# EDIBLE AQUIFER

**Learning Objective:**
To illustrate how water is stored in an **aquifer**, how **groundwater** can become **contaminated**, and how this contamination ends up in a drinking water source. Ultimately, students should get a clear understanding of how careless use and disposal of harmful contaminants above the ground can potentially end up in the drinking water below the ground.

**Background:**
Many communities obtain their drinking water from underground sources called aquifers. Water well drillers 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. Unfortunately, groundwater can become contaminated by improper use or disposal of harmful chemicals such as motor oil, lawn care products, and household cleaners. Failing septic systems and animals can also contribute to ground water contamination. These chemicals and wastes can **percolate** down through the soil and rock into an aquifer, and eventually flow into the wells. Such contamination can pose a significant threat to human health. The measures that must be taken by well owners and operators to either protect or clean up contaminated aquifers are quite costly.

**Materials:**
Blue or red food coloring
Clear soda pop
Crushed cookies or ice
Colored cake decoration
Sprinkles and sugars
vanilla ice cream
drinking straw
clear plastic cup & spoon
small gummy bears or chocolate chips

**Procedures:**
Fill a clear plastic cup 1/3 full with gummy bears, chocolate chips or crushed ice. (represent gravel and soil) Add soda, just covering the candy or ice.
Add a layer of ice cream (confining layer) over the water-filled aquifer.
Add more crushed ice on top of the "confining layer."
Add food coloring to the soda to represent contamination. Watch what happens when it is poured over the top of the aquifer. The same thing happens when contaminates are spilled on the earth's surface.
"Drill" a drinking straw into the center of the aquifer to represent a well.
Slowly begin to pump the well by sucking on the straw. Watch the water table decline.
Notice how contaminates can leak through the confining layer and end up in the ground water and the area of the aquifer where the "well" is and are sucked out to the surface.
Now recharge your aquifer by adding more soda which represents a rain shower.

Discuss student observations and how this ultimately affects our drinking water.

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