

Science Lab on Erosion



Here's what you'll need:

- 2 large disposable aluminum lasagna pans or regular baking pans
- Some good old fashioned soil (natural soil from a garden, NOT potting soil from a bag)
- A watering can or cup with holes poked into the bottom
- A magnifying glass
- 2 or 3 books or other items to prop up end of tray
- A pair of pointy scissors or pushpin to make holes in pan (not needed if using non-disposable baking pans)



Here's what to do:

1. Pour the dirt into one of the pans so that it makes a layer on the bottom 2 to 3 inches deep. Smooth the soil out so that it is as even as possible on the top.
2. Examine the soil closely with the magnifier. Touch it and run it through your fingers. What is the soil made of? Does it all feel the same? How do you think the different soil parts would react if water was poured on them?
3. Use the scissors or compass needle to punch 6 small holes in one end of the tray. If using non-disposable baking pans, do not punch holes and just let water overflow into bottom pan.
4. Place the second pan under the end of the dirt-filled pan where the holes are. (The second pan will catch the water as it leaves the top pan.)
5. Slip 2 or 3 books under the other end of the dirt-filled pan so that it is propped up about 2 inches higher than the end with the holes punched in it.
6. Pour water from the watering can/cup onto the upper end of the tray. Observe what happens. Try this experiment again with sod (soil that has grass and roots growing on it), sand, pebbles, etc.

Challenge Question:

How does rain shape the Earth? Try it yourself! Pour water from the watering can into the raised end of the dirt-filled pan. What happens to the surface of the dirt when the water first hits it? What happens to the water that comes out of the dirt-filled pan and collects in the second pan?

Here are some other questions to consider: Do you think it matters if the soil starts out wet or dry? What would happen if you added a few more books under the pan to make a steeper slope? Do all the soil particles get pushed equally by the water? (Note: Make sure you carefully study the soil first because not all dirt is created equal!)

Before you try this Science Lab, predict what will happen with your classmates. Look around your neighborhood for examples of real life erosion.

Another Version:

An Erosion/ Mudslide Experiment for Kids

Written by Cara Batema - 26 September, 2017

Hypothesis

Ask your kids to think about different kinds of soil, such as sand, clay, pebbles or a mixture -- which types of soil do they think would be more prone to erosion or a mudslide?

In your experiment, you will test various types of soil, and soil with plants and trees. Do your kids think the soil alone or soil with plants will prevent or reduce erosion/mudslide activity?

Help your kids come to the conclusion that the soil with plants and trees will have less erosion/mudslide activity than just soil alone

Materials:

- Large, flat baking pan to act as a "stream table"
- Loose soil
- Soil with grass (roots included) on top
- Toothpicks
- Paper cutouts in the shape of trees
- Nontoxic school glue
- Pebbles, sand and water
- Books to vary the angle of the slope of your stream table

Preparation:

To prepare your experiment, fill your stream table halfway to the top with soil. You might want different stream tables for each type of soil, or you can fill one side with a particular type of soil and the other side with another type. For your hypothesis, you should have one section with just soil and another section with soil, soil with grass and toothpicks to represent tree roots. You can glue the paper cutouts of trees on the toothpicks to make them seem more realistic, so you have mini trees sticking out of your soil. You can also have a stream table with sand and soil with pebbles mixed in to see whether these types make a difference.

Procedure:

Place books underneath one edge of the stream table, so the table looks like a hillside. Pour a measured amount of water, in case you repeat your experiment with a different variable, at the highest edge of the stream table. Continue pouring the measured amounts of water until the soil starts to move toward the bottom of the table. Which kind of soil was carried faster or in larger amounts toward the bottom of the "hill?" Did the grass and trees prevent soil from flowing in a mudslide? Was your hypothesis proven?

Variations:

In addition to experimenting with the various types of soil, you can try different angles of slope to see whether that variable makes a difference. Simply use the same experiment but repeat it with more or fewer books holding up one end of the stream table. Help your child make miniature houses out of construction paper to see whether they can withstand the mudslide.

Real-Life Erosion:

Walk around the neighborhood with your child and take note of the types of erosion you find. Look especially around the downspouts, and near any streams or creeks you find in parks or conservation land or and look at any erosion you find on dirt paths. Your child can draw pictures of the erosion you see and write down what probably caused the erosion, where the eroded material has gone, what any negative effects of the erosion might be, and how the erosion could be prevented.