

# Summary: A Career as a Certified Water Operator

Source: U.S. Department of Labor, Bureau of Labor Statistics



Operators monitor operating conditions, meters, and gauges.

## Quick Facts: Water and Wastewater Treatment Plant and System Operators

<b>2014 Median Pay</b>	\$44,100 per year \$21.20 per hour
<b>Typical Entry-Level Education</b>	High school diploma or equivalent
<b>Work Experience in a Related Occupation</b>	None
<b>On-the-job Training</b>	Long-term on-the-job training
<b>Number of Jobs, 2014</b>	117,000
<b>Job Outlook, 2014-24</b>	6% (As fast as average)
<b>Employment Change, 2014-24</b>	7,000

## What Water and Wastewater Treatment Plant and System Operators Do

Water and wastewater treatment plant and system operators manage a system of machines, often through the use of control boards, to transfer or treat water or wastewater.

## **Work Environment**

Most water and wastewater treatment plant and system operators are employed by local governments. Most operators work full time.

## **How to Become a Water or Wastewater Treatment Plant and System Operator**

Water and wastewater treatment plant and system operators typically need a high school diploma and a license to work. They also usually undergo on-the-job training.

## **Pay**

The median annual wage for water and wastewater treatment plant and system operators was \$44,100 in May 2014.

## **Job Outlook**

Employment of water and wastewater treatment plant and system operators is projected to grow 6 percent from 2014 to 2024, about as fast as the average for all occupations. Job prospects are expected to be excellent.

# **What Water and Wastewater Treatment Plant and System Operators Do**



Water and wastewater treatment plant and system operators manage a system of machines, often through the use of control boards, to transfer or treat water or wastewater.

Operators record data from meter and gauge readings.

## Duties

Water and wastewater treatment plant and system operators typically do the following:

- Add chemicals, such as ammonia or chlorine, to disinfect water or other liquids
- Inspect equipment on a regular basis
- Monitor operating conditions, meters, and gauges
- Collect and test water and sewage samples
- Record meter and gauge readings and operational data
- Operate equipment to purify and clarify water or to process or dispose of sewage
- Clean and maintain equipment, tanks, filter beds, and other work areas
- Follow U.S. Environmental Protection Agency (EPA) regulations
- Ensure safety standards are met

It takes a lot of work to get water from natural sources—reservoirs, streams, and groundwater—into people’s taps. Similarly, it is a complicated process to convert the wastewater from drains and sewers into a form that is safe to release into the environment.

The specific duties of plant operators depend on the type and size of the plant. In a small plant, one operator may be responsible for maintaining all of the systems. In large plants, multiple operators work the same shifts and are more specialized in their duties, often relying on computerized systems to help them monitor plant processes.

**Water treatment plant and system operators** work in water treatment plants. Fresh water is pumped from wells, rivers, streams, or reservoirs to water treatment plants, where it is treated and distributed to customers. Water treatment plant and system operators run the equipment, control the processes, and monitor the plants that treat water to make it safe to drink.

**Wastewater treatment plant and system operators** do similar work to remove pollutants from domestic and industrial waste. Used water, also known as wastewater, travels through sewer pipes to treatment plants where it is treated and either returned to streams, rivers, and oceans, or used for irrigation.

## Work Environment



Water and wastewater treatment plant and system operators held about 117,000 jobs in 2014, of which 78 percent were in local government. About 11 percent worked for water, sewage, and other systems utilities.

Operators must maintain and repair equipment.

### Injuries and Illnesses

Water and wastewater treatment plant and system operators work both indoors and outdoors. They may be exposed to noise from machinery and are often exposed to unpleasant odors. Operators' work is physically demanding and usually is performed in locations that are unclean or difficult to access.

They must pay close attention to safety procedures because of hazardous conditions, such as slippery walkways, the presence of dangerous gases, and malfunctioning equipment. As a result, workers experience an occupational injury and illness rate that is much higher than the average for all occupations.

Operators are trained in emergency management procedures and use safety equipment to protect their health, as well as that of the public.

### Work Schedules

Most water and waste treatment plant and system operators work full time. Plants operate 24 hours a day, 7 days a week. In small plants, operators are likely to work during the day and be on call nights and weekends. In medium- and large-size plants that require constant monitoring, operators work in shifts to control the plant at all hours.

Occasionally, operators must work during emergencies. For example, weather conditions may cause large amounts of stormwater or wastewater to flow into sewers, exceeding a plant's capacity. Emergencies may also be caused by malfunctions within a plant, such as chemical leaks or oxygen deficiencies.

## How to Become a Water or Wastewater Treatment Plant and System Operator



Water and wastewater treatment plant and system operators typically need a high school diploma and a license to work. They also typically undergo on-the-job training.

