

Let's Settle the Matter!

When water causes erosion of the land, where do all those particles end up? Do some travel farther than others and do they end up settling in different layers? Let's try to find out!

Materials:

Clear plastic jar (with lid)
Water
Sand
Potting soil
Spoon
Flashlight
Magnifier (optional)

Procedures:

1. Mix $\frac{1}{4}$ cup sand with $\frac{1}{4}$ cup potting soil. Carefully pour this mixture into a clear plastic jar.
2. Add water until the jar is about $\frac{3}{4}$ full. Screw the lid on tightly.
3. Shake really well and then place the jar down and observe. Shine a flashlight into the water and look closely to see what is happening. You could use a magnifier to get a better view.



4. What particles seem to fall to the bottom of the jar first? What particles seem to take longer to settle?
5. Repeat step 3 to get another look at how the mixture settles in water. Does it seem to settle like it did the first time? Write down the time and draw a rough sketch of the layers you see.



6. Check the jar again in about $\frac{1}{2}$ hour and write down the time and draw what you see. Write a sentence or two describing what you see. The process you are seeing is called settling.
7. Let the jar sit undisturbed over night. Observe it closely and make your last and most detailed drawing. Does there seem to be any connection between the size of the particle and the level it end up in the jar?

Think about this ...

Some places in the world depend on flooding from rains to bring fertile soil to a flat plain along the river bank for farming. Several ancient civilizations developed along this type of fertile flood plain of the Nile, Tigris, and Euphrates rivers. How do you think that flooding might make soil more fertile for farming?

Where's the Chemistry?

Soil is often described by particle size. Sand is large, silt is small, and clay is the smallest. A combination of the size and density of the particles determines how long they stay suspended in the water before sinking. These differences are what cause the particles to settle at different times, forming layers in the jar.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

