Wonderful Water Conservation

FCE Environmental Lesson 2013

Goal of lesson:

Participants will gain:

- Understanding of how water is used inside the home
- Why efficient use is needed
- Ways to use water more efficiently

Water Use at Home

Water usage varies greatly according to the size of your household, climate, the availability of water, the household appliances you use, water usage practices, and income. A 1999 American Water Works Association (AWWA) study of 12 U.S. cities indicated an average daily residential in-house use per person of about 70 gallons. Although studies vary on the amounts used, they do indicate primary water uses in homes are for flushing toilets, washing clothes, and showering.

People in U.S. cities use twice as much water per person as those in western European cities and seven times as much as is used in developing countries, according to the International Arid Lands Consortium. The trend in the U.S. shows an increase in water use per person. From 1950 to 2000, the Environmental Protection Agency (EPA) indicated that the public demand for water increased 209%. Current averages for household use are about 100 gallons per person, per day.

Gallons* per person used in U.S.

525,000 gal./person/year

*Includes other water use in addition to household.

Gal./person used in other nations

Canada	424,525 gal./person/year
Germany	115,972 gal./person/year
Sweden	89,819 gal./person/year
Nicaragua	70,534 gal./person/year

Source: J. Chamie, International Arid Lands Consortium, 2003

In addition to household use, water is necessary for many industries and activities. Irrigation, power supply, mining, livestock, wildlife and recreation are some examples. This program focuses on in-house use and what you can do to be more water-efficient in your homes.

Water efficiency is important whether your water comes from a public water source or a private well. Our public water supply infrastructure is aging. The same is true for public wastewater infrastructure by which used water is carried away, treated, and returned to the environment. In addition, many private well and on-site wastewater treatment systems might not be in compliance with current standards designed to protect human health and the environment.

The EPA estimates that U.S. public water and wastewater infrastructure repair costs over the next 20 years may be as much as $745 billion to $1 trillion. As these costs increase, average water bills are expected to increase to 0.9 percent of the average household income (U.S. Congressional Budget Office, 2002). While individuals with private drinking water and wastewater systems do not receive water bills, they are still financially responsible for maintaining and operating their systems. Budgets will need to include the cost of upgrading or replacing those systems over time.

Water efficiency may decrease the stress on existing public and private systems and help increase their life. Efficient water use can help preserve water resources now and for future generations. For example, if all U.S. households decreased their water use by installing water-saving items, a projected water decrease of 30 percent could be expected. That would result in a savings of 5.4 billion gallons a day, $11.3 million per day in costs, which would equal more than $4 billion a year (Chamie, 2003).

Becoming a more Efficient Water User

The top three water users in the home are the toilet, shower/bath, and washing machine. This is followed closely by faucets and dishwashers. Adopting efficient practices for these areas can provide significant benefits. Within the two categories of physical change and practice change, you can choose from many different practices. Physical changes include modifications in plumbing or fixtures. Practice changes include behaviors that change water use habits. Consider your home structure, your family's lifestyle, cost-benefit analysis, and values to select the physical or practice changes you are committed to making.

Toilet

The number one water user in the home. At 3.5 gallons per flush, toilets account for nearly 40 percent of indoor residential water use. More than 4.8 billion gallons of water are flushed down toilets each day in the U.S. and the average person in the U.S. uses about 9,000 gallons of water per year.

Physical Changes

Install low-flush toilets. Effective January 1, 1994, the Energy Policy Act of 1992 requires that all new toilets produced for home use must operate on 1.6 gallons per flush or less. For more consumer information on water efficiency, operation, and toilet models, go to *www.epa.gov/watersense/* and then to *High-Efficiency Toilets*.

It is estimated that about 20 percent of toilets leak. A leaky toilet can waste an average of about 22 gallons of water every day. To tell if a toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl after a few minutes without flushing, there is a leak. Fix leaks by changing the flapper valve.

