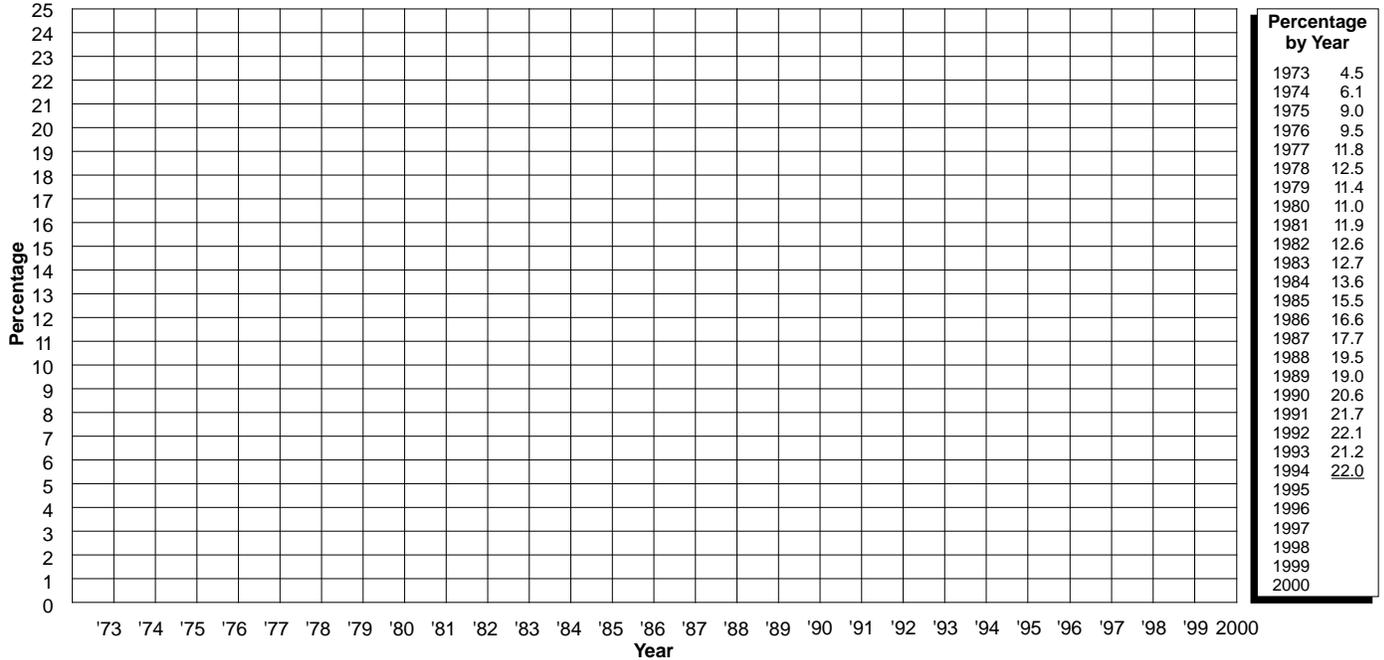


ELECTRICITY FROM NUCLEAR ENERGY

- Briefly explain how electricity is important in your daily life.



- The annual percentages of electricity produced by nuclear powerplants in the United States from 1973 to 1994 are given above. Graph the data above. Then in a sentence explain what the graph shows.

- What do you think that the graph will look like in 2000? Why?

4. Discuss the role nuclear energy plays in providing electricity for the United States. How does this affect you?

5. How is electricity generation related to nuclear waste?

NUCLEAR WASTE: WHAT IS IT? WHERE IS IT?

- A. In the blanks provided, write the number of the statement that best describes the terms that are listed. A response may be used only once. All responses will not be used.

