

Objective: Students will demonstrate that pollutants suspended in water can be harmful to plants and animals living in that environment.

Subject: Science

Background: Water pollutants that are not dissolved in water are instead, suspended in water. Some solid materials, like silt, if present in small amounts, can actually help to **enrich** a body of water by serving as a substrate or foundation upon which nutrients for plant growth, or small aquatic organisms, can settle and/or anchor themselves. Other solid materials can sometimes be harmlessly **dissolved** in water if present in small enough quantities. But, if the solid becomes too abundant, it is held in "suspension" in the water and may become a detriment by preventing light penetration into the water through the respiratory devices of gill-breathing animals. The suspended pollutants may then become lethal in terms of their relationship to the life around them.

Skills: Observation, critical thinking, experimenting

Materials: Black paper (2 sheets), 1 gallon glass jar, water flashlight, silt (fine dirt)

Procedure: Set this experiment up to show how the turbidity (murky because of stirred-up sediment) caused by too many suspended pollutants in the water can prevent light from penetrating through the water. Remember that light penetration is needed for the photosynthesis (food making) and growth of plants in water.

1. Place two holes in the sheet of black paper so when it is wrapped around the glass jar they will be opposite each other.
2. Wrap the paper around the jar and secure.
3. Fill the jar 3/4 full with clean water.
4. Shine the beam of light (from flashlight) through the holes in the paper. Observe the light intensity on another black sheet of paper as the beam emerges from the jar.
5. Add silt to the jar, shaking the jar to keep it in **suspension**.
6. Repeat number 4 and note the **reduction** of light penetration through the jar. This could be done in **gradual** steps, adding silt until no light penetration is evident.
7. Question - What effect would this reduction of light penetration have on aquatic (water) plants in a river, lake, pond, reservoir, etc.?