

Lesson # 1:

The Water Cycle & Groundwater Basics 101

Through the activities below, students will learn how groundwater is influenced and is part of the Water Cycle.

Activity # 1 Video: “Thirsten’s Water Cycle (EPA)”

Go To: http://www.epa.gov/oqwdw/kids/flash/flash_watercycle.html

Discuss the water cycle and terms presented in the video.

Activity # 2: Groundwater and Land Use in the Water Cycle

Go to <http://dnr.wi.gov/topic/Groundwater/documents/waterCyclePoster.pdf> and download the Water Cycle Poster from the Wisconsin DNR.

Discuss with students the main components of the water cycle (transpiration, evaporation, condensation, precipitation). Consider how the water cycle influences groundwater while reviewing the poster with the students.

Student Discussion Questions:

1. When looking at the poster, how does precipitation influence groundwater?
2. What is infiltration? Describe areas where water can and cannot soak into the ground. How may this impact the availability of groundwater? What happens to precipitation that does not soak into the ground or infiltrate?
3. Look for the “Zone of Saturation” on the poster. What term do we use to describe the top of the zone of saturation? What is the primary cause of this to fluctuate?
4. In Minnesota, many of us get the water we use from groundwater. What is the geologic formation and term we use to describe “where we get groundwater”? Look at the poster and identify the 3 different aquifers on the map. How are they different?
5. Ask students to identify 3 activities on the poster where human activities impact groundwater.

Activity # 3: “The Story of Groundwater” (Video)

Go to: <http://www.youtube.com/watch?v=Wao-8zcRiTA>

Student Discussion Questions:

1. What else did you learn about groundwater?
2. The video mentions several activities that can be done at home to protect groundwater. Describe 3 things that you can do at home to protect or conserve groundwater.
3. What device is used to pump water out of the ground that provides water to your home or community that was shown in the video?

Key Terms:

1. Water Cycle - The process, movement and changes of water from a liquid to a vapor or gas & back again. Water is constantly being “recycled” through processes of the water cycle.
2. Transpiration – The process where plants give off water vapor through their leaves.
3. Evaporation - Water changing from a liquid to a gas. The sun provides the heat (energy) to change water from a liquid to a gas or vapor as it rises into the atmosphere.
4. Condensation – Water vapor changing back to a liquid to form clouds prior to falling back to earth as precipitation.
5. Precipitation – Rain, snow, sleet, hail.
6. Infiltration – Water that soaks into the ground.
7. Water Table – The top of the saturated zone below ground.
8. Aquifer – A geologic formation that is water bearing. Aquifers are associated with being able to supply enough water for consumption.
9. Groundwater Recharge – Groundwater is “recharged” through the water cycle when water is able to reach the groundwater table and eventually groundwater aquifers. Some recharge to aquifers can occur in days or weeks, other aquifers it may take hundreds of years for water from the land surface to reach and recharge an aquifer.
10. Well – a drilled, driven or bored shaft or dug hole constructed for the purposes of withdrawing water from an underground aquifer.

Additional Water Cycle Resources:

Expanded explanations of terms and information on other components of the water cycle can be found at:

<http://ga.water.usgs.gov/edu/watercyclesummary.html>

<http://ga.water.usgs.gov/edu/earthqwaquifer.html>

<http://ga.water.usgs.gov/edu/watercyclegwstorage.html>