Soda Rocks! Chemical Weathering

By Katy Key (PreK-12)

KEYWORDS: limestone, carbonic acid, caves, experiment, hypothesize

OVERVIEW: Students will look at different types of rock to see which rock is more likely to be dissolved by carbonic acid.

STANDARDS:

TIME: 30-50 minutes, everything in bold is said by instructor

MATERIALS:
-2 liter bottle of soda (Coke, Pepsi)
-3 small samples of rocks for each group (one must be limestone, check other samples before the experiment to make sure they do not show the same results as the limestone sample. Rocks can be labeled 1, 2, and 3 with permanent marker to help students record information.)
-small clear plastic cups labeled 1, 2, and 3
-paper

OBJECTIVES:
The student will:
1. Hypothesize about an experiment.
2. Simulate the effects of carbonic acid on different rock samples.
3. Decide which rock is more likely to be dissolved by carbonic acid.
4. Share with the class the results of the experiment.

SUGGESTED PROCEDURES:

OPENING
Discuss with students how rainwater falls from the sky, drains through the soil, picks up carbon from the plants in the soil and becomes carbonic acid. Rocks that lie in the Earth's crust as bedrock (like limestone) can be slowly dissolved by carbonic acid and caves can form. This process takes thousands of years to occur.

DEVELOPMENT
-Tell students they are going to test several types of rocks to see which of these rocks can be dissolved by carbonic acid.
-Place students in small groups and pass out the samples of rock. Have students look at their sample and, as a group, make a guess about which rock could be dissolved by carbonic acid. Have students record their guess.
-Pass out three plastic cups to the groups, and **tell students to place their rocks one in each cup**.
-Pour soda over each rock and have students observe which rock shows a fizzing action. **Tell students this is an example of carbonic acid dissolving rock. The more fizz that they see indicates a rock that is easier to be dissolved by carbonic acid.**
-Have students record which rock had the most or longest amount of fizzing action.
-Allow students to share what they have found.

CLOSING
Remind students of the opening that you discussed. Say that carbonic acid can dissolve rocks and create caves. Ask students which part of the experiment was the carbonic acid (SODA), and which part of the experiment showed a process that happens in caves (FIZZING ACTION). Share with students which rock was most likely to be dissolved by carbonic acid (limestone). Discuss how limestone is the rock found in much of Bluespring Caverns.