

WORLDWIDE NUCLEAR WASTE MANAGEMENT

Purpose:

This lesson will help students understand how the United States and a representative sampling of other countries plan to dispose of their high-level nuclear waste. The number of nuclear powerplants, sites, and agencies involved in producing and managing nuclear waste are described. Special attention is focused on how the U.S. and these other countries plan to provide safe, permanent disposal of spent fuel and other high-level waste.

Concepts:

1. An international problem exists because there is an accumulation of nuclear waste.
2. Classification of nuclear waste depends on its source and the types and levels of radiation it emits.
3. Each country must plan to provide safe, permanent disposal of high-level nuclear waste.

Duration of Lesson:

One 50-minute class period

Objectives:

As a result of participation in this lesson, the learner will be able to:

1. complete a matrix showing the number of powerplants, sites, and methods of storage for 12 countries;
2. state how each type of waste is or will be disposed;
3. provide short answers to discussion questions; and
4. discuss where spent fuel and/or high-level nuclear waste is currently stored in the countries mentioned in the videotape.

Skills:

Analyzing, charting, describing, discussing, drawing conclusions, evaluating, interpreting charts, synthesizing, writing

Vocabulary:

Geographic, high-level waste, nuclear reactor, radioactive, radioactivity, repository, reprocess, spent fuel

Materials:

Reading Lesson

Nuclear Waste: What Is It? Where Is It?, p. SR-9

Activity Sheet

Worldwide Nuclear Waste Management, p. 135

Videotape

Worldwide Nuclear Waste Management, 20 minutes (available free of charge by calling the OCRWM National Information Center at 1-800-225-6972; within Washington, DC, 488-6720)

Background Note

International Nuclear Waste Disposal, p. 55

Suggested procedure:

1. Review the reading lesson entitled *Nuclear Waste: What Is It? Where Is It?*, if necessary.
2. Discuss the various types/categories of nuclear waste and on what classification of waste depends.
3. Make sure that students understand that most radioactive waste is low-level and does not require disposal in a repository. A small percentage of the total volume of radioactive waste is high-level, transuranic, or spent fuel and requires permanent disposal in a repository. The small volume of spent fuel and defense high-level waste contains the greatest percentage of radioactivity.
4. Have students look over the matrix activity. Explain that students should listen carefully so they can fill in all the spaces on the matrix. Make sure that they are familiar with the matrix before starting the videotape. Warn them that the videotape covers much information in a short time, so they should pay close attention.
5. View the videotape *Worldwide Nuclear Waste Management*.
6. Watch the videotape again, if necessary.
7. After students have finished filling in their matrices, have them answer the discussion questions.
8. Discuss the findings and any trends that students have noticed during their analyses.

Teacher Evaluation of Learner Performance:

Student participation in class discussion and completion of activity sheet will indicate understanding.