Environmental Science Technician

Snapshot

Career Cluster: Engineering; Environment & Conservation; Science & Technology
Interests: Science, mathematics, environmental issues, research, data analysis
Earnings (Yearly Average): $45,470
Employment & Outlook: Faster Than Average Growth Expected

OVERVIEW

Sphere of Work

Environmental science technicians conduct tests in the laboratory and in the field to assess the levels and sources of air, water, and soil pollution. They set up and monitor experiments and calculate and record results using complex instruments, including state-of-the-art monitoring and testing equipment. Technicians are involved in regulatory compliance, waste management, and hazardous material management and control operations. Using the samples they collect at polluted sites, they assist in the location and elimination of pollution sources. Environmental science technicians typically work for scientific and technical services

businesses, environmental consultants, and state and federal government agencies.

Work Environment

Much of the work performed by environmental science technicians is conducted in laboratories. Such technicians also take samples directly from field sites. They frequently work in teams alongside environmental scientists. Technicians work with and around a wide range of technical equipment and systems at manufacturing facilities, refineries, military installations, and other sites that produce and emit pollution. Because of their direct work with pollution and environmental hazards, environmental science technicians are faced with potential health risks during the course of their work. They may work irregular hours, particularly when monitoring an ongoing issue or conducting a time-consuming experiment.

Profile

Working Conditions: Work both Indoors and Outdoors
Physical Strength: Light Work
Education Needs: Bachelor's Degree
Licensure/Certification: Recommended
Physical Abilities Not Required: N/A
Opportunities For Experience: Apprenticeship, Military Service
Holland Interest Score*: IRE

* See Appendix A

Occupation Interest

Environmental science technicians work to halt pollution before it affects the health of the general public. In many cases, environmental science technicians are sent to scenes of environmental disasters such as oil spills in order to assess the extent of environmental damage caused and to begin a course of action to contain and mitigate those issues. In other situations, environmental science technicians play an ongoing role in analyzing airborne emissions, wastewater discharge, and groundwater quality to comply with government environmental quality standards.

In addition to the potential for intervening in or preventing an environmental disaster, environmental science technicians use the latest in detection and sampling technology as well as advanced computers to analyze and record pollution levels.

A Day in the Life—Duties and Responsibilities

Environmental science technicians frequently work outdoors, sometimes in remote locations. They take air, water, and/or soil samples from areas affected by the waste emissions of a business, municipality, or government facility. Returning to the laboratory, technicians will set up and operate analytical and monitoring equipment to provide a clear study of those samples. They conduct experiments, calculate and record results, and often develop conclusions that are then used by the environmental scientists with whom they work. In the course of their daily activities, environmental science technicians maintain a detailed log of all experiments and operations conducted in the laboratory. They also run maintenance tests on the equipment to ensure that those devices are operating properly.

Many environmental science technicians are employed by companies that produce hazardous materials, waste, and airborne emissions. Many of these technicians are responsible for their companies' waste management and/or hazardous materials inventory programs. They file detailed reports on these topics for submission to state and federal government agencies as required by law.

Environmental science technicians often assist in researching and developing new ways to track and prevent pollution. These innovations are based on the specific data collected during the technicians' normal activities (as opposed to the theoretical concepts and models environmental scientists may use).

Duties and Responsibilities

- **Taking samples at polluted sites for testing in the laboratory**
- **Performing laboratory analysis of samples collected**
- **Preparing reports on sites and materials tested**
- **Advising officials and/or clients regarding pollution mitigation measures**

WORK ENVIRONMENT

Physical Environment

Environmental science technicians work in laboratories, where they operate and maintain scientific equipment, and in offices, where they write reports. These facilities may be found in government agencies, manufacturing plants, private consulting firms, or at universities. Technicians also work outdoors, where they collect samples. Whether indoors or outdoors, technicians work with toxic substances and waste materials; therefore, strict safety measures are enforced so that the risks associated with these pollutants are minimized.

Relevant Skills and Abilities

Analytical Skills

- Collecting and analyzing data

Communication Skills

- Speaking and writing effectively

Technical Skills

- Performing scientific, mathematical, and technical work
- Using laboratory equipment

Work Environment Skills

- Having a good awareness of safety issues
- Working both indoors and outdoors

Human Environment

Environmental science technicians often work in teams with peers as well as under environmental scientists. In their duties overseeing corporate waste management and other programs, environmental science technicians will also work with executives, government compliance officers and inspectors, and internal compliance officers.

Technological Environment

Central to an environmental science technician's responsibilities is the use and maintenance of analytical equipment and monitoring systems, such as air samplers, flow meters, decibel meters, water samplers, and sampling pumps. They also use a wide range of computers and software, such as computer-aided design (CAD) systems, map creation software, and other analytical and modeling software. They must also use basic software applications for reports and data management, such as spreadsheets and word processing systems.

EDUCATION, TRAINING, AND ADVANCEMENT

High School/Secondary

High school students interested in becoming environmental science technicians should focus on science courses such as biology, chemistry, and physics. They should also take relevant math courses, such as geometry, algebra, trigonometry, and calculus. Courses in communication can enhance aspiring technicians' writing skills.

