



Water Careers Worksheet

The following is the entire text used for the water careers activity questions.

What does a hydrologist do?

A love of nature, passion for the environment and concern for how precious water resources are monitored and maintained are just some of the characteristics of Hydrologic Technicians. Managing water in lakes, rivers, and oceans, among others, requires dedication and skill. Ignorance in the care and maintenance of these water sources can lead to much larger repercussions, making Hydrologic Technicians vital to the health and sustainability of water resources.

One great aspect of a career as a Hydrologic Technician is that in order to monitor water, you have to be where the water is! This means many professionals spend most of their time working outside in the field, and not a lot of time sitting behind a desk or in a cramped cubicle.

Hydrologic Technicians primary job duties are to monitor the quality and quantity of surface and ground water, take samples and flow measurements, install gauges and survey cross sections of water ways. Data is then recorded and analyzed to determine if the water meets national and state standards, and for historical records.

What career options are there in this field?

With a two year degree, a hydrologic technician can work for all levels of the government from Federal to city as well as for engineering firms. With a four year degree, hydrologists also can work for all levels of the government from Federal to city as well as engineering firms.

How much money can I make?

With ever-increasing population and a constant struggle to preserve quantity and quality of water, particularly in the Southwest of the United States, careers in Hydrology are in demand nationwide. In Arizona, Hydrologic Technician positions are expected to increase 10% or more in the next 10 years. Hydrologic Technicians earn an average of \$15.20 to \$42.97 an hour for an average salary of \$31,610 to \$85,940 a year.

What are the working conditions?

Most entry-level environmental scientists and hydrologists spend the majority of their time in the field, while more experienced workers generally devote more of their time to office or laboratory work. Many beginning hydrologists and some environmental scientists, such as environmental ecologists and environmental chemists, often take field trips that involve physical activity. Environmental scientists and hydrologists in the field may work in warm or cold climates, in all kinds of weather. In their research, they may dig or chip with a hammer, scoop with a net, come in

contact with water, and carry equipment in a backpack. Travel often is required to meet with prospective clients or investors. Those in laboratories may conduct tests, run experiments, record results, and compile data.

Environmental scientists and hydrologists in research positions with the Federal Government or in colleges and universities frequently are required to design programs and write grant proposals in order to continue their data collection and research. Environmental scientists and hydrologists in consulting jobs face similar pressures to market their skills and write proposals so that they will have steady work. Occasionally, those who write technical reports to business clients and regulators may be under pressure to meet deadlines.

How stable is this career?

Employment of environmental scientists is expected to grow about as fast as the average for all occupations through 2014, while employment of hydrologists should grow much faster than average. Job growth for environmental scientists and hydrologists should be strongest at private-sector consulting firms. Demand for environmental scientists and hydrologists will be spurred largely by public policy, which will oblige companies and organizations to comply with complex environmental laws and regulations, particularly those regarding ground-water decontamination, clean air, and flood control.

What skills do I need?

Computer skills are essential for prospective environmental scientists and hydrologists. Students who have some experience with computer modeling, data analysis and integration, digital mapping, remote sensing, and geographic information systems will be the most prepared to enter the job market. A knowledge of the Geographic Information System (GIS) and Global Positioning System (GPS)—a locator system that uses satellites—is vital.

Environmental scientists and hydrologists must have excellent interpersonal skills, because they usually work as part of a team with other scientists, engineers, and technicians. Strong oral and written communication skills also are essential, because writing technical reports and research proposals and communicating technical and research results to company managers, regulators, and the public are important aspects of the work. Those involved in fieldwork must have physical stamina.

What steps do I need to take to get a job in this field?

Students interested in the field of hydrology should take courses in the physical sciences, geophysics, chemistry, engineering science, soil science, mathematics, aquatic biology, atmospheric science, geology, oceanography, hydrogeology, and the management or conservation of water resources. In some cases, graduates with a bachelor's degree in a hydrologic science are qualified for positions in environmental consulting and planning regarding water quality or wastewater treatment. Curricula for advanced degrees often emphasize the natural sciences, but not all universities offer all curricula.

What does a water operator do?

Operators read, interpret, and adjust meters and gauges to make sure that plant equipment and processes are working properly. Operators operate chemical-feeding devices, take samples of the water or wastewater, perform chemical and biological laboratory analyses, and adjust the

amounts of chemicals, such as chlorine, in the water. They use a variety of instruments to sample and measure water quality and they utilize common hand and power tools to make repairs to valves, pumps, and other equipment.

Water and wastewater treatment plant and system operators increasingly rely on computers to help monitor equipment, store the results of sampling, make process-control decisions, schedule and record maintenance activities, and produce reports. When equipment malfunctions, operators also may use computers to determine the cause of the malfunction and seek its solution.

What do water operators do at the plant?

The specific duties of plant operators depend on the type and size of the plant. In smaller plants, one operator may control all of the machinery, perform tests, keep records, handle complaints, and perform repairs and maintenance. A few operators may handle both a water treatment and a wastewater treatment plant. In larger plants with many employees, operators may be more specialized and monitor only one process. The staff also may include chemists, engineers, laboratory technicians, mechanics, helpers, supervisors, and a superintendent.