

Groundwater Contamination

In this activity you will create a miniature well so you can observe the effects of the presence of contaminants in groundwater.

Approximately 50 percent of the population in the United States and Canada gets its water from underground aquifers. An aquifer is a geological (created by rocks) formation containing water. Like the holes in a sponge, an aquifer has openings or pores that can store water. Water for drinking is drawn up to the surface by a well or spring. The world's largest aquifer is the Ogallala Aquifer, which extends from Nebraska to Texas. Since water seeps down through soil into the aquifer, the soil filters the water.

Gasoline and other harmful liquids have been allowed to leak from underground storage tanks into the groundwater supply. Pollutants can seep into groundwater from poorly constructed landfills or septic systems. Groundwater can also be polluted by runoff from fertilized fields or livestock areas. Homeowners unknowingly contribute to ground-water contamination by dumping toxic chemicals down the drain or pouring them on the ground.

Materials:

250 mL beaker
150 mm of nylon net
plastic tie
eyedropper
vegetable-oil food dye (red, green or blue)
potting soil to fill beaker

Procedure:

1. Wrap the nylon around a pencil and secure it with a plastic tie.
2. Hold the nylon-wrapped pencil in the middle of the beaker, so it can act as a "well."
3. Carefully place the soil in the beaker around the nylon-wrapped pencil. Finally, untie the plastic tie and slip the pencil out of the soil (allowing the nylon to remain in the hole) and pour water into the cup. After a few minutes, the water should appear in the opening of the well.
4. Remove water from the well with the eyedropper. Record your observations. Return the water to the well.
5. Add a drop of food dye to the surrounding soil to represent contamination.
6. After a few minutes, remove water again with the eyedropper. Record your observations.

Questions:

1. What would happen to the lakes and rivers that are fed by water from this aquifer?
2. What types of things in your household, if poured on the ground, might contaminate drinking water?
3. Should you throw toxic household items in the trash? Explain.
4. Should toxic chemicals be poured on streets to be washed into storm systems? Explain.