# **05 UNIT 5- Aquatic and Terrestrial Pollution**

Content Area:	Science
Course(s):	Environmental Science
Time Period:	Semester 1
Length:	3 weeks
Status:	Published

# Standards

	Cause and Effect
	Stability and Change
	Engaging in Argument from Evidence
SCI.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
	Planning and Carrying Out Investigations
	Constructing Explanations and Designing Solutions
SCI.HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
SCI.HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and climate change have influenced human activity.
SCI.HS-ESS3-3	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
SCI.HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on climate change and other natural systems.
SCI.HS-ESS3-6	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity (i.e., climate change).

#### **Enduring Understandings**

- 1. Human activities have physical, chemical, and biological consequences for the quality of our water sources.
- 2. There are many forms water pollution can take from chemical to thermal to noise.
- 3. The US and many developing nations have enacted laws to protect water from pollution and make sure water is safe to drink.
- 4. Humans are the only organisms that produce waste.
- 5. Waste disposal encompasses the three R's, composting landfills and incineration.
- 6. Many chemicals that are disposed of in the environment may be hazardous to human health.

- 1. What are major sources of pollution to our waterways?
- 2. What are the consequences of water pollution to the health of ecosystems and human populations?
- 3. What is the impact of policies, like the Clean Water Act, to restore water quality?
- 4. What are the different pathways for waste?
- 5. What can humans do to reduce waste?
- 6. How is toxicity of pollutants determined?

## **Knowledge and Skills**

Knowledge:

- 1. Students will know the different types of aquatic pollution and their sources including: wastewater, heavy metals, oil, and nonchemical forms of pollution like noise.
- 2. Students will know how wastewater causes problems and technologies we can use to treat wastewater.
- 3. Students will know the effects on organisms of pollution like heavy metals and oil.
- 4. Students will know about the effect of the Clean Water Act and the Safe Drinking Water Act on cleaning up and preventing future pollution.
- 5. Students will know how waste is disposed of in the US as well as the contents of waste.
- 6. Students will know about the role of the 3Rs and composting in reducing waste streams.
- 7. Students will know about the disposal of hazardous waste.
- 8. Students will know alternative ways to handle waste.
- 9. Students will know about the impact of chemicals in aquatic pollution on human health. Biomagnification and LD50s will be reviewed.

## Skills:

- 1. Design and interpret experiments.
- 2. Interpret data on LD50 experiments
- 3. Construct and interpret graphs using data on waste.
- 4. Collect and analyze data in laboratory experiments.
- 5. Apply scientific reasoning to develop an argument based on evidence.

#### **Modifications**

https://docs.google.com/document/d/1wR7bQF-8AQoRrt0g4C3hKja0yjwDjC9\_BiAmONWbTcl/edit?usp=sharing

#### Assessments

https://docs.google.com/document/d/1wR7bQF-8AQoRrt0g4C3hKja0yjwDjC9 BiAmONWbTcI/edit?usp=sharing