

## Rocks & Minerals – Rocks: Plaster & Ice Mechanical Weathering

We tend to think that rocks last forever but if you break a rock open you'll see the outside often looks different than the inside. The outside has weathered. Weathering is a destructive process that breaks down the rock's surface. Since weathering is a long slow process we tend to not see the change but if you visit the old Hillside Cemetery in Kin Coulee you can see the rock gravestones have changed. Sometimes these changes are the result of mechanical weathering.



(Red Rock Coulee)

### Materials:

- plaster of Paris
- two 250 mL milk cartons
- water
- freezer
- small balloon

**Procedure:** (Remember to have your parent's permission and have them watch and help you.)

- Fill the balloon with water until it is the size of a ping-pong ball. Tie a knot at the end.
- Mix water with plaster of Paris until the mixture is as thick as yogurt. Totally open the top of the milk carton and pour half of the plaster in one milk carton and the other half in the other.
- Push the balloon down into the plaster in one carton until it is about 1 cm under the surface. Hold the balloon there until the plaster sets enough so that the balloon doesn't rise to the surface.
- Let the plaster harden for about 1 hour.
- Put both milk cartons in the freezer overnight.
- Remove the containers the next day and observe the results.

### What's Happening:

What happened to the plaster in the two containers? Why is there a difference? Which carton acted as a control (something you compare to)? Why? How does this experiment show what happens when water seeps into a crack in a rock and freezes?

The plaster containing the balloon should have cracked as the water in the balloon froze and expanded. When water seeps into cracks in rocks and freezes, it breaks them apart. The same thing happens to our cement sidewalks in winter.

### Extension:

Experiment with using cooking oil in the balloon. Does it cause as much cracking as water? Did the oil freeze?

We often think of weathering as a bad thing because it ruins buildings and statues. However, as rock is destroyed, valuable products are created. The major component of soil is weathered rock. The growth of plants and the production of food depend on weathering. Some metallic ores (aluminum, copper) are concentrated by weathering. Dissolved products of weathering are carried by water to the rivers, lakes and oceans, where they nourish things living there. As rocks weather and erode, the sediment eventually becomes rock again – a sedimentary rock.

This activity is based on our Rocks & Minerals kit. The source for this lab was: <http://www.scienceviews.com/geology/activity4.html>. Our teaching kits (described on our website) are loaned out FREE to provide classroom teachers and parents of home schooled children an opportunity to explore Science in interesting ways. Mark your calendars, our next community event will be the Family Science Olympics Oct 13, 2012. Also, please consider volunteering as a classroom speaker or allow your business as a field trip location.

Lorne Cooper, Regional Executive Director

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