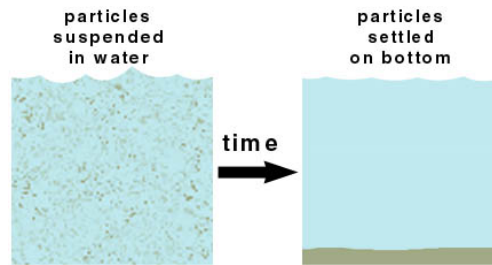


SETTLING SEDIMENTS



Background: Sediments are particles of rocks and soils that end up in water bodies. They can arrive there naturally by the weathering of rocks at the Earth's surface and then being transported by water, causing erosion. Erosion can be natural part of the rock cycle or the process can be accelerated by manmade activities that disturb the land surface, such as poor agricultural practices, mining, construction, ranching and off-road vehicles. Sediments settle at different rates depending on their size, shape and mass. Large heavier sediments settle out of water first unless energy such as fast moving water is maintained in a system such as currents in a river, lake, sea or ocean. Finer sediments such as clay and chalk (from dissolved shelled organisms) take much longer to settle out. They can stay suspended for a much longer time and cause turbidity (water cloudiness). Sediments that settle in the waterways, seas and oceans can eventually become sedimentary rocks under the right conditions. They must be compacted and cemented with dissolved minerals to finally become sedimentary rocks. For example rounded gravel can become a conglomerate rock, sand becomes sandstone, mud becomes shale, and chalk (calcium carbonate) can become limestone.

Conduct the following classroom activity to demonstrate that sediments settle at different rates according to particle size. Depending on the amount of available materials, these activities can be demonstrated in front of the class or conducted in small groups.

Materials:

- Jars (plastic or glass), quart size to baby food jar size (depending on availability)
- Sediments: Gravel, sand, clay and pulverized sidewalk or blackboard chalk (use mortar and pestle or bag and hammer to pulverize chalk)
- Water for each jar (fill to top after putting in sediments)

Steps:

1. Prepare sediment jars ahead of time. You will need a jar for each type of sediment used. If you are providing jars to students rather than demonstrating the process you will need one jar for each sediment type per group. Place the materials in the jars, with only one type of material per jar, up to about one quarter full. **Be sure to place the same volume of sediments for each type in each jar! This will help make an accurate comparison of settling times.**
2. Display the jars if doing a demonstration or distribute the four sediment jars to each group. Have the students discuss the contents of the jar. Discuss their origin (see background information) and sizes.
3. Shake each jar and then observe. For older students, have them record the amount of time it takes for the sediments to settle and for the water to clear.