



*Drexel-SDP GK-12 ACTIVITY*

## Activity: What is an Environmental Engineer?

**Subject Area(s)** Environments

**Associated Unit** Environments, module 4

**Associated Lesson** embedded

**Activity Title** What is an Environmental Engineer?

**Grade Level** 6 (3-8)

**Activity Dependency** None

**Time Required** 1 50 minute lesson

**Group Size** 2-3

**Expendable Cost per Group** None

### Summary

Since we had a special guest, John Butow, an Environmental engineer at Environmental Resource Management, Inc (ERM) come to visit the class, the students learned hands on how parts of the environment (namely air, soil and water) affect their daily lives. They discussed what could lead to contamination of air, soil and water and how environmental engineers go about cleaning the air, soil or water. Students were able to ask questions and also try on a special safety outfit that would need to be worn when doing testing in an oil refinery.

### Engineering Connection

Engineers are deeply vested in the sustainability of our planet. Sustainability calls for the responsible use of natural resources to ensure their availability for future generations. Engineers design processes in construction, agriculture and manufacturing for sustainability.

## Keywords

Environment, sustainability, environmental engineers

## Educational Standards

- Environments and Ecology: Renewable and nonrenewable resources 4.2.A. Uses, 4.2.B. Availability, 4.2.C. Management, 4.2.D. Influential factors  
Environmental Health 4.3.A. Environmental health issues, 4.3.B. Human actions, 4.3.C. Biological diversity  
Humans and the Environment 4.8.A. Societal needs, 4.8.B. Sustainability, 4.8.C. Human impacts, 4.8.D. Supply and demand
- Science: Technology Education – Science, Technology and Human Endeavors – Meeting Human Needs 3.8.B, Science, Technology and Human Endeavors – Consequences and Impacts 3.8.C

## Pre-Requisite Knowledge

None.

## Learning Objectives

Lesson objective: students will be able to

Explain what an environmental engineer does

Draw a connection between human society and environmental conservation.

## Materials

Nomex suit

Nomex gloves

Safety goggles

## Introduction / Motivation

Since we luckily had a special guest, John Butow, an Environmental engineer at Environmental Resource Management, Inc (ERM) come to visit the class, the students learned hands on how parts of the environment (namely air, soil and water) affect their daily lives. They discussed what could lead to contamination of air, soil and water and how environmental engineers go about cleaning the air, soil or water. Students were able to ask questions and also try on a special safety outfit that would need to be worn when doing testing in an oil refinery.

Review the background material with the students, discuss the vocabulary, then begin the activity.

## Vocabulary / Definitions

Word	Definition
Environmental engineering	The application of science and engineering principles to improve the environment (air, water, and/or land resources).

Renewable resource	A material made from petroleum capable of being molded, extruded, or cast into various shapes.
Nonrenewable resource	A finite resource that cannot be replaced once it is used (for example, petroleum, minerals).

## Procedure

### Background

Discuss any lecture materials on environmental engineering.

### Before the Activity

Introduce the guest speaker.

### With the Students

Review with students what is an environmental engineer? Any guesses?

An environmental engineer focuses on three things:

AIR, WATER, SOIL

How can these things get dirty?

Have class list their ideas on the board.

So what can you do to clean them up?

\*\*\* [www.epa.gov](http://www.epa.gov) \*\*\* for information on these questions

This is what an environmental engineer does. They work on cleaning the air the soil and the water.

Our guest speaker focuses on air, so we let the students try on his outfit he wears in the refinery. What issues do they think are important at an oil refinery?

Oil spills, gas emissions.

Environmental protection agency (EPA) regulates what gasses are released from refineries. Many environmental engineers work on monitoring all the pipes, valves, tanks, etc at these refineries to make sure they are not “leaking” gasses. In order to do so, they must wear these protective clothes (suit, goggles, gloves).

### Safety Issues

- None

### Troubleshooting Tips

Help students to navigate the EPA website for kids <http://www.epa.gov/kids/>.

### Investigating Questions

Q&A time with guest speaker

### Assessment

#### Pre-Activity Assessment

None

#### Activity Embedded Assessment

Ensure students are working as a team to research their ideas.

#### Post-Activity Assessment

Base upon attention and participation.

**Activity Extensions**

<http://www.epa.gov/kids/>

**Owner**

Drexel University GK-12 Program

**Contributors**

Noelle Comolli

**Copyright**

Copyright 2007 Drexel University GK12 Program. Reproduction permission is granted for non-profit educational use

**Version: Mar 2007**