

# Restoring the Land: Hazardous Waste Management

Part of the *Green Careers* series

## Study Guide

Appropriate for grades 9-12 and post-secondary,  
as well as 7-8 with teacher guidance.



In this program, we'll visit a Naval Air Station where a team from the Environmental Protection Agency manages a massive program to remove a half-century of hazardous waste, and will profile such jobs as hazardous-waste technician, chemist, toxicologist, and EPA project manager.

**Jobs profiled in this program include:**

Project Manager, Technical Manager, Safety Officer, Chemists and Scientists.

22 minutes



**The Phoenix  
Learning Group, Inc.**

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### Learning Objectives

Following are some sample cross-curricular learning objectives for comprehension questions and activities. Students will be able to:

#### Science

- Determine the effects various types of hazardous waste have on the environment and humans.
- Substantiate the benefits of reclaiming land that was exposed to hazardous waste.

#### Social Studies

- Identify world events that led up to, and included, the use of hazardous materials.
- Support the reasoning behind the development of government agencies to protect the environment such as the Environmental Protection Agency.

#### Careers/Guidance

- Evaluate personal interests to determine if green careers are an area in which to pursue further education.
- Compare and contrast the skills and education required for green careers.
- Identify post-secondary programs that offer green careers and locate courses of study within the programs.
- Determine the appropriate high school courses to enroll in to prepare for a chosen green career.
- Compare and contrast various types of government employment and private contracting.
- Predict the consequences of not performing adequately in a position that involves the dangers of working with hazardous waste.

#### Technology

- Conduct research utilizing a computer and the internet.

#### Mathematics

- Construct a chart to represent the types of engineers involved in hazardous waste clean-up.

#### Language Arts Literacy

- Write and conduct interviews to acquire knowledge regarding green careers.
- Create an advertising campaign to inform others about green careers and the developing need for skilled workers.
- Debate the importance of hazardous waste removal and dangers involved in the clean-up.

### Questions

#### Project Manager

1. The film lists several types of professionals needed to work on a large waste removal project, including lawyers. Why are lawyers included in a list of science-based careers?
2. Why is the specific title of this position “remedial project manager?”
3. Identify three of the jobs that the project manager oversees.

4. Predict the outcome if proper supervision is not carried out during a clean-up project of this magnitude.
5. What personality qualities are beneficial to be successful in this role?
6. Why does the interviewee consider this position to be liberating?
7. What are the recovered lands being utilized for within the communities mentioned?
8. Identify the short and long-term consequences of building on a site that has not been properly cleared of hazardous waste.
9. Why will there be a need for more scientists and engineers in the future, and in what fields will there be the greatest need?

### **Technical Manager**

1. Explain how someone works as a civilian employee of the navy.
2. Why has the job of restoring the land become more technical over the years?
3. Summarize the differences between the project manager and the technical manager.
4. What satisfaction does the interviewee gain from his position as a technical manager?
5. Identify three of the personal qualities stated to be of importance in this career.
6. Describe the two ways identified as starting points into this field.
7. Define job security and its importance when making a career choice.

### **Safety Officer**

1. What is radioactive waste?
2. Cite the dangers of working with radioactive waste and the type of personality traits one would need to accomplish this work.
3. Why are there safety officer positions at most sites where the navy or army have been involved, as well as at universities?
4. Elaborate on why safety officers will continue to be in great demand.

### **Chemists and Scientists**

1. What three types of chemistry-focused fields were mentioned as needed to clean up environmental pollutants?
2. What is a full-service environmental laboratory?
3. Why is the knowledge of where test samples originated important?
4. From viewing this film, hypothesize the various skills needed to work in the laboratory shown.
5. Explain a laboratory audit.
6. What is done with the information obtained in this type of laboratory?
7. What is the benefit of a research internship?
8. Summarize the appeal this position has for the interviewee.

### **Soil and Plant Restoration**

1. What is the goal of the restoration positions?
2. Describe the function of the agronomist, botanist, and hydrologist.
3. In what setting do these professionals work?
4. Explain the dangers of pesticides to the environment, and how the knowledge of the botanists in Virginia was able to offer a solution to combat the arsenic in soil.
5. How can one prepare for this position?

## Sample Activities:

- List and discuss the examples mentioned in the film of past destruction to the environment and how such destruction was caused. Use those examples to develop a public awareness series of posters or videos to educate the public about what needs to be done to clean up these sites, and the types of professionals needed to conduct this work.
- Research the development and purpose of the Environmental Protection Agency (EPA).
- Locate and map the superfund sites around the United States and what each was used for to inundate them with hazardous waste.
- Research the difference between the job descriptions between the EPA, US Department of Agriculture, and State and Local Agencies. From this information, develop a list of pros and cons for working for each, as well as working in the private sector.
- Divide the students into several groups and have each research one type of engineer that may work on a hazardous waste clean-up project. Create a chart depicting the responsibilities of their groups' engineer and share the information with the class. As a class, determine the similarities and differences between the different types of engineers.
- Research how a company acquires a contract with the navy to work on cleaning up hazardous waste sites, then generate a list of pros and cons of working for the military in the capacity of a private contractor.
- Using the information acquired from this film, conduct a class debate as to which field is most dangerous and/or most important.
- Select three green careers that are of interest to you and generate a chart identifying the pros and cons for each career. Consider working conditions/work environment, job availability, salary, skills required, level of education, and locations of programs that offer training in the chosen field.
- Research the programs (college or technical) that offer the training required for employment in the area of interest. Locate the course list for the program to get an idea of the classes that should be taken in high school in preparation for entering the program.

## Related Links

<http://www.bls.gov/audience/students.htm>

Part of the Bureau of Labor Statistics website designed for teachers and students. It includes resources such as the latest statistics on employment, prices, and wages.

<http://www.epa.gov/highschool/waste.htm#one>

Section of the Environmental Protection Agency's High School Environmental Center that compiles related links.



### The complete *Green Careers* series includes:

Building Green	Clean Energy: Solar Power
Recycling	Environmental Justice
Water Management	Green Design
Sustainable Agriculture	Restoring the Land: Hazardous Waste Management

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