

Lab #14: Geology 2 (Chapter 9)

Speleology I

INTRODUCTION:

The objective of this lab is to demonstrate hypogene speleogenesis.

MATERIALS

- Ruler
- Scissors
- 1 Mason/canning jar (with relatively straight sides, that does not “bottle neck” at the top) at least 7 inches tall with a roughly 3-inch diameter (1 pint/16 oz. jars generally work)
- Flowerpot hole mesh pad (3-inch diameter) [Alternate: circular steel wool sponge with a diameter greater than the diameter of the jar]
- Duct tape (optional)
- 1 washing sponge/scouring pad with a diameter/side length at least as long as the diameter of the jar
- Sugar cubes (roughly 30)
- Microwave
- Tap water
- Stop watch or clock
- Microwavable cup or bowl
- Plastic tripod for pizza box support

METHODS

1. Cut the sponges to a diameter slightly larger than that of the jar, so that the sponges will fit snugly within the jar, completely filling the opening.
2. Center the tripod in the jar
3. Place the mesh pad on the tripod. [If necessary to stabilize the pad from tipping, add thin strips of duct tape around the edges to increase its diameter.]
4. Heat water to near boiling in the microwave.
5. Add hot water to the Mason jar until it is less than a half inch below the mesh pad.
6. Stack two layers of sugar cubes on top of the mesh, tightly filling the entire surface area of the mesh.
7. Push the sponge into the jar, keeping the sponge horizontal, so that it just touches the sugar cubes. [Note: do not push so hard that the mesh touches the water.]



8. Place the jar in the microwave and heat until the water in the jar boils above the mesh for 5-10 seconds—stopping the microwave after that point. **Immediately observe** and **record** what happens. _____

RESULTS/DISCUSSION

1. What does the water in the jar represent? _____
2. What does the microwave represent? _____
3. What does the sponge represent? _____
4. What does the mesh pad represent? _____
5. What do the openings in the mesh pad represent? _____
6. What do the sugar cubes represent? _____
7. What does the jar represent? _____
8. What was the result when the sugar cubes came into contact with water? What was created? _____

9. What were the two main causes of the hot water being able to reach the sugar cubes? _____

10. How does the experiment parallel hypogene speleogenesis? _____

11. What would be predicted to happen if an even stronger acid (e.g., sulfuric acid) was used instead of water? _____

12. To better represent the Flood's effects, while the water in the microwave is heating, the top sponge would be pushing downward on the sugar cubes. What would that be representing? _____

