Kid's Corner

Effects of Chemical Weathering on Rocks

Weathering is a set of physical, chemical and biological processes that alter the physical and chemical state of rocks and soil at or near the Earth's surface. **Chemical weathering** is the process by which rocks are decomposed, dissolved or loosened by chemical processes to form residual materials. Chemical reactions break down the bonds holding the rocks together, causing them to fall apart into smaller and smaller pieces. Weathering causes **erosion**, the process of these rock particles being carried away and deposited in other level places. Chemical weathering is much more common in locations where there is a lot of water, because water is important to many of the chemical reactions that can take place. The most common types of chemical weathering are **oxidation**, **hydrolysis** and **carbonation**.

This project focuses on the carbonation weathering process by which dissolved carbon dioxide in rainwater or moisture in surrounding air forms carbonic acid which reacts with the minerals (**calcium carbonate**) in some rocks, softening them and making it easier for other forces to break the rocks apart.

Carbonated water is simply water that has had pressurized carbon dioxide forced into it. The liquid is usually kept pressurized in its container to prevent the carbon dioxide from escaping the liquid, but once the pressure is gone (i.e., the container is opened) the carbon dioxide escapes, causing the liquid to bubble. Carbonated water is used in soft drinks, club soda, and seltzer water.

Problem: Measure and compare effects of chemical weathering, specifically carbonation, on several rock samples.

Materials

- Package of plastic 8 oz drinking glasses or cups
- 1-liter bottle of club soda or seltzer water
- Masking tape
- Clock or watch
- 3 fragments of each of the following rock samples: limestone, marble, granite, and sandstone

Procedure:

1. Fill four cups or glasses three-fourths full of carbonated water (club soda or seltzer water).

2. Fill the remaining four cups three-fourths full of tape water.

3. Place masking tape on the cups and label them: "limestone and tap water," "limestone and carbonated water," "marble and carbonated water," "marble and tap water," "granite and carbonated water," "granite and tap water," "sandstone and carbonated water," and "sandstone and tap water."

4. Place the appropriate rock sample fragments into each labeled cup. Set aside a fragment of each type of rock for a control.

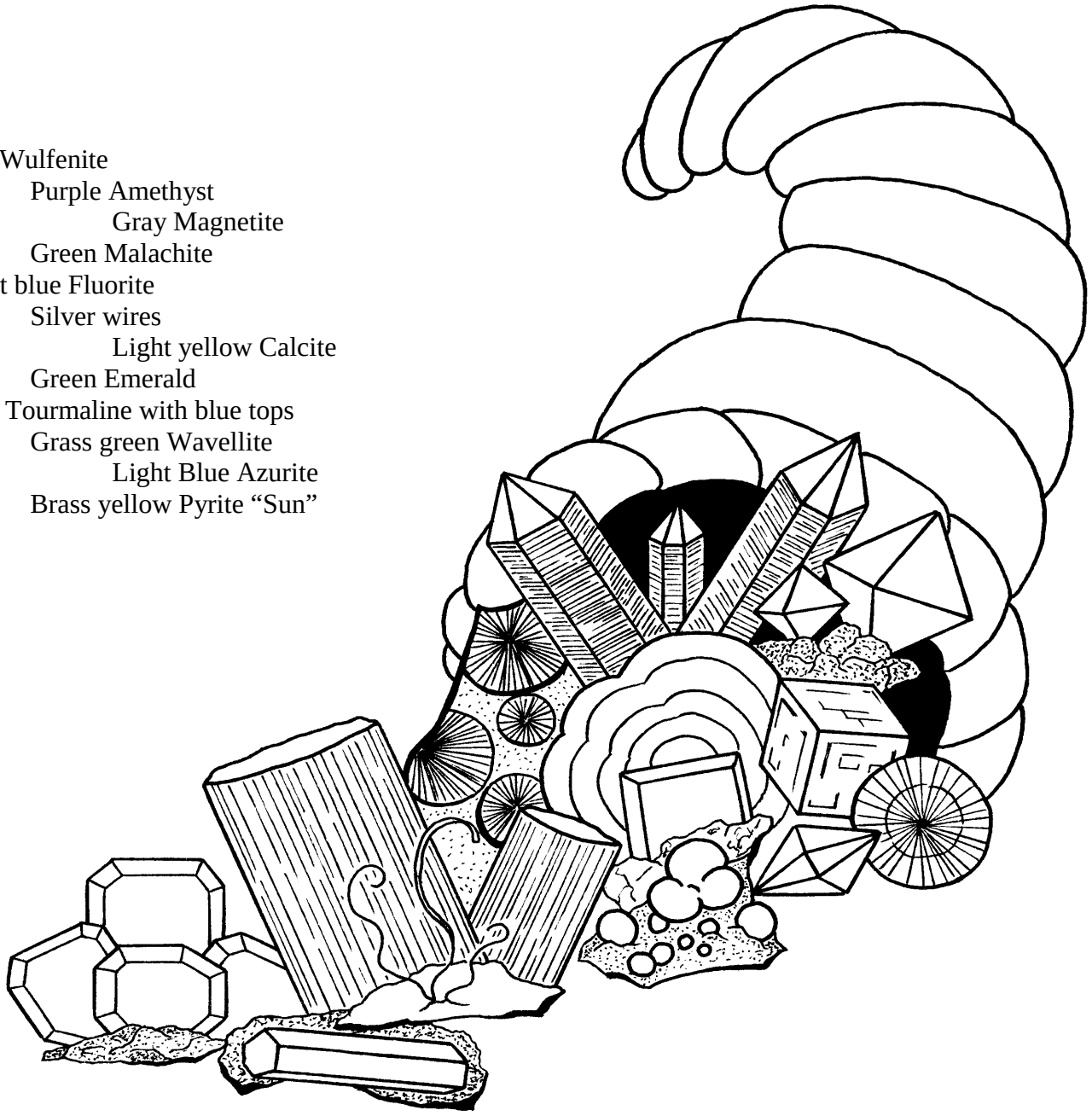
5. Allow the jars to stand for about a 3-4 days.

6. Remove the rocks from the jars and perform the Mohs Hardness Test on each, including your control fragments. Were the fragments that had been immersed in carbonated water softer than the others? Record your results.

Source: http://www.education.com/science-fair/article/effects-of-chemical-weathering-on-rocks/

MINERAL CORNUCOPIA

Red Wulfenite
Purple Amethyst
Gray Magnetite
Green Malachite
Light blue Fluorite
Silver wires
Light yellow Calcite
Green Emerald
Pink Tourmaline with blue tops
Grass green Wavellite
Light Blue Azurite
Brass yellow Pyrite "Sun"



The Cornucopia is also called "The Horn of Plenty." At Thanksgiving time, a cornucopia is traditionally overflowing with food from the harvest, like apples, grapes, squash, potatoes, and all sorts of fruits and vegetables. Here is a cornucopia overflowing with minerals for you to color and identify. In this picture are the following minerals: wulfenite, emerald, tourmaline, silver, azurite, malachite, amethyst, fluorite, pyrite "sun," calcite, magnetite, and wavellite.