

11. Fresh Water Uses

Teachers' Notes: Fresh water is used for many more purposes than drinking. Based on the weight of product manufactured, the water supply industry is by far the largest manufacturer of "product" in the United States and Canada. Water treatment plants process 40 billion gallons (227 billion liters) of tap water daily for domestic use (homes, restaurants, hotels, small businesses, and so forth) in the United States.

Daily irrigation use is much larger, depending on location and time of year. It takes about 50 glasses of water just to grow enough oranges to produce one glass of orange juice. One estimate puts the total amount of water used for irrigation at 141 billion gallons (554 billion liters) a day.

Water is also used in manufacturing and food processing, and many manufacturers will further treat their water before using, resulting in ultrapure water.

Not all fresh water is treated before using, however. Commercial farming operations draw water directly from the ground or ditches; mining operations use water drawn from underground sources as well as nearby rivers. By far the largest user of untreated fresh water is the thermoelectric sector, which uses water to generate electricity using steam-driven generators.

Objective: Students will learn about the different uses of fresh water.

Curriculum Area: Social studies; Science

Taxonomy: Knowledge; Understanding; Analyzing

Science Processes: Reading graphs, maps or tables; Communicating and explaining; Technology and research

Time Needed: 45–60 minutes

Activity Directions: Read page 9 of *The Story of Drinking Water* as a group or individually. Consider the pitcher graph and discuss.

(*The Story of Drinking Water*, page 9): In addition to home use, fresh water is used for transportation, agriculture, heating and cooling, industry, livestock, and many other purposes. That one percent of water is primarily used in eight different ways, or categories:

- *Public supply.* Public and commercial buildings, such as schools and restaurants
- *Domestic.* Residential indoor and outdoor use, such as drinking, cleaning, and watering lawns
- *Irrigation.* Watering systems for farms that grow food
- *Livestock.* Watering systems for animals on ranches and farms
- *Aquaculture.* Watering systems for fish farms and hatcheries
- *Industrial.* Water used for manufacturing products, including food, paper, and petroleum products
- *Mining.* Water used for extracting natural resources, such as metals, minerals, natural gas, and oil
- *Thermoelectric.* Water used for generating electricity using steam-driven generators

Solve the Problem: According to the graph, what category uses the most fresh water? (Thermoelectric followed by irrigation) How can we reduce this amount of water use? (Recycling more water in closed thermoelectric systems, conserving use of electricity) What alternative energies can be developed? (Solar, wind, hydroelectric, etc.) Make a bar graph of this chart.



Drinking Water
Week 2012



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