

SETTLING IN - SEDIMENTATION

K-2

OBJECTIVES

At the end of this lesson, the students shall be able to do the following:

1. Mix sand with water and record or tell what they observed with sedimentation or settling;
2. Predict, record, or tell the effect of shaking on the particles; and
3. Give an oral or written definition of the new term: sediment.

BACKGROUND INFORMATION

Sediment is one of our most destructive water pollutants. America's water is polluted by more than one billion tons of sediment annually. Every year, Americans lose millions of dollars because of sediment pollution.

Sediment is caused by erosion, which is the gradual wearing down and carrying away of the earth's materials. Soil erosion occurs when soil is moved from one place to another by natural means. Wind blows soil, and moving water washes soil away. Normally, soil erosion occurs slowly over a very long time because trees and grasses hold the soil in place. Erosion can also occur naturally from forest and prairie fires, hurricanes, or tornadoes which strip the land of its protective vegetation cover. Nonpoint source erosion by people can also cause soil erosion to happen much more quickly than normal by allowing over grazing by farm animals, and by digging and building on steep slopes, cutting down trees, and plowing the land for crops. The rapid soil erosion that results from such activities can be very harmful to the environment.

Erosion by water often starts when rain strikes bare soil. Large amounts of rain washing down a sloping area pick up loose soil and carry it away. Harmful pollutants and nutrients can be washed away with the soil during the runoff event. Substandard agricultural and other land practices can cause fields and their topsoil to be washed away. Besides making the water less attractive to swim in and drink, the soil kills fish and other organisms living in the water.

Term

sediment: eroded soil material, often suspended in water, that consists mainly of particles derived from rocks, soil, and inorganic materials.

SUBJECTS:

Science, Language

TIME:

1 hour

MATERIALS:

1 baby food jar for each child
sand
water
recording sheet
soil (optional)
tablespoons
stopwatch

ADVANCE PREPARATION

Fill the baby food jars about 2/3 full of water, and place one on each student's desk.

PROCEDURE

I. Setting the stage

- A. On the recording sheet, have students draw a picture of the water and sand as they think they will look when both are in the jar.

II. Activities

- A. Have students add 1 tablespoon of sand to the water in their jars and then draw a picture of their observations.
- B. Have students draw a picture of how they think the sand and water will look when they shake their jars.
- C. Have students shake the jar and draw what they see. Immediately begin the stopwatch. Have students guess how long it will take for the sand to settle.
- D. Have each student raise his/her hand when all of the sand has settled. Write the settling times on the board.
- E. Have students record their hypotheses about what the water will look like when potting soil is first added, and then after it has been shaken.
- F. Have students shake their jars and then record their observations.
- G. Again, start the stopwatch and take students' predictions for potting soil settling. Students should watch their jars and raise their hands when it settles. Record these times on the board.

III. Follow-up

- A. Working in pairs, have students write or discuss their ideas about why one kind of material settled more quickly than the other.
- B. Point out that what occurred in the jar is similar to what happens in a natural body of water. The shaking is similar to the rivers or streams flowing and moving particles from place to place. The particles that settle out at the bottom are called sediment.

IV. Extension

- A. Conduct a tour around the schoolyard looking for signs of erosion. In an urban setting, look for such things as cracked and pitted sidewalks, rounded pebbles used for decorative

stone and rivulets carved in dirt by water flowing along street gutters or down slopes on schoolyard.

1. Construct a chart with names of areas of erosion. Brainstorm possible solutions.
2. Write a letter to the principal explaining what you have been studying, along with the area noted on your tour and possible solutions. Ask permission to enlist help from parents and community to correct problem areas.
3. Set up a work session with students and parents to follow through with solutions designed by the class.

RESOURCE

Video: 3-2-1 Classroom Contact. Children's Television Workshop, "Erosion: Earth vs Change".

Name-----

SAND- after shaking



prediction



actual

Time needed for settling:-----

SOIL- after shaking



prediction



actual

Time needed for settling:-----

Which took longer to settle?-----