

Activity Story

Paragraph 1

The Earth has a way of naturally maintaining its atmosphere called the carbon cycle. On our planet, there are many different organisms, such as mammals, birds, and reptiles, as well as naturally occurring events, like fires, that expel carbon dioxide into the atmosphere. Other organisms, such as plants, absorb carbon dioxide before it enters the atmosphere. The different organisms worked together in harmony to maintain a balance in the atmosphere so that life can flourish on Earth.

(Use the small measuring cups for shifting water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the small measuring cup to shift water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Paragraph 2

As time on Earth continued to move forward, the human population increased. This increase did not initially upset the balance between carbon emittance into the atmosphere and carbon absorption, because the number of organisms and events that emitted carbon dioxide into the atmosphere were relatively equal to the number of plants that were absorbing it. This balance changed however, with the invention of new technologies and development of large civilizations. At first, these early technologies were powered by natural forces such as the wind or currents of the water for things such as sailboats, factories, and mills.

(Use the small measuring cups for shifting water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the small measuring cup to shift water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Paragraph 3

As the population of mankind grew larger and larger, the need for more materials increased. More factories were needed across the Earth to produce the items needed. However, the current location of the factories were only in certain places that could support the early technologies that were powered by natural forces instead of being spread out across the Earth. Additionally, humans sought new ways to travel easier and faster across the Earth. They experimented with different materials to find an answer.

(Use the small measuring cups for shifting water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the small measuring cup to shift water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Paragraph 4

The answer that was found for powering their technology was the burning of coal. Mankind began burning coal to power the small amount of technology that they had, but they were unaware of the effect coal had on the atmosphere. Burning the coal added more carbon dioxide to the atmosphere. The coal also had to be mined from the ground which required in some areas for trees and plants to be destroyed to obtain the coal needed. The Earth was unable to handle the new amount of carbon dioxide being added to the atmosphere so the level of the carbon dioxide in the atmosphere increased.

(Use the medium measuring cup for shifting water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the small measuring cup to shift water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Paragraph 5

As time progressed, the technology became more advanced. With the advancement in the technology came the need to have more energy to power their devices. The number of factories where the new technology was produced on a mass scale increased as the population of mankind grew. The only answer was to keep burning more and more coal to power their new technology and factories. The levels of carbon dioxide slowly increased until the scientists of the Earth realized the damage they were doing to the atmosphere.

(Use the large measuring cup for shifting water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the small measuring cup for shifting water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Paragraph 6

Scientists began developing new energy sources to use instead of coal to power their technologies. Some of the scientists in Iowa started to find some ways to use other resources that would not damage the atmosphere. They found that by burning coal with some of the plants on the Earth the rate of carbon dioxide being placed in the atmosphere was being decreased. This discovery prompted the humans to begin planting more plants in order to have plants to burn with the coal to further help the atmosphere reduce the carbon levels. Certain locations such as the University of Iowa began burning the mixture of coal and plants for energy to heat their buildings. However, coal was still being burned by the factories so extra carbon dioxide was being placed in the atmosphere.

(Use the large measuring cup to shift the water from the potential carbon dioxide bowl to the carbon dioxide in the Earth's atmosphere bowl. Use the medium measuring cup to shift water from the carbon dioxide in the Earth's atmosphere bowl to the potential carbon dioxide bowl.)

Post Activity Questions

- What were the changes to the atmosphere that you noticed throughout the story?
- What caused these changes?
- What events in the story corresponded with the changing of cup sizes being used?
- How is this related to the renewable energy exhibit in the Mobile Museum?
- Was there a section that described a similar process in the Hawkeye Power Exhibit? How?
- What were some of the plants that were featured in the Hawkeye Power Exhibit?
- How is this cycle similar to something that you experience in everyday life?

Prior to Exhibit Engagement Questions

Questions to engage students in biofuels and the carbon cycle

- What are other types of materials being burned besides coal?
- What is the effect of burning these materials on the atmosphere compared to burning coal?
- Why could burning biofuels be healthier for the environment than burning coal?
- Does the Earth have a way to maintain a healthy atmosphere?
- How could the Earth maintain its atmosphere?

During Exhibit Engagement Questions

- Encourage students to look for the other materials being burned for energy instead of coal.
- What are some differences between burning coal and biomass?
- How does burning coal affect the atmosphere?
- How does burning organic product affect the atmosphere?

Post Exhibit Engagement Questions

- What were some of the other products being burned instead of coal?
- What was the difference between burning coal and burning organic products?
- Why is there a difference between burning coal and burning organic products?
- Make a list of some everyday items or actions that put carbon dioxide into the atmosphere.

Name: _____ Class Period _____

Effect on the Atmosphere

Instructions: Each group of students will be given a paragraph to read and perform the actions indicated below the paragraph. Determine the order of the paragraphs by using the **bold numbers** above. Before each paragraph is read, make a prediction about how the carbon dioxide levels in the atmosphere will change and explain why you think that will happen. After each paragraph, write how the carbon dioxide levels in the atmosphere had changed and why.

| Paragraph Order | Predictions and Why | Result and Why |
|-----------------|---------------------|----------------|
| Paragraph 1 | | |
| Paragraph 2 | | |
| Paragraph 3 | | |

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|-------------|--|--|
| Paragraph 4 | | |
| Paragraph 5 | | |
| Paragraph 6 | | |