Learning Objectives

Teachers in Ohio use the Revised Science Standards for the state, but other states that border the Great Lakes may be using Next Gen Science Standards (https://www.nextgenscience.org/). Since Lake Erie is the Great Lake most affected by HABs, it is an example that can be used to touch on many concepts covered in the Next Gen Science Standards. The HABs in Lake Erie actually serve as ideal phenomena around which to build toward understanding the complexity of ecosystems, the dynamic nature of water on the earth and earth's processes, and human activities that impact these systems.

Ohio's Revised Science Standards 2017
Environmental Earth's Resources
ENV.ER.3: Water and water pollution
- Potable water and water quality
- Hypoxia, eutrophication
- Clean Water Act
- Point source and non-point source contamination

ENV.ER.4: Soil and land
- Mass wasting movement and erosion
- Sediment contamination
- Land use and land management (including food production, agriculture and zoning)

Chemistry Properties of Matter
C.PM.6: Intermolecular chemical bonding forces of attraction
- Implications for properties of substances
  -Solubility

Biology Diversity of Life
B.DI.3: Loss of Diversity
- Climate change
- Anthropocene effects
- Invasive species

Physical Geology Earth's Resources
PG.ER.3: Water
- Potable water and water quality
- Hypoxia, eutrophication

Next Gen Science Standards (NGSS)
HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.
- Create your own algae bloom

HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

HS-ESS3-3. Create [use] a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.
- On-Field Ohio activity

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- Evaluate solutions

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- Evaluate solutions

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
- Evaluate solutions