Curiosity Guide #503
Rocks

Accompanies Curious Crew, Season 5, Episode 3 (#503)

Sandy Syringe Rocks

Investigation #4

Description

Rock on with this rock-making activity.

Materials

- 20-milliliter syringe
- Hacksaw
- Sand
- Water
- Salt
- Sugar
- Plaster of Paris. Must have gloves, goggles, and adult supervision.
- Paper towels
- Disposable bowls
- Stirring sticks
- Sandstone

Procedure

1) Cut off the very end of the syringe, including the nozzle, with a hacksaw.
2) In a small bowl combine four parts sand to one part sugar.
3) Add enough water to the bowl to get the mixture damp, stirring a bit with a stirring stick.
4) Scoop the mixture into a syringe.
5) Lay paper towels on the table.

6) Turn the syringe over so that the open, cut end is on the paper towel.
7) Hold the open end with the sand mixture firmly against the towel for several minutes so that the towel absorbs any extra moisture.
8) Lay the syringe on its side and gently press out the form.
9) Leave the form to dry for a couple of days.
10) Repeat the experiment with four parts sand and one part salt in a second bowl.
11) Repeat the experiment with four parts sand and one part Plaster of Paris in a third bowl.
12) Examine each rock. Can you see the different grains?
13) Is one rock harder than another? Why?
14) How do these sandy rocks compare to natural sandstone?

My Results

Explanation

Sedimentary rocks, like sandstone, limestone, or conglomerate, are made when sediments of different sizes are deposited, compressed, and cemented together. The sediments are cemented with water and chemicals like silica, calcium carbonate, or iron compounds. In our example, the sugar, salt and Plaster of Paris—which is dehydrated gypsum--acted as the cementing agents that held the moist sand together. Each of the cementing agents had a different strength. Natural cements also differ in how strong their bonds are with the different sediments. For example, silica, like the Plaster of Paris, can be a very hard natural cement. In this experiment we were able to show the compression that occurs when sediments get compressed over time by bodies of water.

The surface of the Earth has many kinds of rocks that are all affected by erosion and weathering. In time, rocks break down into small particles that get transported into bodies of water, where the rock particles come to rest in layers. As more particles get deposited into layers, the added weight of particles and water compress the particles. Meanwhile, small bits of minerals, like silica, calcium carbonate, or iron compounds, fill in the tiny spaces between the rock particles and cement the particles together. In time, those compressed, cemented particles or sediments make sedimentary rock, like sandstone, limestone and conglomerate.

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