



Traveling Carbon Lab: The Carbon Cycle, SB4 b,d



Carbon is an element that is found in both the living portion of our planet and the inorganic parts of the Earth system. The carbon cycle is one of the biogeochemical cycles and is very important for ecosystems. Carbon moves slowly through the cycle and is stored in reservoirs such as the atmosphere, living organisms, soils, and oceans along its way. The purpose of this lab is to play the role of carbon atoms traveling through the carbon cycle and to understand the importance of carbon in ecosystems.

Instructions: **1.** Obtain a passport and go to your assigned reservoir. **2.** Read the directions at the station and roll the die. **3.** Stamp your passport and fill out the “where I’m going” and “how am I getting there” **4.** Continue around the room following the directions for your roll of the die.

Questions:

- 1) Explain why the movement of carbon is often linked to the cycling of oxygen in ecosystems? Justify your response with examples.
- 2) Explain the niche of decomposers in the cycling of carbon.
- 3) What do you think is the biggest input to carbon in the biosphere? Please justify.
- 4) What are two ways that humans can impact the amount of carbon cycling throughout the biosphere? Please read standard SB4d for ideas.
- 5) What form does carbon take in plants that later supplies energy to animals?
- 6) Describe how increased quantities of carbon dioxide in the atmosphere may contribute to the greenhouse effect and global warming. Is there a difference between the two underlined terms? Justify.
- 7) How can deforestation impact the carbon cycle?
- 8) The amount of carbon in the atmosphere fluctuates in a predictable pattern each year. This pattern is directly caused by autotrophs. Propose a hypothesis for this annual fluctuation in carbon.
- 9) The law of conservation of energy states that energy is neither created nor destroyed. Using one decomposer, one autotroph, and two heterotrophs create a food chain showing how much energy is passed to each organism. What happens to the energy that is not being directly transferred?
- 10) The last cycle we need to discuss is the phosphorous cycle. Use a computer to find out about this cycle. Please explain the importance of the phosphorous cycle and explain how it is cycled in ecosystems.

STAPLE PASSPORT TO THE BACK OF LAB