

Investigation 2.D: Biosphere in a Bottle Answer Key

Answers to Analysis Questions

1. Typical answers may include the following:
 - producers: duckweed and submerged plants
 - consumers: insects and shrimp
 - decomposers: snails and flatworms
2. Biogeochemical cycles will include the water cycle and the carbon-oxygen cycle.
3. A clear bottle allows sunlight into the ecosystem. Without sunlight, no energy enters the ecosystem, and all the organisms will die.
4. You will most likely find that your biosphere increased in temperature, as it functioned as a greenhouse.
5. Condensation on the bottle.
6. If you performed the experiment correctly, you should report that the model biosphere performed fine once it got started, until it ran out of oxygen over time. Explain why your biospheres did or did not function properly.
7. You may see differences in the amount of green (indicating the rate of production) in your biosphere, which you should attribute to differences in the amount of sunlight entering the biosphere. Similarly, different temperatures may be observed. The aerobic organisms in some biospheres may have died, which you should attribute to an excess of carbon dioxide and lack of oxygen in the biosphere.

Answer to Conclusion Questions

8. Decreasing the amount of sunlight available to the biosphere will decrease photosynthetic activity over time and reduce productivity. As a result, oxygen levels in the biosphere will fall and carbon dioxide levels will rise, leading to the eventual death of aerobic organisms.
9.
 - a) Decrease in atmospheric oxygen levels.
 - b) Increase in atmospheric carbon dioxide levels.