Practice Changes

Plastic containers can be filled with water or pebbles and placed in a toilet take to reduce the amount of water used per flush. You may also do this by installing a toilet dam. Do not use bricks or other objects that can release particles of soil, stone, or corrosive materials into the tank.

Washing Machines

Clothes washers are typically the second-biggest water user in the home. Energy-saving models use 35 to 50 percent less water and require about 50 percent less energy per load.

Physical Changes

Install a high-efficiency washer. These washers use 18-25 gallons of water per load. Some washers sense the load size and soil of water and fabric and adjust the water level accordingly. When comparing models, look for the Energy Star label and compare the amount of water use for the same tub capacity. Comparisons can be found on the internet at *www.energystar.gov* under *Clothes Washers* and *Product List.*

Practice Changes

Wash only full loads if possible. Washing fewer full loads uses less water than washing several small loads. When small loads much be washed, adjust the water level or use the appropriate load size selection on the washing machine.

Shower/Bath

Showers account for about 20 percent of total indoor water use. A quick shower usually uses less water than a bath.

Physical Changes

Install low-flow showerheads. Showerheads made since 1994 use no more than 2.5 gallons per minute.

Practice Changes

Individuals can use water efficiently by taking shorter showers. Additional water can be conserved by shutting off the flow of water while soaping or shampooing. If using a bath, use lower bathtub levels. Close the drain stopper immediately when filling the tub and adjust the water temperature as the tub fills.

Faucets

Physical Changes

Install efficient faucets or aerators. More efficient kitchen and bathroom faucets that use only 2 gallons of water per minute are available. These can reduce faucet water use by as much as 60 percent while maintaining effectiveness.

A slow drip or leak can waste more than 100 gallons of water a week. To check for leaks, read your water meter before and after a two-hour period when no water is being used. If the meter reading has changed, you probably have a leak. Fix this by replacing faucet washers as needed.

Practice Changes

Water can be saved by shutting off the flow while lathering up, brushing teeth, shaving, or completing other similar tasks.

Keep a pitcher of water in the fridge for drinks instead of running cold tap water to fill up a glass.

Dishwashers

Physical Changes

Install water-efficient dishwashers, these models average 6-7 gallons per load. When replacing a dishwasher look for features to control wash cycle selections for light washes or cycles that use less water. For more information go to *www.energystar.gov/* and then to *Dishwashers* and *Product List.*

Practice Changes

Wash full loads of dishes in the dishwasher. If small loads must be run, adjust the control setting for the level of soil. If the dishwasher is not cleaning effectively, read the instructions for correct loading and detergent types.

When washing dishes by hand, do not use a continuous running faucet for rinsing. Use a spray attachment and rinse as needed.

Efficient Water Use

Efficient water use can help preserve water resources, reduce impacts on the water and wastewater infrastructure and the environment and may reduce household water wand wastewater costs. By addressing the top water users total household water use can be reduced. Adopting water-use efficiency practices for these areas can provide significant benefits. Choose the equipment or practice changes you are committed to making and that fit your household.

Resources

American Water Works Research Foundation, (1999)

J. Chamie, (2003). International Arid Lands Consortium. Available at *http://ag.arizona.edu/OALS/IALC/press-releases/waterfacs.pdf*

U.S. Geological Survey, Department of the Interior/USGS, (2005). *Water Use at Home.* Available at *http://ga.water.usgs.gov/edu/qahome.html*

U.S. Environmental Protection Agency, (2007). *How to Conserve Water and Use It Effectively.* Available at *http://www.epa.gov/OWOW/nps/chap3.html*

High-Efficiency Toilets. Available at *http://www.epa.gov/watersense/pubs/het.htm*

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This lesson is adapted from *Make Every Drop Count In The Home*, University of Nebraska Lincoln Extension, authored by Shirley M. Niemeyer, Extension Housing and Environment Specialist and Sharon O. Skipton, Extension Water Quality Educator.