The Incredible Edible Aquifer

OVERVIEW:
Many communities obtain their drinking water from underground sources called ***aquifers***. Water suppliers or utility officials drill wells through soil and rock into aquifers to supply the public with drinking water. Homeowners who cannot obtain drinking water from a public water supply have private wells that tap the ***groundwater*** supply. Groundwater can become contaminated by improper use or disposal of harmful. These chemicals can ***percolate*** down through the soil and rock into an aquifer – and eventually into the wells. Such contamination can pose a significant threat to human health.

OBJECTIVE:
To illustrate the geologic formation of an aquifer, how pollution can get into ground water and how this pollution can end up in our drinking water wells. Students will come to understand how our actions can affect ground water and drinking water.

INGREDIENTS:

Clear plastic cups
Drinking straws (preferably clear)
Crushed Ice
Vanilla ice cream
Pixie Sticks
Lemon-lime/clear soda
Crushed graham crackers
Crushed Oreo cookies (substitutable w/ chocolate grahams)
Blue or red food coloring
Green cake decorating sprinkles (optional)

PROCEDURE:
Fill the cup 1/3 full with crushed ice. This represents our sand and gravel soil.

Add enough soda to cover the ice about 1/2 way. This represents saturated and unsaturated soil. The area containing the soda is the ***zone of saturation***, where all the pore spaces between the soil are taken up by liquid. The area of ice above the soda is the ***zone of aeration***, where the pore spaces are full of air. The water table is at the top of the saturated zone.

Add a healthy scoop of ice cream next. The ice cream will be our ***confining clay layer*** that helps to protect the lower aquifer.

Pour some of the crushed graham crackers and Oreos over the layer of ice cream to represent the porous top soil. Green cake sprinkles will symbolize the lawn/grassy area.

Pixie stick sugar represents different things that contaminate our water: types of trash, lawn care products, fertilizers, septic waste, pesticides and other chemicals. Adding a drop or two of food coloring (to represent an oil spill), watch a plume develop and contaminate the groundwater.

Use the straw to simulate drilling a well through the various layers until you hit the lower aquifer. Use your *well* to draw the contamination into the groundwater and up to the surface where you drink it.

Add a little more soda, which represents a rain shower, to ***recharge*** the aquifer. Look to see if the contaminates are moving or changing.