



UW-MADISON EXTENSION

TASTY GROUNDWATER



Pollution on the ground can sink in, all the way down to our water. Today, we are going to create a tasty ice cream treat while learning how pollution affects water in the ground.

4-H PROJECT AREAS:

Natural Resources, Environmental Education

LIFE SKILLS:

Critical Thinking, Learning to Learn, Planning

TIME:

15 - 30 minutes

MATERIALS:

- 9 oz. clear plastic cups (1 per participant)
- Straws (1 per participant)
- ½ Measuring cups
- Spoon (1 per participant)
- Medium size M&Ms (1 tablespoon per participant)
- Cookies (1 per participant)
- Softened vanilla ice cream (½ cup per participant)
- Clear (white) soda (½ cup per participant)
- Chocolate chips (1 tablespoon per participant)
- Pictures of groundwater aquifer, pollution, and well

**Note: See the Family Guide for alternative ingredients to include*

BEFORE YOU BEGIN:

Clean and sanitize all surfaces where food will be prepared or eaten.

Check with families about any food allergies or reactions. Be sure parents or caregivers are aware that the youth will make an edible ice cream treat during the activity.

Use safe food handling practices. Have everyone wash hands. Be sure the adult distributing ingredients is wearing food safe gloves.

Did you know?

Groundwater comes from rain or melted snow that goes into the ground. Water sinks down further and further - through the soil and through cracks in rocks until it can't go any further. When it's way down deep, it is called groundwater, and the only way to get to it is to dig a well. A well has a special pump that pulls groundwater back up for us to drink.

Ask

How do you use water? What does it normally look like?

Do you think all water is clean, all the time? Why or why not?

How do you think pollution affects this water? Why or why not?

Investigate

Show pictures of a groundwater aquifer (*ak-wuh-fer*), pollution and a well. Explain that we get water we use from the ground - for bathing and drinking. Today, we will be creating a sample of a slice of earth that has a water aquifer and a well. We can then drink the "water" from the earth sample.

Create

1. Measure 1 Tablespoon of chocolate chips and place in the bottom of an empty cup. The chocolate chips represent the gravel, rocks or sand that make up the lowest part of our ground, which is saturated with water.
 2. Measure $\frac{1}{2}$ cup of vanilla ice cream and put on top of the chocolate chips in the cup - making sure there are some gaps between the chocolate chips and ice cream. The ice cream represents the layer of ground made up of rocks or clay that water has a hard time passing through.
 3. Crush the cookie and place on top of ice cream. The cookie represents gravel and soil. See the spaces between the pieces of cookie? Water can easily pass through this layer because of the spaces between the materials. That is different than the ice cream, where there are fewer spaces - water has to work harder to get through!
 4. Measure 1 Tablespoon of M&Ms and place on top of the cookie crumbles. This layer represents pollution on earth.
- Ask:** *What is pollution? What are some examples of pollution?*
5. Measure $\frac{1}{4}$ cup of clear soda, and slowly pour into the cup like it is raining. After it has settled, pour one more $\frac{1}{4}$ cup on top of the M&Ms. The soda represents water as it moves over pollution into earth. We can see how pollution gets pulled through the layers and into water we use.
 6. Carefully put the straw into the cup until it reaches the bottom around the chocolate chips.

The straw represents a well that pulls water up for us to use.

7. Take a drink from the straw. Your mouth is acting as a well pump that pulls water up.

Share/Reflect

Ask, *Where do we find something like this in real life?*

Ask, *What happened when it rained on top of the pollution (M&Ms)?*

Ask, *How can we help to make our water cleaner?*

Relationship to 4-H...

One of the essential elements of 4-H is generosity. 4-H youth and their families participate in community service projects to improve the places where they live, work, and play. 4-H Youth Development believes that young people at all ages can learn about the world around them and use their heads, hearts, hands and health to do actions (big and small) that make their communities better.



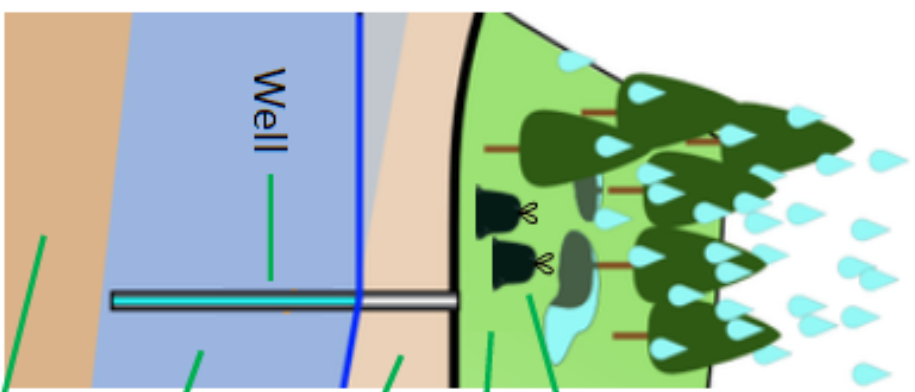
More to Explore

Ask youth to pay attention to pollution (dirt, waste, garbage, harmful things) in the environment around them. Encourage them to think about what they could do to clean up their environment and lessen pollution.

Resources Sources: DEQ in the Classroom: The Incredible, Edible Aquifer, Idaho Department of Environmental Quality - Groundwater and Aquifer, Well Water Program, Oregon State University

Adapted by: Kayla Viste, Interim University of Wisconsin Division of Extension 4-H Youth Development Educator

Groundwater



Pollution

Unconfined Aquifer Layer

Made of gravel and soil

Confining Aquifer Layer

Made of rocks or clay that water has a hard time passing through

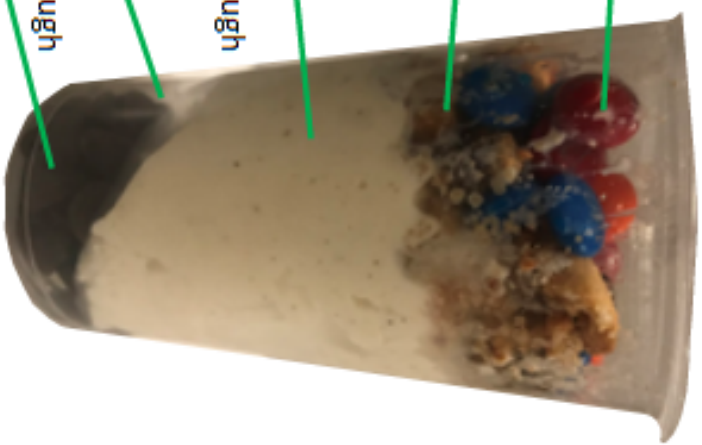
Confined Aquifer Layer

May have gravel, rocks, or sand that water cannot pass through

Water is caught in this layer

Bedrock

Water cannot pass through



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Created by: Kayla Viste,
Interim 4-H Youth Development Educator
Outagamie County UW-Extension