relationship between the exposure and illness. BEPHI uses One Health Harmful Algal Bloom System (OHHABS) definitions to determine case status for humans and animals. Using these definitions, each case will be classified as not a case, suspect, probable, or confirmed (4). A suspect case is considered to possibly be a HAB-associated illness based on exposure, symptoms, and public health assessment. A probable case is considered to likely be a HAB-associated illness based on either a professional medical diagnosis, laboratory HAB data (e.g. detection of microcystin in the water the individual was exposed), or observational or environmental data (e.g. scum observed on the water or nutrient levels that support the presence of an algal bloom) in addition to the criteria of a suspect case. A confirmed case is considered to definitely be a HAB-associated illness based on clinical data and either a professional medical diagnosis or all other causes of illness ruled out. A case can also be considered confirmed by having a professional medical diagnosis, other causes of illnesses ruled out, and laboratory HAB data. Reporting illness due to HABs is voluntary in Kansas. Because of this, it is likely that the number of illnesses for humans and animals from exposure to HABs are under-reported. Illness reports can be submitted at: [human illness form](#) and [animal illness form](#).

# 2017 Harmful Algal Blooms Season

Figure 1. Public Health Recommendations from Sampled Public Water Bodies, Kansas 2017 (N=33)



In the 2017 HAB season, there were 21 public waters in Kansas that had a public health Warning for HABs and 5 public waters with a public health Watch, totaling 26 HAB affected public waters (Figure 1). There were 7 public waters that were sampled for HABs, but the analysis did not result in an advisory based on KDHE’s HAB policy. Compared to previous years, the 2017 season in Kansas appeared to have a high number of public waters affected by HABs (Figure 2). The 2017 HAB season had a higher number of public waters sampled and a higher number of samples taken compared to the average in previous years (Figure 3). Kansas public waters affected by HABs during the 2017 season are displayed in Map 1.

