



Module 3 Environmental Engineering

45 minutes

Purpose of this lesson

- Introduce students to environmental engineering
- Introduce students to potential careers in environmental engineering

Materials

Copy of the lesson
Computers with internet access

Background and discussion

Environmental engineers strive to solve environmental problems by applying science and engineering principles to improve air, water, and/or land resources and remediate polluted sites. Environmental engineering is concerned with understanding the impacts of human activities on the public health, natural environmental quality, and natural resources and with developing the scientific basis for identifying, analyzing, solving, mitigating, or managing environmental problems caused by human activities.

Environmental engineers are qualified to work on a variety of serious environmental issues. For example, they can design municipal water supply and industrial wastewater treatment systems; assess recycling and reclamation processes; conduct hazardous waste management studies; and consult on the environmental effects of various construction projects. They may be required to inspect and evaluate industrial and municipal facilities and programs to assess their compliance with environmental regulations. They may work with environmental scientists, planners, hazardous waste technicians, engineers, and other specialists to address environmental problems.

On a larger scale, environmental engineers work on global issues such as the problem of acid rain, global warming, air and water pollution, and ozone depletion. They may prepare, review, and revise environmental regulations and recommendation reports and monitor the progress of certain environmental programs. They also advise industries and government agencies about the efficacy of environmental policies and standards.

According to the U.S. Bureau of Labor Statistics, www.bls.gov, employment opportunities for environmental engineers are expected to increase. This field is projected to grow because more engineers will be needed to help companies in various industries comply with environmental regulations. Those who would like to enter this field should at least have a bachelor's degree in Environmental Engineering.

Procedure and Assessment

1. Use the list of example fields of environmental engineering and create a brochure about the field that would encourage other students to consider a career in the field. If you would like to highlight an aspect of environmental engineering, be sure to check with your teacher before proceeding.

Example jobs/fields in environmental engineering:

- Water resources management (watersheds, reservoirs, storm water management)
- Drinking water quality (arsenic, pharmaceuticals, pollution control systems)
- Water treatment (wastewater treatment, waterborne infectious disease remediation)
- Air quality management (pollution control systems, emissions, fate and transport)
- Remediation (Oil spill, hazardous material spill)
- Soil/land management (pollution control systems, remediation, Superfund sites, landfills)
- Hazardous chemicals treatment and disposal
- Environmental contaminant fate and transport
- Environmental monitoring networks
- Government agencies that monitor and regulate waste discharges
- University professor
- International agencies in developing world
- Environmental protection advocacy and policy

2. Use the resources below as a start, however additional resources are needed to collect the required information for the brochure:

- Preparation for career
- Type of work – tasks or duties common to the job
- Earning potential
- Location – where are the jobs

Potential Resources

EPA – Water You Waiting For?

“Water You Waiting For?” is a 12-minute video showcasing the water profession for high school and/or vocational technical school students. This video highlights four areas—the value of water, job responsibilities, career successes, and environmental contribution.

(<http://www.epa.gov/safewater/operatorcertification/wateryouwaitingfor/index.html#>)

Ocean Careers

At the heart of www.oceancareers.com are four databases in which you’ll find detailed information about: Educational Institutions, Careers (descriptions of more than fifty ocean occupations, including task and duties, knowledge and skills, salary range, and workforce trends), Educational Competencies (what you need to know and be able to do in twenty-four different discipline areas to be marketable in today’s workplace) and Professional Societies. (<http://oceancareers.org/2.0/index.php>)

AllEngineeringSchools

Environmental engineering career information and preparation.

(<http://www.allengineeringschools.com/engineering-careers/career/environmental-engineering>)

American Academy of Environmental Engineers

(<http://www.aaee.net/Website/Careers.htm>)