

WATER WISE

A program by Oklahoma 4-H Youth Development & Oklahoma Water Resources Center

SKILL: SCIENCE TIME: 20-30 MIN

OBJECTIVES:

Students will:

- Identify ways that water is wasted outside the home.
- List the principles of Xeriscape landscaping.
- Identify ways that water can be conserved outside of the home.

LESSON ACTIVITY:

The average American uses 80-100 gallons of water in and around the home each day — that's a lot of water! About 5% is used for drinking and cooking while bathing and flushing is about 45%. Cleaning our clothes and dishes makes up the remaining 50%.

What are some ways that we use water outside of our home?

- Lawn and garden irrigation can use a lot of water. **Irrigation** means that you use a hose or sprinkler system to water the lawn, flowerbeds and garden to keep it alive.
- Washing vehicles
- Home maintenance such as rinsing off the driveway or sidewalks, washing windows or the house siding
- Filling and maintaining a swimming pool or hot tub
- Filling bird baths, fountains, or decorative water features in your yard
- Using liquid pesticides or fertilizers that require water for mixing

VOCABULARY

- Irrigation
- Recharge Rates
- Xeriscape™ Landscaping
- Xeric
- Drought-Tolerant

MATERIALS

- Are You Water Wise? Handout
- Pencils

ITEMS TO DISPLAY (OR PICTURES)

- Piece of soaker hose
- Piece of drip irrigation line
- Sprinkler
- Sprinkler system sprinkler head
- Spray nozzle and water hose
- Samples or pictures of drought-tolerant plants for your area
- Variety of mulch samples (cedar, rubber, rock, etc.)

4H₂O: WATER WISE

When we use a lot of water both inside and outside of the home, we are reducing the amount of water in the aquifers. Most aquifers have limited **recharge rates** of around one-half to two-thirds the rate of withdrawal. The recharge rate is how fast the water fills back up in the aquifer compared to how fast water is used out of the aquifer. Aquifers are recharged when it rains and the water runs into the aquifer.

When the recharge rate is lower than the rate of withdrawal (or water use), what can eventually happen?

- We could use up all the water in the aquifer, or as the water level in the aquifer gets low, contamination can occur and make the water supply unsafe.
- Approximately 30-40% of domestic water use is for watering the outside landscape.

Can you think of things we can do to help reduce the amount of water used for watering outdoors?

- Choose grasses, plants and ground covers that don't need as much water to live. We call this process **Xeriscape™ Landscaping**. In dry (**xeric**) environments, plants adapt to the dry conditions and water use can be greatly reduced.
- Water plants only when the water is needed. This encourages deep root growth and produces a healthier and more **drought-tolerant** landscape which means it can survive with less water.
- Efficient watering can also make a big difference in needing less water for the landscape. Watering during the early morning (4:00-6:00 a.m.) makes the water available to the plants with a minimum of water loss. Using a drip or trickle irrigation system instead of a spray system will reduce the amount of evaporation. It is also important to keep an eye on the rainfall and adjust the amount of water applied to the landscape and garden. For example, if it rains 3 inches, you may not need to water for a few days. If available, set a timer on the irrigation system so that you don't have to remember to turn it on and off.
- If you have an automatic sprinkler system, check the sprinkler heads. Be sure they have not shifted directions to spray water on the house, driveway, sidewalk, or road.
- Water the grass when it begins to show signs of needing water. What are those signs that the grass is getting thirsty? When you walk on it, you can still see the footprints. The grass doesn't bounce back when it's been walked on. Another sign is the grass may turn a dull grey-green color. Give the grass a good deep soaking that gets down in the soil. A sandy soil will need to be watered more often than mostly clay soil.
- Mowing the lawn once a week and cutting only 1/3 of the grass blade will also help conserve water. If you cut the lawn too short, it can put the grass into shock and the grass will turn yellow.