Figure 2. Number of Public Waters Affected by HABs, Kansas 2010-2017

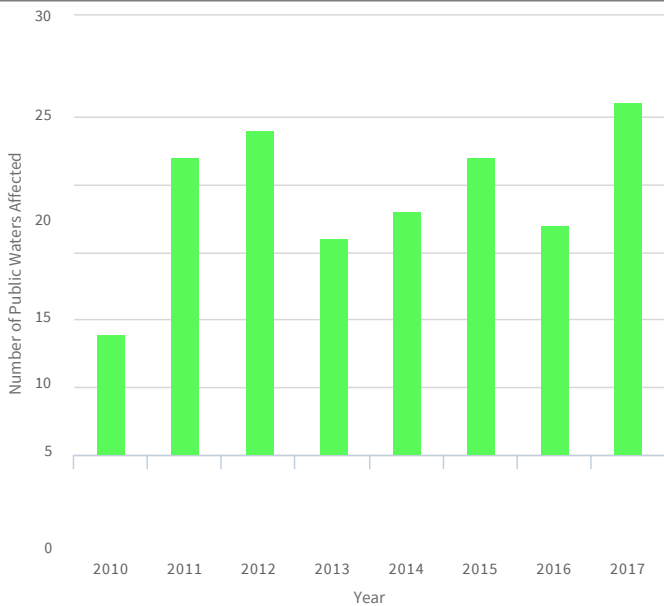
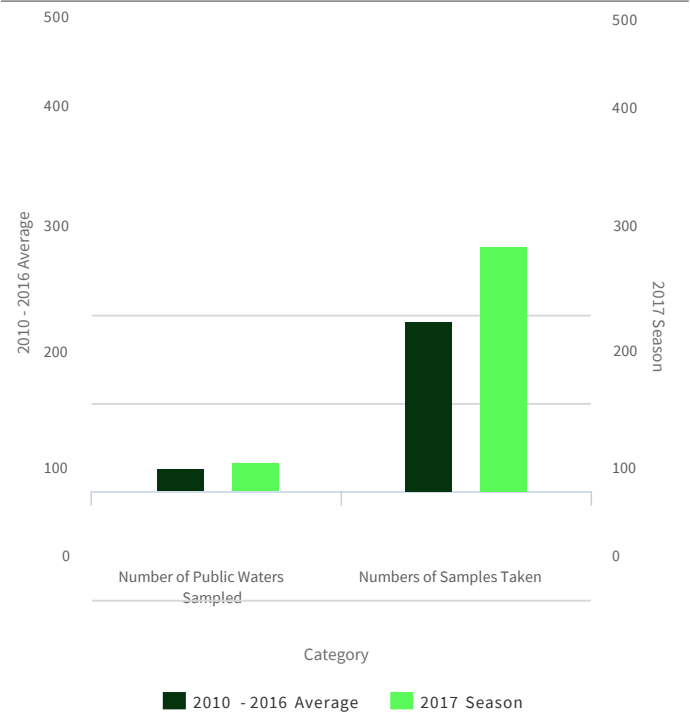
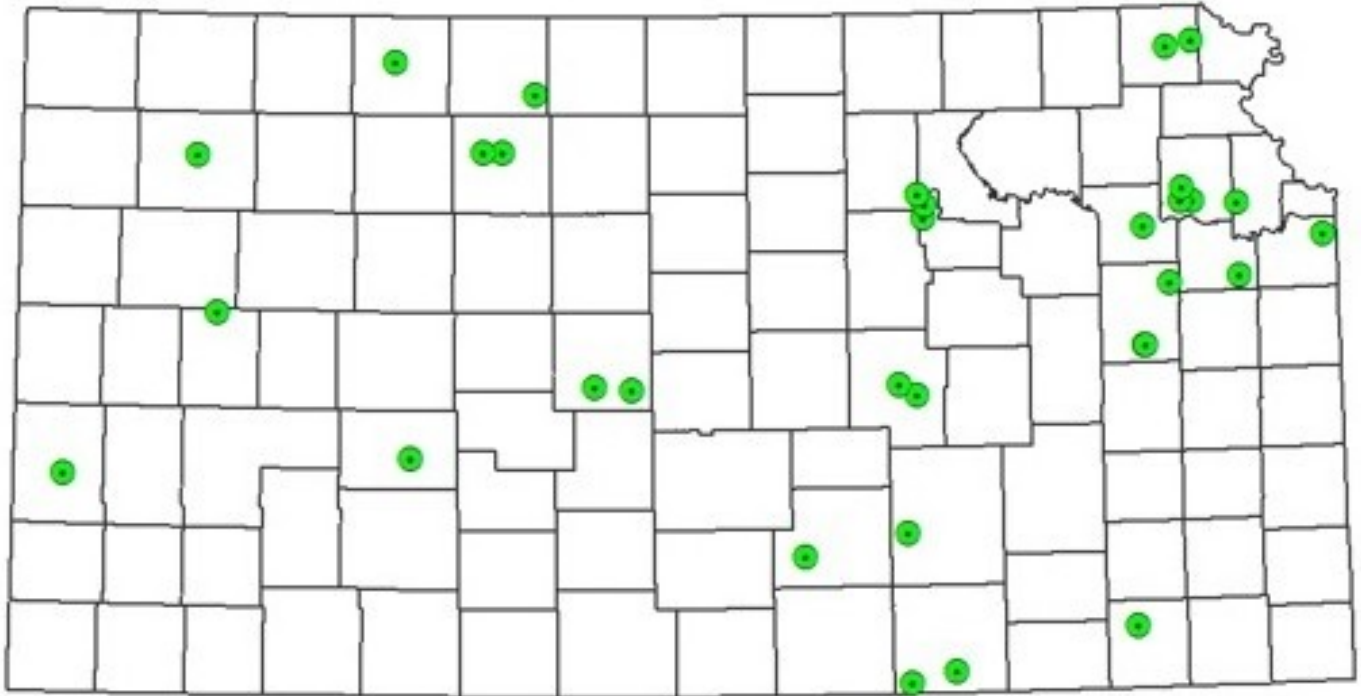


Figure 3. Number of Public Waters Sampled and Number of Samples Taken, 2017 HAB Season and 2010-2016 Season Average



