

Environmental Engineers

Professional Activities

Environmental engineers use the principles of engineering, soil science, biology, and chemistry to develop solutions to environmental problems. They are involved in efforts to improve recycling, waste disposal, public health, and water and air pollution control. They also address global issues, such as unsafe drinking water, climate change, and environmental sustainability.

Environmental engineers typically do the following:

- Prepare, review, and update environmental investigation reports
- Design projects leading to environmental protection, such as water reclamation facilities, air pollution control systems, and operations that convert waste to energy
- Obtain, update, and maintain plans, permits, and standard operating procedures
- Provide technical support for environmental remediation projects and for legal actions
- Analyze scientific data and do quality-control checks
- Monitor the progress of environmental improvement programs
- Inspect industrial and municipal facilities and programs to ensure compliance with environmental regulations
- Advise corporations and government agencies about procedures for cleaning up contaminated sites

Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of the hazard and advise on treating and containing it. Some environmental engineers study ways to minimize the effects of acid rain, global warming, automobile emissions, and ozone depletion. They also collaborate with environmental scientists, planners, hazardous waste technicians, engineers, and other specialists, such as experts in law and business, to address environmental problems and environmental sustainability.

Educational Requirements

Environmental engineers must have a bachelor's degree in environmental engineering or a related field, such as civil, chemical, or general engineering. Programs typically last 4 years and include classroom, laboratory, and field studies. Some colleges and universities offer cooperative programs in which students gain practical experience while completing their education. At some colleges and universities, a student can enroll in a 5-year program that leads to both a bachelor's and a master's degree. A graduate degree allows an engineer to work as an instructor at some colleges and universities or to do research and development. Many engineering programs are accredited by ABET, which originally stood for "the Accreditation Board for Engineering and Technology". The organization changed its name to simply "ABET" in 2005.

Employers value practical experience. Therefore, cooperative engineering programs, in which college credit is awarded for structured job experience, are valuable as well. Getting a license improves the chances for employment. Some employers prefer to hire candidates who have graduated from an accredited program. A degree from an ABET-accredited program is usually necessary to become a licensed professional engineer.

Licenses, Certifications, and Registrations

To become a licensed as a professional engineer (PE), generally requires the following steps:

- A degree from an engineering program accredited by ABET
- A passing score on the Fundamentals of Engineering (FE) exam

- Relevant work experience
- A passing score on the Professional Engineering (PE) exam

The initial FE exam can be taken after graduation. Engineers who pass this exam are commonly called engineers in training (EITs) or engineer interns (EIs). After getting suitable work experience, EITs can take the second exam, called the Principles and Practice of Engineering. Several states require continuing education for engineers to keep their licenses. Most states recognize licensure from other states if the licensing state’s requirements meet or exceed their own requirements. After licensing, environmental engineers can earn board certification from the American Academy of Environmental Engineers and Scientists. This certification shows that an environmental engineer has expertise in one or more areas of specialization.

Academic Programs

[Illinois Institute of Technology](#)
[Northwestern University](#)
[Southern Illinois University](#)

[University of Illinois, Urbana-Champaign](#)

Employment/Salary Outlook

State and local governments’ concerns about water are leading to efforts to increase the efficiency of water use. This focus differs from that of wastewater treatment, for which this occupation is traditionally known. The requirement by the federal government to clean up contaminated sites is expected to help sustain demand for these engineers’ services, particularly those who work for the government sector. In addition, wastewater treatment is becoming a larger concern in areas of the country where new methods of drilling for shale gas require the use and disposal of massive volumes of water. Environmental engineers will continue to be needed to help utilities and water treatment plants comply with any new federal or state environmental regulations.

State and National Wages

Location	Pay Period	2021		
		Low	Median	High
United States	Hourly	\$28.76	\$46.55	\$73.65
	Annual	\$59,820	\$96,820	\$153,200
Illinois	Hourly	\$28.76	\$46.55	\$63.86
	Annual	\$59,820	\$80,840	\$132,830

State and National Trends

United States	Employment		Percent Change	Projected Annual Job ¹
	2020	2030		
Environmental Engineers	52,300	54,300	4%	4,000
Illinois	Employment		Percent Change	Projected Annual Job ¹
	2018	2028		
Environmental Engineers	1,440	1,520	+6%	120

¹Projected Annual Job Openings refers to the average annual job openings due to growth and net replacement.

Note: The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2010-2020, while the projections period for national data is 2012-2022.

Professional Organizations

American Academy of Environmental Engineers & Scientists (aaees.org)

American Society for Engineering Education (asee.org)

ABET (abet.org)

National Council of Examiners for Engineering and Surveying (ncees.org)

National Society of Professional Engineers (nspe.org)

References

Occupational Outlook Handbook, U.S. Department of Labor, Bureau of Labor Statistics
(<https://www.bls.gov/ooh/architecture-and-engineering/environmental-engineers.htm>)

O*NET OnLine (<https://www.onetonline.org/link/summary/17-2081.00>)

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