



# Inquiring Minds Want to Know

## Science Activities for Young Minds

## Soil Tube Races

### WHAT YOU'LL NEED

- Three empty 2-liter soda pop bottles (with caps)
- Pea gravel or small stones
- Sand
- Clean plain clay kitty litter
- Glasses of water
- Measuring cups (optional)
- Hot cocoa mix, food coloring, drink mix (optional)

### WHAT TO DO

**Remember:** The purpose is NOT to teach a specific topic but to help children experience the excitement of **science exploration!**

### GETTING READY

1. Cut off the bottoms of the 2-liter pop bottles.
2. Put holes in the caps of the bottles with a small nail or drill, and put the caps back on the bottles.
3. Fill the bottles – one with gravel, a second with sand, and the last with kitty litter. Note: kitty litter can be dusty.

### LET'S GO

1. Have the children **observe** each substance (gravel, sand and kitty litter) and describe it using their own words. Describing how something feels is using **observation** made through touch to identify physical properties of each substance.

*What do you **observe**? How are the substances similar? Different?*

2. Have the children **predict** which soil tube water will run through faster.
3. Give three children each a cup with the same amount of water and have them pour it into the open ends of the pop bottles.

*Were the children's **predictions** correct? Why did the water run faster or slower through the bottles?*

### TALK IT OVER

*If you poured water on the soil in your yard, what would happen?*

*What would happen if you poured water onto the sand at the beach?*

*What would happen if you poured water in a parking lot?*



*If the ground is already full of water from a lot of rain, will that change things?*

*How would this knowledge affect where you might put a house? A playground? A landfill?*

## GOOD TO KNOW

- ▶ Pour muddy water, food coloring, drink mix or hot cocoa through the tubes and see what happens. *Do you **predict** that the soil will make the water clear? What do you **observe**?*

*If pollution is spilled on the ground, how would the soil affect how the pollution moved?*

- ▶ Use two measuring cups – one to pour water in the top and the other to catch it at the bottom.

*Do you **predict** that the same amount of water will come out as went in? Does all the water poured in the top come out the bottom? If not, where does some of the water go?*

- ▶ Learn about where the water comes from in your community. A list of community water supplies in Michigan is available at [http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675\\_3691-9775--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3691-9775--,00.html).

*Does your water come from water that moves through the soil? A reservoir? A lake? A river?*

## THE SCIENCE BEHIND IT

Most of us learned the water cycle a long time ago:

- ▶ The heat of the sun causes water to evaporate.
- ▶ The water condenses to form clouds.
- ▶ Precipitation in the form of rain or snow causes water to fall back to the earth.
- ▶ Repeat the process.

This leaves out a big portion of the water cycle. What happens when the water hits the surface of the earth? The simplified version that we were taught in school often does not take into account soils. Different types of soil allow water to move through at different speeds. That groundwater eventually comes to the surface in lakes, streams and wetlands, or is pumped from wells.

## RESOURCES

- ▶ Your local university Extension office – <http://msue.anr.msu.edu/county>.
- ▶ Michigan Groundwater Mapping Project – <http://gwmap.rsgis.msu.edu/>.
- ▶ U.S. Web Soil Survey – <http://websoilsurvey.sc.egov.usda.gov>.

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