04 UNIT 4 Atmospheric Pollution

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

Standards

9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
	Young people can have a positive impact on the natural world in the fight against climate change.
	Analyzing and Interpreting Data
	Engaging in Argument from Evidence
	Obtaining, Evaluating, and Communicating Information
	Constructing Explanations and Designing Solutions
	Systems and System Models
	Energy and Matter
	Developing and Using Models
HS-LS2	Ecosystems: Interactions, Energy, and Dynamics
LS4.D	Biodiversity and Humans
HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
HS-ESS3	Earth and Human Activity
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.

Enduring Understandings

1. Human activities have physical, chemical, and biological consequences for the atmosphere.
2. Local and regional activities can have impacts at the global level.
3. Air pollution can occur from natural or anthropogenic sources.
4. Air pollution issues may be specific to a region such as smog in the US and acid rain in Asia.
5. Ground level pollution can have impacts on human health.
6. Indoor air pollution can have impacts on human health.
7. Changes in atmospheric gas concentrations have led to climate change.
8. Climate change will have effects on the environment and living things on our planet.

Essential Questions

1. What is the structure of the atmosphere?
2. How do human activities change the composition of the atmosphere?
3. What evidence is there for human activities causing global warming?
4. How will global warming affect our planet?
5. What can humans do to combat global climate change?

Knowledge and Skills

Knowledge:

1. Students will know the major air pollutants and be able to describe the sources of the pollutant and the impact of the pollutant on the environment.

2. Students will know the difference between primary and secondary pollutants.

3. Students will know how photochemical smog forms.

4. Students will know how acid rain forms and the steps taken in the US to reduce acid deposition.

5. Students will know the strategies and techniques used to control pollutants like sulfur dioxide, nitrogen oxides and particulate matter.

6.Students will know the difference between ozone found at ground level and stratospheric ozone.

7. Students will know about the ozone hole and the efforts that were taken to repair the hole.

8. Students will know the differences between global change, climate change and global warming.

9. Students will know the role of greenhouse gases as well as the natural and anthropogenic sources.

10. Students will know the patterns of change in CO2 and the correlation to changes in temperature.

11. Students will know the science behind estimating greenhouse gas levels for the past 500,000 years as well as how to model predicted changes for the future.

Skills:

1. Design and interpret experiments.
2. Interpret diagrams such as trophic pyramids, biogeochemical cycles, population growth pattern graphs and pyramids.
3. Construct and interpret graphs using data like population growth.

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