Map 1. Kansas Public Waters Affected by HABs, 2017\*



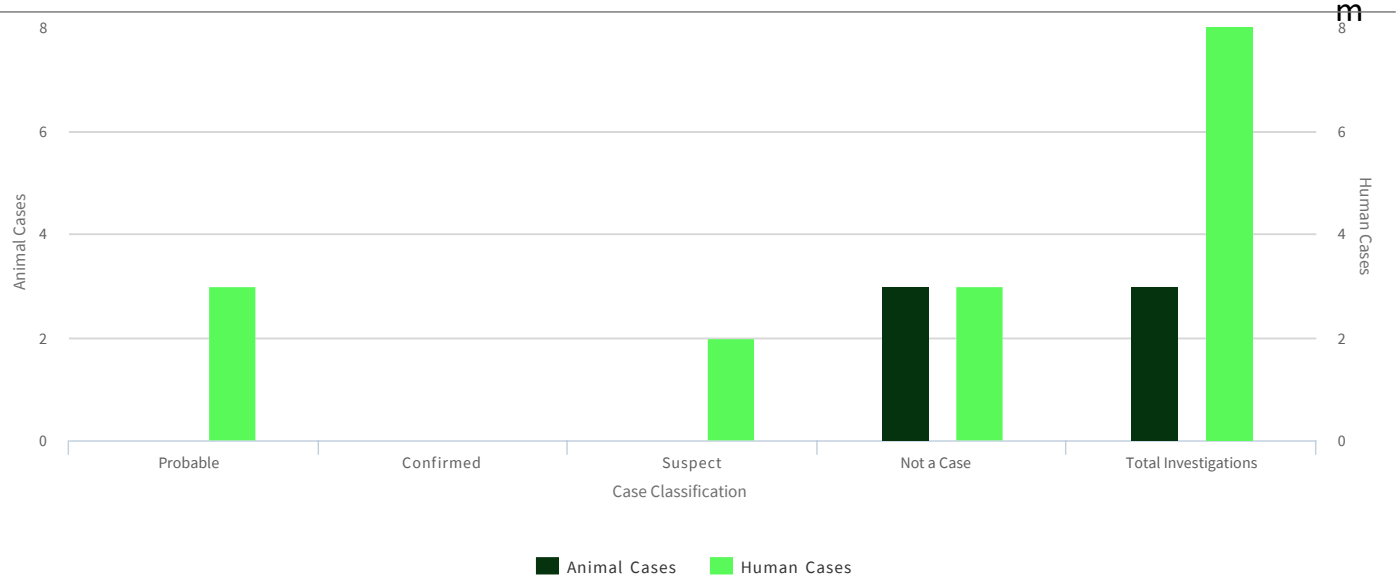
\*There were 26 Kansas public waters affected by HABs, but the map displays more than 26 dots due to 4 Kansas lakes affected by HABs having multiple zones affected. Each zone is marked with its own dot.

**“If you suspect that you or your pet has become ill from HAB exposure, please report this information. Reporting these cases helps prevent future illness for pets and humans.”**

- Henri Menager, MPH, Senior Epidemiologist

During the 2017 HAB season, 8 human and 3 animal reports of illness were investigated (Figure 4). Of the human reports investigated, 2 were classified as suspect cases and 3 were classified as probable cases. Because of the lack of HAB toxins in the water, 3 human and 3 animal reports were not considered cases.

Figure 4. Case Classification of 2017 HAB Season Animal and Human Illness Reports



## References

- 1) United States Environmental Protection Agency. Cyanobacteria/Cyanotoxins. Available from: <https://www.epa.gov/nutrient-policy-data/cyanobacteriacyanotoxins#what1>. Accessed 4/4/18.
- 2) United States Environmental Protection Agency. Health and Ecological Effects. Available from: <https://www.epa.gov/nutrient-policy-data/health-and-ecological-effects>. Accessed 4/5/18.
- 3) Blue Cross for Pets. Blue-green algae and its dangers to dogs. Available from: <https://www.bluecross.org.uk/pet-advice/blue-green-algae-and-its-dangers-dogs>. Accessed 4/9/18.
- 4) One Health Harmful Algal Bloom System (OHHABS) - Harmful Algal Bloom (HAB) Event and Case Definitions. Available from: <https://www.cdc.gov/habs/pdf/ohhabs-case-and-event-definitions-table.pdf>. Updated 7/8/16.

## Additional Resources

The KDHE HAB Response Plan can be found here.

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