



Dead Zones - Lesson 2, Activity B: Standards and Assessment

State of Michigan - Grade Level Content Expectations (5th-7th grade)

Discipline 1: Science processes

Inquiry, analysis and communication (IA)

- S.IA.05-07.11 - Analyze information from graphs to answer scientific questions
- S.IA.05-07.13 - Communicate and defend findings of observations and investigations using evidence

Reflection and social implications (RS)

- S.RS.0507.15 - Demonstrate scientific concepts through various models and activities

Discipline 2: Physical science

Properties of matter (PM)

P.PM.M.2 Elements and compounds

- P.PM.07.24 - List examples of physical and chemical properties of elements and compounds

National Science Education Standards (NSES) - Middle School

Science as inquiry (A):

- Think critically and logically to make the relationship between evidence and explanations

Physical science (B):

- A substance has characteristic properties, such as density, a boiling point and solubility, all of which are independent of the amount of the sample
- Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature

Earth and space science (D):

- The sun is the major source of energy for phenomena on the earth's surface, such as growth of plants, winds, ocean currents and the water cycle

Educators are encouraged to use this free material. Please include source information:

Great Lakes Lessons, Teaching with Great Lakes Data, Michigan Sea Grant, www.greatlakeslessons.com

Great Lakes Literacy Principles – K-12

- 5e – The Great Lakes ecosystem provides habitat for terrestrial and aquatic species. The Great Lakes are three-dimensional, offering vast living space and diverse habitats from the shoreline and surface down through the water column to the lake floor.
- 5f – Great Lakes habitats are defined by environmental factors. As a result of interactions involving abiotic factors, such as temperature, clarity, depth, oxygen, pH, light, nutrients, pressure, substrate type and circulation, life in the Great Lakes is not evenly distributed temporally or spatially. Abiotic factors within the Great Lakes can change daily, seasonally or annually because of natural and human influences.

Standards Sources

- State of Michigan = Michigan department of education - Grade level content expectations (GLCEs)
- NSES = National science education standards
- Great Lakes Literacy Principles, COSEE Great Lakes, 2010. Great Lakes Literacy: Essential principles and fundamental concepts for Great Lakes learning [brochure]. Columbus, OH: Ohio Sea Grant OHSU-B-090. Available from www.coseegreatlakes.net.

Assessment

This assessment chart was designed for teachers to create their own assessment. In creating assessments, the value should depend on the learning level of the task. Levels are coded as Low (knowledge, comprehension), Medium (application, analysis), High (synthesis, evaluation).

Learning Objective	Student Performance
List examples of physical and chemical properties of elements and compounds	Name the physical properties of water (temperature, density) (Low)
Identify the living and nonliving components of an ecosystem	Explain how water temperature and density are related to seasonal cycles (Medium)
	Describe the Great Lakes seasonal cycle (Medium)
Analyze information from graphs to answer scientific questions	Interpret water temperature versus depth graphs to answer questions (Medium)