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
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
HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
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.
HS-ESS3-3	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on climate change and other natural systems.
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.

Essential Questions

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_BiAmONWbTcI/edit?usp=sharing

Assessments

https://docs.google.com/document/d/1wR7bQF-8AQoRrt0g4C3hKja0yjwDjC9_BiAmONWbTcI/edit?usp=sharing