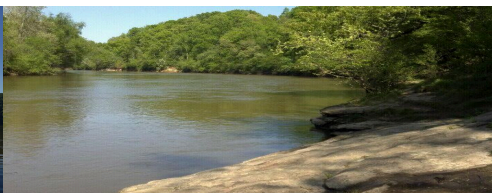
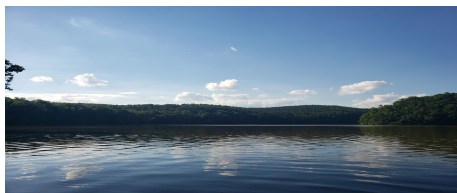




HARMFUL ALGAL BLOOM (HAB) FAQ AND FACT SHEET



AUGUST 2020



What are Harmful Algal Blooms (HABs)?

- Algal blooms result from an excess of nutrients in lakes and rivers and increased sunlight and temperatures. These nutrients may come from urban stormwater runoff, wastewater treatment plants, large agricultural operations and fertilizer runoff from lawns, and other residential sources.

- HABs are algal blooms that are dominated by cyanobacteria compared to other present beneficial algae species. Cyanobacteria may produce toxins, which can lead to HABs.

Why should I care about HABs?

- The cyanotoxins produced can be harmful when individuals come into contact (i.e. swimming) or ingest them through water or food. According to the Center for Disease Control, symptoms may range from skin, eyes, nose and throat irritation, to more serious neurological, digestive or respiratory system impacts.

- Pets are also at risk from HABs. Pets may experience a range of symptoms from excessive salivation, digestive, and/or respiratory complications, with there being a report out of

Wilmington just last summer of three dogs dying from similar complications.

- The concentration of cyanobacteria in these HABs also can result in an environmental phenomenon called hypoxia. This means that the HABs remove oxygen as they decompose. This lack of oxygen can create “dead zones” where aquatic life is unable to survive.

- Over time, HABs can be harmful to local economies. Poor water quality can lead to reductions in recreational and economic activity, and can even lower property values. In addition, drinking water treatment costs can be increased as a result.

Why are HABs increasing?

- North Carolina has seen higher temperature averages due to climate change, which contributes to increased algae growth. This combined with stagnant water and high levels of nutrient runoff can result in concentrated algal blooms, which can then turn into HABs.

- The length, intensity, and toxicity of HABs vary over time, making it difficult to monitor and track HABs.

What is being done about HABs and how can I protect my pets and myself?

- North Carolina does not have a water quality standard for cyanotoxins. The EPA has established water quality guidelines.

- The EPA also has an app that shows HAB data weekly, which is called “Cyanobacteria Assessment Network.” It is designed to visually track potential HABs.

- The NC Department of Environmental Quality has images of varying algal blooms on their website. Consult these images if you are concerned with algae in your area. (NCDEQ: <https://deq.nc.gov>)

- Avoid drinking from and swimming in areas that are stagnant and/or look to be experiencing an algal bloom. Make sure to shower thoroughly after using public waterways.

- For pets, limit them from water exposure when there is a possible HAB. If exposed to the water, wash thoroughly, and if complications occur bring them to a veterinary clinic.

- Contact NC DEQ at 877-623-6748 or YRK at 336-722-4949 to report any potential HAB sightings.



HABs: Numbers to Know

- NC Division of Water Resources defines an algal bloom as:

- Algal Cell Density >10,000 units/mL

- Biovolume >5,000 mm³/m³

- Recommended EPA levels for common cyanotoxins for adults and school-age children:

- Recreational Concentration: Microcystins 8 ug/L;
Cylindrospermopsin 15 ug/L

- Drinking Water Concentration: Microcystins 1.6 ug/L;
Cylindrospermopsin 3.0 ug/L

- The NC Science Advisory Council made a recommendation on June 17, 2020 to the NC DEQ that Chlorophyll A concentrations in High Rock Lake do not exceed 35 ug/L, in comparison to the current 40 ug/L water impairment standard.

- Per [NC DEQ Standard Operating Procedures](#), an algal bloom is active when there is more than 20,000 cyanobacterial cells/mL and it should continue to be monitored.

What Should NC do about HABs?

YRK recommends the state of North Carolina adopt the following policies:

1. Inclusion of cyanobacteria sampling in ambient monitoring programs where indicated due to past occurrences, taking into account species of cyanobacteria, density, size and toxicity levels.

2. Adoption of EPA water quality guidelines for cyanotoxins and statewide numeric standards for chlorophyll-a, phosphorus, and nitrogen.

3. Improve communications and coordination between NC DEQ and NC Department of Health and Human Services regarding standard operating procedures for defining and responding to HABs, as well as testing methods and thresholds for monitoring HABs.

4. Watershed-wide reductions in nonpoint and point source nutrient pollution and increased funding for agriculture best management practices.

5. More research and development on the fate and transport of cyanotoxins produced by HABs and their correlation with hypoxia and low dissolved oxygen.

Cyanotoxins on Contaminant Candidate List

Cyanotoxin	Number of Known Variants or Analogues	Primary Organ Affected	Health Effects ¹	Most Common Cyanobacteria Producing Toxin ²
Microcystin-LR	80~90	Liver	Abdominal pain Vomiting and diarrhea Liver inflammation and hemorrhage	<i>Microcystis</i> <i>Anabaena</i> <i>Planktothrix</i> <i>Anabaenopsis</i> <i>Aphanizomenon</i>
Cylindrospermopsin	3	Liver	Acute pneumonia Acute dermatitis Kidney damage Potential tumor growth promotion	<i>Cylindrospermopsis</i> <i>Aphanizomenon</i> <i>Anabaena</i> <i>Lyngbya</i> <i>Raphidiopsis</i> <i>Umezakia</i>
Anatoxin-a group ³	2-6	Nervous System	Tingling, burning, numbness, drowsiness, incoherent speech, salivation, respiratory paralysis leading to death	<i>Anabaena</i> <i>Planktothrix</i> <i>Aphanizomenon</i> <i>Cylindrospermopsis</i> <i>Oscillatoria</i>