New workers manage basic systems under the guidance of an experienced operator.

### Education

Water and wastewater treatment plant and system operators need a high school diploma or equivalent to become operators. Employers may prefer applicants who have completed a certificate or an associate's degree program in a related field such as environmental science or wastewater treatment technology, as it reduces the amount of training a worker will need. These programs are generally offered at community colleges, technical schools, and trade associations.

### Training

Water and wastewater treatment plant and system operators need long-term on-the-job training to become fully qualified. Trainees usually start as attendants or operators-in-training and learn their skills on the job under the direction of an experienced operator. The trainees learn by observing and doing routine tasks, such as recording meter readings, taking samples of wastewater and sludge, and performing simple maintenance and repair work on plant equipment.

Larger treatment plants usually combine this on-the-job training with formal classroom or self-paced study programs. As plants get larger and more complicated, operators need more skills before they are allowed to work without supervision.

## **Licenses, Certifications, and Registrations**

Water and wastewater treatment plant and system operators must be licensed by the state in which they work. Requirements and standards vary widely depending on the state.

State licenses typically have multiple levels, which indicate the operator's experience and training. Although some states will honor licenses from other states, operators who move from one state to another may need to take a new set of exams to become licensed in their new state.

## **Advancement**

Most states have multiple levels of licenses for water and wastewater treatment plant and system operators. Each increase in license level allows the operator to control a larger plant and more complicated processes without supervision.

At the largest plants, operators who have the highest license level work as shift supervisors and may be in charge of large teams of operators.

## **Important Qualities**

**Analytical skills.** Water and wastewater treatment plant and system operators must conduct tests and inspections on water or wastewater and evaluate the results.

**Detail oriented.** Water and wastewater treatment plant and system operators must monitor machinery, gauges, dials, and controls to ensure everything is operating properly. Because tap water and wastewater are highly regulated by the U.S. Environmental Protection Agency, operators must be careful and thorough in completing these tasks.

**Math skills.** Water and wastewater treatment plant and system operators must have the ability to apply data to formulas that determine treatment requirements, flow levels, and concentration levels.

**Mechanical skills.** Water and wastewater treatment plant and system operators must know how to work with machines and use tools. They must be familiar with how to operate, repair, and maintain equipment.

# Pay

Median annual wages, May 2014

## Plant and system operators

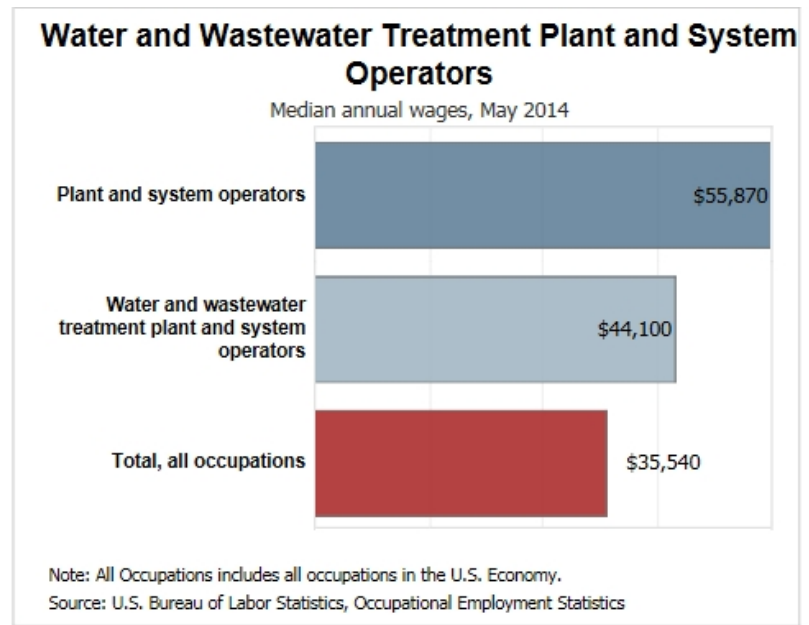
\$55,870

## Water and wastewater treatment plant and system operators

\$44,100

## Total, all occupations

\$35,540



Note: All Occupations includes all occupations in the U.S. Economy.

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

The median annual wage for water and wastewater treatment plant and system operators was \$44,100 in May 2014. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$26,640, and the highest 10 percent earned more than \$70,270.

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Occasionally, operators must work during emergencies. For example, weather conditions may cause large amounts of stormwater or wastewater to flow into sewers, exceeding a plant's capacity. Emergencies also may be caused by malfunctions within a plant, such as chemical leaks or oxygen deficiencies.

## Union Membership

Compared with workers in all occupations, water and wastewater treatment plant and system operators had a higher percentage of workers who belonged to a union in 2014.