

# IT'S SEDIMENTARY, MY DEAR WATSON



## OBJECTIVES

The students will do the following:

1. Determine the amount of solid material or sediment suspended in water samples.
2. Explain turbidity observations of water samples.
3. Explain ways in which sediment disturbs organisms.
4. Determine possible local nonpoint sources of sediment present in water samples.

## BACKGROUND INFORMATION

Heavy rains or snow melt can wash a variety of suspended materials or sediment into water bodies and make water cloudy or turbid. Turbidity is a measure of the amount of suspended material (cloudiness) in the water. Many other pollutants such as bacteria, nutrients, and harmful chemicals can attach to sediment particles and be transported with the sediment. While the process is natural, human activities can increase the rate faster than ecosystems can adjust. Improperly managed construction sites may cause a 2,000-fold increase in erosion rates and poorly managed farmland may cause a 200-fold increase, compared to rates of similar undisturbed forest lands. Sediment can interfere with aquatic life, commercial and recreational activities, and hydroelectric power generation. Sediment can decrease light transmission through the water, thus decreasing plant photosynthesis and reproduction. Also, sediment absorbs heat causing the temperature of the water to increase. A decrease in photosynthesis and/or an increase in water temperature can result in a decrease in the level of dissolved oxygen. Moreover, sediment can interfere with feeding and reproductive patterns of aquatic life. When sediment settles, it may create blankets which smother the aquatic plants and animals, and disrupt the food chain. Sediment can gradually fill lakes and streams. This can reduce flood storage capacity and hydroelectric power potential in reservoirs and cause navigation problems in rivers. The best way to solve nonpoint problems caused by sediment is to prevent or reduce soil erosion caused by human activities.

## SUBJECTS:

General Science, Earth Science, Ecology, Chemistry, Biology

## TIME:

2-4 class periods

## MATERIALS:

thermometers  
local topographic map  
filter paper  
funnels  
stirring rods  
balances (electronic preferred)  
shovel or spades (to collect soil, optional)  
turbidimeter (optional)  
clean, dry, wide-mouth collection bottles with lids (two per student or lab team)  
beakers  
large watch glasses  
stick-on labels or masking tape  
permanent ink markers or grease pencils  
area land use maps  
samples of water from local streams or lakes  
data table (included)  
cooler with ice (optional)  
calculators (optional)  
soil—preferably clay type (optional)  
sun lamp or grow light (optional)  
data sheet (optional; included)  
graph paper  
"Collecting a Water Sample" handout (included; see page 60)  
"It's Sedimentary" Quiz (optional, included)