



# Water Systems, Conservation, and Careers in Water

## LESSON PLAN

### Overview:

Water is in limited supply, but it is critical for all survival. Without it, life would not exist. Entry level jobs in the water industry require only a high school degree. But high school students often overlook these jobs as potential career options because they are not familiar with the industry. According to the *U.S. Department of Labor Occupational Outlook Handbook 2016-17 edition*, the water industry will require 7,000 new water and wastewater operators from 2014-2024. This course focuses on three important areas:

1. Module One, Water Systems – How You Get Your Water:
  - a. Summarizes the three main jobs performed by a water treatment plant
  - b. Explains how water utilities manage and treat source water to make it safe for the public
  - c. Identifies the “water system infrastructure” and summarizes the water delivery process
2. Module Two, Water Conservation – Saving Our Scarce Resources:
  - a. Summarizes the basic need for clean water and discusses our limited water supplies
  - b. Discusses water pollution, protection of our water supplies, and water conservation
  - c. Distinguishes between tap water’s economic value and that of bottled water and other fluids
3. Module Three, Water Careers – Your Future in Water:
  - a. Lists a variety of potential careers students might consider for working in the water industry
  - b. Summarizes the work done by water utility operators and outlines their work environments
  - c. Discusses water utility operator entry-level requirements, pay, benefits, and certification

### Learning Objectives - when students are finished with these three modules, they will be able to:

1. Discuss the important work that public water utilities do to ensure public health and safety
2. Describe the “water system infrastructure” and summarize the water delivery process
3. Identify the impact of water pollution on our scarce water resources and state ways to control it
4. State ways to conserve water by reducing, reusing, and recycling, and by using water wisely
5. Identify water industry careers and discuss water operator jobs, entry-level requirements, work environments, pay, benefits, and certifications

### Materials Needed:

- PowerPoint presentation
- Note-taking materials, participant handouts, and scenario-exercises

### Agenda:

0:00 - 0:02 – Introduction

0:03 - 0:18 – Module 1: Water Systems – How You Get Your Water

0:19 - 0:34 – Module 2: Water Conservation – Saving Our Scarce Resources

0:35 - 0:50 – Module 3: Water Careers – Your Future in Water

0:51 - 0:58 - Summary and Q & A

0:59 - 0:60 – Thank you, additional resources, and scholarship/career information

### Evaluation:

Optional Teacher Quiz



# Water Systems, Conservation, and Careers in Water

## LESSON PLAN

### Activities for Module 1, Water Systems – How You Get Your Water

#### Water Utilities & Source Water

Water utilities' **1<sup>st</sup>** job is to oversee water in nature ("source water"). Source water is either:

- *surface water* (lakes, rivers, reservoirs), found above the Earth's surface
- *Groundwater* (found below the Earth's surface; sometimes also called an "aquifer")

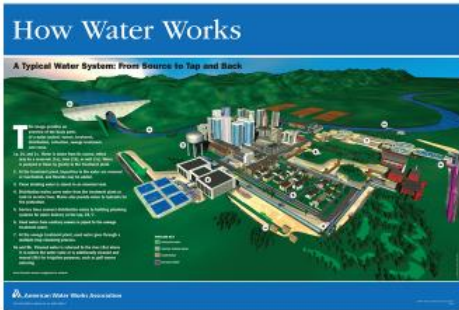
Source water is unsafe to drink. Do you know why?



Can you think of some reasons why source water might be unsafe to drink?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

#### How Water Works: from source to you



What does it mean when we say water utilities "treat" water?

- 
- 
- 

Notes:

# Water Systems, Conservation, and Careers in Water

## LESSON PLAN

### Activities for Module 2, Water Conservation – Saving Our Scarce Resources

**Do You Know...????**

- How much water should humans drink each day?  

- How much of the Earth's surface is made of water?  

- How much of the water on Earth is suitable for drinking?  




Can you answer these questions?

1. How much water do humans need daily?  
\_\_\_\_\_
2. How much of the Earth's surface is water?  
\_\_\_\_\_
3. How much of Earth's water is OK to drink?  
\_\_\_\_\_

**Conservation: for Life**

- One person makes a difference
- You are not alone – others will join/follow
- Everyone has a stake
- We must conserve for future generations



Name as many ways as you can think of to prevent water pollution & conserve our water supplies

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Notes:

# Water Systems, Conservation, and Careers in Water

## LESSON PLAN

### Activities for Module 3, Water Careers – Your Future in Water

### Water Industry Career Overview

Water/Wastewater Utility Careers:

- Water Plant Operator
- Water Plant Manager
- Water Quality Engineer
- Water Lab Technologist
- Operations Supervisor
- Distribution Operator
- Engineering Manager
- Science Technician



Developed by AWWA in partnership with RCAP and funded by USEPA. Published 2015.

There are many careers in the water industry. But no matter what career you choose, water industry employees all share one important job. It is the one thing that all of these workers have in common. What is that job?

---


---

---

---

### Should YOU Work in Water?

Name the top 5 reasons you might want a water career.....



Developed by AWWA in partnership with RCAP and funded by USEPA. Published 2015.

Should you work in water? List some reasons that a water industry job might be a good career move.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

Notes:



# Water Systems, Conservation, and Careers in Water

## LESSON PLAN

### Additional Resources:

- AWWA Career Center: <http://www.awwa.org/resources-tools/career-center.aspx>
- AWWA How to Become a Certified Operator: <http://www.awwa.org/resources-tools/operator-certification-advancement/become-a-certified-operator.aspx>
- AWWA Scholarship page: <http://www.awwa.org/membership/get-involved/student-center/awwa-scholarships.aspx>
- Bureau of Labor Statistics Occupational Outlook Handbook for Water and Wastewater Treatment Plant and System Operators: <http://www.bls.gov/ooh/production/water-and-wastewater-treatment-plant-and-system-operators.htm>
- DrinkTap.org: <http://www.drinktap.org>
- EPA Selection of Training Programs for Water and Wastewater Operators: <https://www.epa.gov/sustainable-water-infrastructure/selection-training-programs-water-and-wastewater-operators>
- How Water Works: <http://www.awwa.org/resources-tools/water-knowledge/how-water-works.aspx>
- Only Tap Water Delivers: <http://www.awwa.org/resources-tools/public-affairs/communications-tools/only-tap-water-delivers/only-tap-water-delivers-materials.aspx>
- Rocky Mountain Section of the American Water Works Association: <http://rmsawwa.org/getintowaterco/index.html>
- United States Environmental Protection Agency (EPA): <https://www.epa.gov/students>
- United States Geological Survey (USGS): <https://www.usgs.gov>
- Water Environment Federation: <http://www.wef.org/>
- Work for Water: <http://www.workforwater.org/>