<u>TERMS</u>	<u>ANSWERS</u>
___ A. Geologic Repository	1. byproduct from using radioactive material
___ B. Spent Fuel	2. discarded protective clothing from "housekeeping" functions of commercial and university nuclear facilities
___ C. Fuel Rods	3. depends on its origin, level of radioactivity, and potential hazard
___ D. Nuclear Waste	4. deep underground facility
___ E. Low-Level Waste	5. organization of States with purpose of providing for disposal of low-level waste from all members
___ F. Classification of Waste	6. has been used in a nuclear reactor and doesn't contribute efficiently to the nuclear chain reaction
___ G. Compact	7. hollow metal tubes containing nuclear powerplant fuel
	8. spent fuel and defense high-level waste will be disposed of in a geologic repository

B. List the four categories of nuclear waste and give the source or sources for each type.

- 1. _____
- 2. _____
- 3. _____
- 4. _____

C. Arrange the following phrases in the correct order. Then draw a diagram that illustrates the sentence you have made.

- causing the nucleus to split apart
- a neutron
- releasing energy, fission products, and more neutrons
- strikes the nucleus of a uranium-235 atom

D. Indicate whether each statement is true (T) or false (F) by writing the correct letter in the blank. If the statement is false, correct it to make it true.

- ___ 1. The U.S. Department of Energy (DOE) is responsible for establishing a system for the disposal of high-level radioactive waste.
- ___ 2. Mill tailings contain small amounts of radium that decay to radon, a radioactive gas.
- ___ 3. Transuranics represent the most radioactive category of nuclear waste.
- ___ 4. All radioactive waste must be handled by remote control from behind heavy shielding.
- ___ 5. Nuclear fuel burns.

E. Complete each of the following sentences.

- 1. Nuclear waste requires special disposal because _____

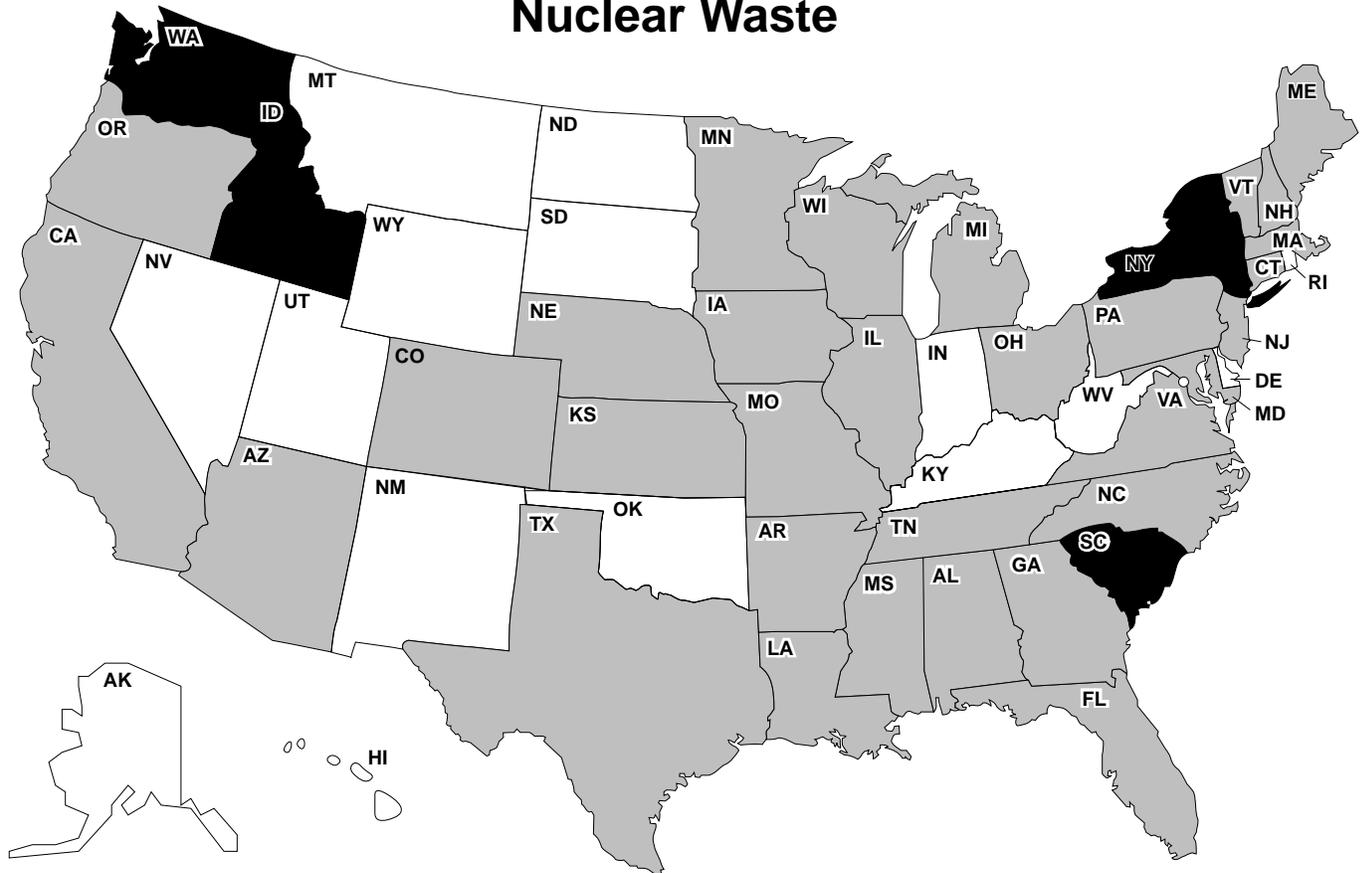
- 2. The amended Nuclear Waste Policy Act directed the U.S. Department of Energy to perform site characterization on _____ as a candidate site for a geologic repository.
- 3. Some high-level waste may contain elements that decay very slowly and may remain radioactive for _____ of years.
- 4. In 1994, over 109 nuclear powerplants operating in 35 States generated more than _____ percent of the Nation's electricity.
- 5. Approximately 8,000 to 9,000 metric tons of defense high-level waste are currently stored at three DOE Sites: the _____ ; the _____ ; and the _____ .

