

Turbidity

Turbidity (cloudiness of the water) is caused by particles which scatter the sunlight passing through it. Two main sources of turbidity are sediments from runoff of eroded soil, and increased numbers of algae caused by too many nutrients in the water. Sediments and algae block sunlight that underwater plants need. Sediments also bury fish eggs and creatures that live on the bottom.

We measure turbidity to see how deep sunlight can go. Sunlight is needed by the underwater plants that provide food and shelter for aquatic life. Although rivers and streams may move too quickly to support submerged plants, the total amount of these plants is an important sign of the health of the Chesapeake Bay.

To make your own turbidity test, you can use a tall (one foot or more) clear flat-bottomed test tube or glass, a ruler, a bucket, and a newspaper. Collect your water sample in the bucket. Place the clear container over a "turbidity target" (the small black on white print in the newspaper) and look down through the container at the words. You should be able to read them clearly through the bottom of the container. Pour the water sample slowly into the container, stopping now and then to see if you can still read the words.

Keep adding more water until you can no longer read the writing (even though you can still barely see it). Stop pouring, mark the water level in the container, and measure its height. Empty and rinse the container and repeat this test using clear water, then again with muddy water. (Muddy water = water + dirt.)

Compare the three readings. Is your sample closer to the clear water or the muddy water? Try collecting a variety of samples from different locations, before and after rainstorms, or at different times of the year. Greenish water has a lot of algae while brownish water has a lot of dirt. By observing local conditions, what can you determine about the causes of turbidity?

Scientists often use a disk lowered by rope to check turbidity. The depth to which the secchi disk can be seen is called the secchi depth. Since the light travels through the water twice (once down and again reflected back to the observer), the light actually goes deeper. A secchi depth of at

least 1 meter should be expected in the Bay and large rivers. Plants could then grow in water up to 2 meters deep.

Chesapeake Bay "old timers" use their toes. Walk out into the water about 1 meter deep without disturbing the bottom sediments. If you can see your toes, the water is pretty clear.



Secchi Disk