



NYSDEC Environmental Education

Erosion

Objectives: The students will be able to define the term "erosion" and compare the differences of soil erosion on various surfaces.

Grade Level: Elementary, Intermediate, High School

Time: *Activity I: 20 - 30 minutes*
Activity II: Approximately 40 minutes

Season: Spring, Summer, Fall

Materials: **Activity I:** Per team: 3 sticks, 3 long (2 feet) pieces of white cardboard, worksheets, pencils, waterproof markers, tacks
 Activity II: None

Erosion is the wearing away of land surfaces by forces such as wind, water and ice. These forces also transport and eventually deposit the debris. The amount of soil or land surface that is eroded depends on the amount and velocity of the active force (stream, wind, etc.). It also varies on different surfaces.

The first step in the erosion process is the dislodging of soil particles. Soil is broken down by the impact of falling rain. One study by the Soil Conservation Service showed that from 1 to 100 tons of soil per acre may be splashed into the air during one rainfall. Splash erosion results in sand and gravel being left on the surface and clay and silt being eroded away.

Activity Description I

Discuss erosion with the students and explain that they will compare the amount of erosion in a few different areas by using a splash stick. Divide the class into teams, each with the materials listed above. Have the teams mark off inch (or centimeter) intervals on their pieces of cardboard and tack each of the cardboard pieces to a stick so that the bottom of the cardboard will be even with the ground. Allow a couple of free inches at the bottom of the stick so that it can be inserted into the ground.

Then designate three different areas to set up the splash sticks (such as a grassy area, a wooded area, and an area of bare, compacted soil). Have the students leave the sticks in the three areas

and check them after the first rain fall. They should then record on the worksheet how high the rain water splashed on the cardboard. They can leave the sticks outside and continue to check them for a few more days.

After checking the splash sticks, ask the students to compare the various splash levels in the different areas. Which area had the least splash erosion? Why? How might vegetation slow down splash erosion? Which area had the most splash erosion? Why? The students can also note the removal of soil by splash erosion by placing some coins or flat stones on the soil and noting what water does to the soil around the coins or stones.

These activities can be done without rain by using a watering can to sprinkle water on the areas in front of the splash sticks or coins.

Activity Description II

Discuss with the students where soil particles go when they are eroded. Consider specific instances, such as the three sites in the last activity. Where does the runoff water go? Is there a slope to the ground or a stream nearby? Take the students outside and look for signs of the erosion process - roadsides, stream banks, trails, steep slopes. You may find trees or other plants whose roots are exposed due to erosion of the soil around them. Where is erosion the worst? Why? How strong or fast was the water flowing?

Have the students consider the effects of erosion. How does it influence the different areas they investigated? How does it affect plant life and, in turn, animal life? How can erosion affect humans? Erosion can carry away rich topsoil and weaken the root structures of plants. The small examples of erosion commonly visible around us indicate powerful forces that can be seen on a much larger scale. Eventually, erosion carves river valleys and wears down mountains, leveling the land.

Follow-up: Have the students find a good example of soil erosion near the school and try to measure the amount of erosion with a ruler. Record the measurement and return in a month or after a heavy rain and see if there is additional erosion by measuring again. Compare the erosion amounts from fall to spring.

SOIL EROSION WORKSHEET

LOCATION	SPLASH HEIGHT			
	DAY 1	DAY 2	DAY 3	
GRASSY AREA				
WOODED AREA				
BARE SOIL				