4H₂O: WATER WISE

- Use mulch in flowerbeds to help hold the moisture in the soil and keep water from evaporating.
- When you wash your car, wash it on the grass so that the water can soak into ground and not run off the driveway into the street or ditch. Also remember to turn off water when you are not using it to rinse the car.
- Use a broom to clean off porches, sidewalks and driveways.
- If you have a swimming pool, keep it covered when you aren't using it. An average-size pool with average sun and wind exposure loses approximately 1,000 gallons per month. A pool cover cuts the loss by 90%.
- Make sure that your outside water faucets are not leaking.

Let's see if your family is water wise by using some of these practices already. On your Water Wise handout, there are 10 questions. Answer each question by circling one of the 4 available answers: **Always** — worth 1 point; **Most of the Time** — worth 2 points; **Sometimes** — worth 3 points; **Never** — worth 4 points. After you answer all the questions, add up the number of points you circled and write the total in the box at the bottom.

If your total score is:

34-40 points — you are water wise!

27-33 points — You are doing a good job but could improve a little.

10-26 points — You could do a better job of conserving water outside of your home.

Let's Clean Up and Review

- What are three things you can do to help conserve water outside your home?
- Where is the most water used outside the home?
- Who are two people that you can talk to about reducing the amount of water used outside your home?
- Why is water so important to us?

Lesson adapted from 4-H₂O For You: Outdoor Water Conservation, Texas A&M AgriLife Extension Service, Guadalupe County



**OKLAHOMA WATER
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ARE YOU WATER WISE?

Instructions: Circle the answer of the score that best fits your family's habits for each question. **Always** – worth 1 point; **Most of the Time** – worth 2 points; **Sometimes** – worth 3 points; **Never** – worth 4 points. Add up your circled scores and write the total in the box.

| Question | Always = 1 | Most of the time = 2 | Sometimes = 3 | Never = 4 |
|---|------------|----------------------|---------------|-----------|
| 1. Do you wash your car on the driveway or street instead of the grass? | 1 | 2 | 3 | 4 |
| 2. Do you water the lawn or garden in the middle of the day? | 1 | 2 | 3 | 4 |
| 3. Do you water flowerpots with a water hose instead of a watering can? | 1 | 2 | 3 | 4 |
| 4. Do you leave your swimming pool uncovered when not in use? | 1 | 2 | 3 | 4 |
| 5. Do you have plants around the house that use a lot of water? | 1 | 2 | 3 | 4 |
| 6. Do you have an automatic sprinkler system that sprays water on the side of your house, on the driveway or sidewalk or on the road? | 1 | 2 | 3 | 4 |
| 7. Do you mow your lawn more than once a week? | 1 | 2 | 3 | 4 |
| 8. Do you wash off the porch or sidewalk with a water hose rather than sweeping it off with a broom? | 1 | 2 | 3 | 4 |
| 9. Do you allow your outdoor faucets to drip? | 1 | 2 | 3 | 4 |
| 10. Do you water the grass at your house several times a week? | 1 | 2 | 3 | 4 |
| Total Score: | | | | |

PASS Standards

| Grade Level | Standard | Science and Engineering Practices | Cross Cutting Concepts |
|-------------|---|--|--------------------------|
| 4th | 4.ESS2.1: Plan and conduct investigations on the effects of water, ice, wind, and vegetation on the relative rate of weathering and erosion. | Planning and Carrying out Investigations | Cause and Effect |
| 4th | 4.ESS3.2: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. | Designing Solutions | Cause and Effect |
| 5th | 5.ESS3.1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environments. | Obtaining, Evaluating, and Communicating Information | System and System Models |
| 6th | 6.ESS2.4: Develop a model to describe the cycling of water through earth's systems driven by energy from the sun and force of gravity. | Developing and Using Models | Energy and Matter |
| 7th | 7.ESS3.1: Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. | Constructing Explanations | Cause and Effect |
| 7th | 7.ESS3.3: Apply scientific principles to design a method for monitoring and minimizing human impact on the environment. | Constructing Explanations | Cause and Effect |
| 7th | 7.ESS3.4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. | Engage in Argument from Evidence | Cause and Effect |