GEOGRAPHIC DISTRIBUTION OF COMMERCIAL SPENT FUEL AND COMMERCIAL AND DEFENSE HIGH-LEVEL NUCLEAR WASTE

In 1993, commercial spent fuel was stored in more than half of the States in the Nation. High-level waste from defense activities was stored in three States in 1991 and will continue to be stored there through the year 2000. In addition, a small amount of waste (1,729 cubic meters) that resulted from the reprocessing of commercial spent fuel was stored in West Valley, New York in 1991.

Fill in the map below to show the three groupings of States indicated by the map key. To make your groupings, use the information in the paragraph above and information in the reading titled *Nuclear Waste: What Is It? Where Is It?* The information in the reading is in the table titled *Spent Fuel Storage - 1993 and 2003* (Section 1.14) and the discussion of storage of high-level defense waste (Section 1.15). Read these sections again before beginning to work on the map.

Geographic Distribution of Commercial Spent Fuel and Commercial and Defense High-Level Nuclear Waste



- KEY:**
- Commercial spent fuel and defense high-level waste (4 States)
 - Only spent nuclear fuel stored
 - No spent fuel or commercial high-level waste

GEOGRAPHIC DISTRIBUTION OF COMMERCIAL SPENT FUEL AND COMMERCIAL AND DEFENSE HIGH-LEVEL NUCLEAR WASTE

Directions: Using the completed map, the activity introduction, and information about *metric tons* of spent fuel for other high-level waste from the tables in the reading lesson, answer the questions below.

1. What _____ is _____ commercial _____ waste?

What _____ is _____ defense _____ high-level _____ radioactive _____ waste?

2. In how many States was commercial spent fuel being stored in 1993? _____

3. Was spent fuel stored in the State you live in during 1993? _____

4. If yes, how many metric tons? _____

5. If not, do you border a State that does? _____

6. In which three States was defense high-level nuclear waste stored in 1991? (Use State abbreviations.) _____

7. In which State was commercial high-level waste (reprocessed spent fuel) other than spent fuel stored in 1993? _____

8. Which four States had the largest accumulations (in *metric tons*) of spent fuel in 1993? (Use State abbreviations.) _____

Which five States are projected to have the largest accumulations (in *metric tons*) by 2003? (Use State abbreviations.) _____

9. Commercial spent fuel and other high-level nuclear waste were not stored in 1993 and are not projected to be stored by the year 2003 in the following 15 States: (Use State abbreviations.)

10. In your opinion, what is the significance of the information in the map and in the tables?