Suggested High School Subjects

- Algebra
- Applied Biology/Chemistry
- Applied Communication
- Applied Math
- Biology
- Calculus
- Chemistry
- Computer Science
- English
- Geometry
- Physical Science
- Trigonometry

Famous First

The first noise pollution law was enacted by the state of New Jersey in 1971 and signed into law in 1972. The act authorized the state Department of Environmental Protection to set out rules and regulations regarding noise pollution and control. Later in 1972 a national noise pollution law was enacted; it was rescinded in 1981 under the Reagan administration.

College/Postsecondary

Many environmental science technicians obtain an associate's or bachelor's degree in a field such as engineering, environmental science, or computer science. Courses in chemistry, physics, and math are also essential, as is work in a campus laboratory.

Related College Majors

- Chemical Engineering
- Civil Engineering
- Environmental Science/Studies
- Mechanical Engineering
- Natural Resources Conservation, General

Adult Job Seekers

Environmental science technicians may find employment by directly applying for jobs posted on corporate or government websites or through employment agencies. They may also benefit from joining a related professional trade organization such as the American Academy of Environmental Engineers.

Professional Certification and Licensure

Environmental science technicians should receive their Hazardous Materials Technician (also known as Hazardous Waste Operations and Emergency Response) certification through the U.S. Occupational Safety and Health Administration (OSHA). Professional certifications

may also be obtained through trade organizations such as the National Registry for Environmental Professionals.

Additional Requirements

Environmental science technicians must be able to use scientific principles and rules to solve complex problems and issues. They should have strong organizational, communication, and analytical skills. Furthermore, technicians must have exceptional capability using mechanical devices and computer equipment.

EARNINGS AND ADVANCEMENT

Environmental science technicians increase their chances for advancement through experience and further education. Median annual earnings of environmental science technicians were $45,470 in 2013. The lowest ten percent earned less than $27,000, and the highest ten percent earned more than $70,000.

Environmental science technicians may receive paid vacations, holidays, and sick days; life and health insurance; and retirement benefits. These are usually paid by the employer.

Metropolitan Areas with the Highest Employment Level in This Occupation

Metropolitan area	Employment[1]	Employment per thousand jobs	Hourly mean wage
New York-White Plains-Wayne, NY-NJ	1,080	0.21	$24.08
Chicago-Joliet-Naperville, IL	860	0.23	$23.13
Boston-Cambridge-Quincy, MA	790	0.45	$17.27
Houston-Sugar Land-Baytown, TX	770	0.28	$26.39
Washington-Arlington-Alexandria, DC-VA-MD-WV	700	0.30	$22.23
Los Angeles-Long Beach-Glendale, CA	650	0.16	$24.43
Denver-Aurora-Broomfield, CO	580	0.46	$22.11
Phoenix-Mesa-Glendale, AZ	520	0.29	$23.51
San Diego-Carlsbad-San Marcos, CA	500	0.39	$22.12
Seattle-Bellevue-Everett, WA	490	0.34	$26.37

[1] Does not include self-employed. Source: Bureau of Labor Statistics

EMPLOYMENT AND OUTLOOK

Environmental science technicians held about 35,000 jobs nationally in 2013. Employment is expected to grow faster than the average for all occupations through the year 2022, which means employment is projected to increase 15 percent to 20 percent. Job growth will result from the need for environmental science technicians to regulate waste products; to collect air, water, and soil samples to measure levels of pollutants; to monitor compliance with environmental regulations; and to clean up contaminated sites. Environmental science technicians can expect job opportunities in government as well as private companies.

Employment Trend, Projected 2012–22

Environmental Science Technicians: 19%

Total, All Occupations: 11%

Science Technicians (All): 10%

Note: "All Occupations" includes all occupations in the U.S. Economy. Source: U.S. Bureau of Labor Statistics, Employment Projections Program.

Related Occupations

- Agricultural Engineer
- Biological Scientist
- Chemical Engineer
- Civil Engineer
- Environmental Engineer
- Hazardous Waste Manager
- Petroleum Engineer
- Water & Wastewater Engineer
- Wind Energy Engineer

Related Military Occupations

- Environmental Health & Safety Officer

SELECTED SCHOOLS

Many agricultural, technical, and community colleges offer programs related to environmental science and engineering. Interested students are advised to consult with their school guidance counselor or to research area postsecondary schools and training programs. For those interested in pursuing a bachelor's degree, refer to the list of schools in the "Environmental Engineer" chapter in the present volume.

MORE INFORMATION

American Academy of Environmental Engineers & Scientists
147 Old Solomons Island Road
Suite 303
Annapolis, MD 21401
410.266.3311
www.aaees.org

American Society for Engineering Education
1818 North Street NW
Suite 600
Washington, DC 20036
202.331.3500
www.asee.org

National Environmental Health Association
720 S. Colorado Boulevard
Suite 1000-N
Denver, CO 80246-1926
303.756.9090
www.neha.org

National Environmental, Safety & Health Training Association
2700 North Central Avenue
Suite 900
Phoenix, AZ 85004
602.956.6099
https://netforum.avectra.com

National Registry of Environmental Professionals
P.O. Box 2099
Glenview, IL 60025-6099
847.724.6631
www.nrep.org

Global Environment & Technology Foundation
2900 S. Quincy Street
Suite 375
Arlington, VA 22206
703.379.2713
www.getf.org

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