

Nurture Nature – Clean Water for All

Balancing Natural Systems and Human Activity

Teacher Info Sheet 2010

◆ Where does water come from?

Surface water comes from lakes, rivers, streams and ponds. Groundwater is water that comes from the ground. Groundwater comes from rain, snow, sleet, and hail that soak into the ground. The water moves down into the ground because of gravity, passing between particles of soil, sand, gravel, or rock until it reaches a depth where the ground is filled, or saturated, with water. Groundwater is stored in the ground in materials like gravel or sand. The earth is kind of like a big sponge, holding all that water. Water can also move through rock formations like sandstone and granite.

An underground area that holds a lot of water, which can be pumped up through a well, is called an **aquifer**. Wells pump groundwater from the aquifer into pipes that deliver water to users in cities and towns, including agriculture and industry.

Most groundwater is clean, but groundwater can become polluted, or contaminated. It can become polluted from leaky underground tanks that store gasoline, leaky landfills, or when people apply too much fertilizer or pesticides on their fields or lawns. When pollutants leak, spill, or are carelessly dumped on the ground they can move through the soil and into our drinking water supplies.

◆ In our country businesses exist to make money, yet, in the face of competition, they often resist environmental goals they see as threatening their ability to remain competitive and profitable. *Nurture Nature Foundation*

◆ **Sustainable development** is the most workable solution to the conflict between environment and development. *Nurture Nature Foundation*

◆ How should you dispose of old medications?

Discussion -unwanted medications should not be flushed down the toilet because a wide range of pharmaceuticals have been found in our lakes, streams, and drinking water. Scientists are

trying to figure out what effects these drugs might have on people, wildlife and plants that grow in lakes and streams.

The Office of National Drug Control Policy, the EPA, and the Department of Health and Human Services all now recommend that old or unwanted or needed medications should be discarded by taking them out of their original containers, mixing them with an "undesirable substance" (such as kitty litter or used coffee grounds), putting the mixture in a Ziploc bag or a container with a lid, then throwing the whole package in the trash. *Slate*

◆ Help preserve and avoid contaminating our water supply through the following actions:

1. Avoid using chemical pesticides and fertilizers in your lawn or garden. They will be washed out by rain and end up in nearby lakes and streams.
2. Use porous materials (such as wood, brick and gravel) for decks, patios, and walkways.
3. Seek natural alternatives to cleaning products that contain toxic chemicals and avoid products containing chlorine bleach.
4. Incorporate water-efficient appliances, plumbing and water-use practices in your home.
5. If you own a septic system, maintain it properly.

Use natural fertilizers. Apply natural fertilizer such as compost, manure, bone meal or peat because composting decreases the need for fertilizer and helps soil retain moisture. [The Compost Resource Page](#) or the EPA's [composting pages](#). Remember that even natural fertilizers can be polluters! Don't use more than you need "More is not better". Get your soil tested to find out what kind of help it needs. Visit http://www.uvm.edu/pss/ag_testing/?Page=soils.html

Help identify, report and stop polluters. Join a local clean water or environmental group that monitors industries and sewage treatment plants that are discharging wastes

Be an activist:

- ◆ Contact public officials, and encourage them to support laws and programs to protect our water.
- ◆ Volunteer for a beach or stream clean up, tree planting, water quality sampling, or stream.
- ◆ Visit NRDC's Earth Action Center webpage to get government contact information on how to get involved.

Clothing and Home Furnishings We can move away from wearing clothes and buying home furnishings when their production damages the environment and which are made by underpaid workers or child labor. Our buying power can be used to persuade designers, manufacturers and distributors to transition to sustainable materials and methods. New runway shows demonstrate to industry and consumers that our choices can make a truly lasting fashion statement. Two thirds of a garment's **carbon footprint** will occur after it is purchased. Find more information at **Earth Pledge**.

Failing to use water efficiently The demand for water in the United States creates the need to build dams, dig wells, and make withdrawals from our natural water bodies. Using too much water also significantly contributes to **nonpoint source pollution** which is when water moves across the ground, collecting pollutants from various sources, and eventually deposits them into our drinking water.

Failing to use water efficiently can hurt our water supply by:

- ◆ Altering stream flows due to excessive withdrawals.
- ◆ Causing saltwater to intrude into freshwater aquifers due to excessive withdrawals.
- ◆ Increasing the amount of dirty runoff water that flows into natural water supplies. This runoff water carries sediments, nutrients, salts and other pollutants and can be caused, among other things, by over irrigating urban landscapes or farm fields. Nutrients such as nitrogen, phosphorus, and potassium are naturally occurring, but habitats can be destroyed when excess amounts of any one nutrient, especially phosphorus, is concentrated in the soil or water.
- ◆ Creating the need to build additional dams. Dams generate nonpoint source pollution by trapping sediment and other pollutants, affecting water quality both upstream and downstream. This concentrates pollutants, causes sediment in the river to pile up, decreases dissolved oxygen, and alters water temperatures. (*EPA WaterSense*)

Websites and places to Visit

Birds of Vermont, Huntington, VT- <http://www.birdsofvermont.org/>

Conservation International- <http://www.conservation.org/>

Echo Lake Aquarium and Science Center, Burlington, VT- <http://www.echovermont.org/>

Fish Ladder and Visitor Center, Bellows Falls, VT- http://www.nature-museum.org/projects/fish_ladder_and_visitor_center/

The Groundwater Foundation (See Kid's Corner)- <http://www.groundwater.org/>

Montshire Museum, Norwich, VT- <http://www.montshire.org/>

Nature Museum at Grafton, Grafton. VT- <http://www.nature-museum.org/>

Earth Pledge- <http://www.earthpledge.org/>

North American Vegetarian Society- <http://www.navs-online.org/>

Slate – The Green Lantern 2009: Illuminating answers to environmental questions.
www.slate.com

Vermont Institute for Natural Science (VINS) Nature Center, Quechee, VT-
<http://www.vinsweb.org/>

WaterSense – Environmental protection Agency- <http://www.epa.gov/watersense/kids/>

National Resource Defense Council (NRDC) - www.nrdc.org

The Compost Resource page- www.oldgrowth.org/compost

Definitions

Aquifer – underground layer of rock or gravel that holds water, we often use water in aquifers by pumping it up to the surface for drinking and irrigation

Sustainable Development – building both homes and businesses in a way that is environmentally responsible and friendly by planning ahead to reduce its impact on our environment. Examples are: keeping lighting, cooling and heating costs down, reducing runoff, managing our water use and how much wastewater we generate, minimize the amount of trash we generate

Carbon Footprint – amount of all the greenhouse gasses (CO₂) caused by an event, activity or product including all the ones we don't think about like moving products around, making their containers, heating or cooling the stores that sell them and the factories that make them

Non Point Source Pollution - polluted runoff from parking lots, farms, lawns, roads, etc. that contain sediments, oils, heavy metals, fertilizers, manure and our pet's poop, pesticides and herbicides