

# **UNIT 5:**

## **Living On A Layer Cake**

# *Teacher's Notes*

## **Living On A Layer Cake**

### **Overview of Activity:**

Students will explore the many layers beneath their feet. A metaphor of "a layer cake" is used to help describe the layers of material underground. Students get involved in putting the layers on the board as you describe them (the layers) topping it off with a house and well, then singing the song "Living on a Layer Cake" to sum up the activity.

### **Outcomes:**

- Discover different types of materials found beneath the earth's surface.
- Discover what types of materials allow water to flow (permeable) and which will not (impermeable).
- Learn of the problems faced when we spill unwanted materials onto the ground.

### **Purpose:**

As a class, students learn of the different types of materials beneath the earth's surface and their importance in our water resources. The ground under us is made of many different layers. Our ground water is found in the porous layer. Whatever we put on the top layer eventually finds its way through the layers.

### **Materials Needed:**

- Felt backboard
- Various layers of material with Velcro attached to the back
- Felt or material cut into the shape of a house
- Two plastic tubes of different lengths (representing wells) with Velcro attached along the side at either end
- Tub for material storage
- Extra velcro
- Laminated copies of the song

### **Procedure:**

Ask the students if they know what is under the ground they are standing on. Then describe it as a layer cake, where the oldest layers are on the bottom. Ask for two volunteers to help put the layers on the backboard as you discuss them. When complete, sing the song's chorus together.

1. Start off with the **Pre-Cambrian rock** (granite) that dates back many millions of years on the bottom. It was formed when the lava cooled as the Earth was forming. The Canadian Shield is made of this type of rock.
2. Above that layer, place the **confined aquifer** (a layer of porous rock that holds water but **does not** allow it to move through other layers).
3. Above that layer comes the **impermeable rock** (material that does not allow other materials – e.g. water - to get through – eg: clay).

4. The **unconfined aquifer** is a layer of rock that also holds water but **does** allow the water to pass through to other layers (other materials can enter as well - eg. contaminants).
5. The **permeable rock** is a layer of rock that allows materials (eg. water) to pass through.
6. The last layer to be added is the **soil and plants** layer that covers the rock layers. These, like the permeable rock allow the water and other materials to pass through to the other layers.
7. Finally, add the house with the well to the display (use the velcro strips to attach in place; use one well length - short piece of tubing). The original well was dug down into the **unconfined aquifer** but because it dried up, it was drilled deeper into the **confined aquifer** (add other well tube after explaining reason). Some people prefer the **unconfined aquifer** water (dug well water) because it can taste better (in this area there is some sulphur content in our confined aquifers). However, a dug well can become easily contaminated (if contaminants spill onto the soil above the permeable rock). This contamination could lead to having to drill a well into the **confined aquifer** in search of potable (drinkable) water.

Review the layers once more then, using the song sheets, prompt the students to sing the song "Living on a Layer Cake".

*(Song by Chris Rawlings. The music CD "Rocks and Water" is available through Cooking Fat Music c/o Chris Rawlings, 67 Wrenson Rd., Toronto ON M4L 2G5)*