

Dirty Water

Standard of Learning

Science 6.5, 6.7

English 6.6, 6.7, 7.8, 7.9

Objective

The student will:

- Identify best management practices dealing with water quality
- Write a persuasive essay encouraging best management practices to protect the water supply

Materials

- paper towel
- scissors
- paper funnel
- clean sand
- clear glasses or jars (plastic may be used)
- spoon
- water
- soil

Background Knowledge

Thousands of farmers have made the *Conservation Reserve Enhancement Program (CREP)* one of Virginia's most active water quality efforts. The program aims to improve Virginia's water quality and wildlife habitat by offering financial incentives, to farmers who voluntarily restore river bank buffers called riparian, filter strips and wetlands through the installation of approved conservation practices. CREP is part of a federal program established in 1985.

Virginia CREP is divided into two regions. The *Chesapeake Bay CREP* targets Virginia's entire bay watershed and calls for the planting of 22,000 acres of buffer and filter strips as well as 3,000 acres of wetland restoration along side riverbanks. The *Southern Rivers CREP* targets watersheds outside the bay drainage basin and will establish 13,500 acres of buffer and filter strip plantings and 1,500 acres of wetland restoration.

Farmers participating in CREP are protecting their own farm as well as the water system. This practice helps reduce sediment from eroding stream banks and improving water quality. Participants fence off a 100 foot wide strip alongside the creek and river banks on their farmland. Next hardwood and grasses are planted within the strip. The vegetation absorbs excess nutrients which may run off from nearby fields as well as provides a filter for water flowing into the waterway. This practice has significantly reduced excess nitrogen and phosphorus from the water flowing into the Chesapeake Bay. Participating farmers receive financial assistance to fence, plant, and even drill wells for livestock fenced out of creeks and rivers.

The Dirty Water experiment is designed to provide a literal view of water filtration through a simple one step method. Allowing students to expand upon filtration methods will produce a



clean water sample and lead to interesting discussion how farmers and other groups can protect the water supply from the smallest creeks and ponds to the Chesapeake Bay and on the Atlantic Ocean.

Procedure

1. Cut a circle from the paper towel.
2. Fold it in half, then in half again.
3. Open the folded circle a little to make a paper cone.
4. Put the cone inside the funnel and set the funnel in one of the glasses or jars.
5. Fill the cone with clean sand. Fill the other jar with water.
6. Add $\frac{1}{4}$ cup of soil to 2 cups of water and stir it. Slowly pour the muddy water into the funnel.
7. Record observations as water seeps through the funnel.
8. Discuss what happened to the soil and the water mixture traveled through the filter.
9. Does a phase filtering clean all particles from the water? Why or why not?

Extension

- Have students revise a filtration system which will cleanse the water.
- Encourage students to develop a method to prevent soil and impurities from entering the water source at the creek and stream level.
- Assign students the task of writing a persuasive essay to use best management practices to keep streams and ponds free of soil run off.
- Explore how non-agricultural groups can take action to improve water quality.

References

<http://www.dcr.virginia.gov>.

