INTRODUCTION

A Complex Undertaking

The permanent disposal of our Nation's high-level nuclear waste is a challenging and complex undertaking. It is an undertaking that will affect not only the present generation but generations to come. First, the high-level waste must be safely transported to a disposal site. At the disposal site, the high-level waste must be handled safely, properly prepared for disposal, and stored in the geologic repository. Finally, the repository must permanently isolate the high-level waste from the public and the environment for tens of thousands of years.

Applying What We Know

To safely dispose of high-level nuclear waste, we must apply all that we know about radiation and nuclear waste. We have sophisticated instruments that detect and measure all types of ionizing radiation, permitting us to monitor the performance of waste packages and waste disposal systems. We know a great deal about ionizing radiation itself and its effect on humans. In fact, we know more about the biological effects of ionizing radiation than we do about the effects of other hazardous materials. We also know a lot about radiation shielding and how to safely package high-level waste for shipment. Finally, we have a very sophisticated knowledge of the elements, how they act in a controlled environment, and how they act in nature.

Developing a successful waste management system for high-level waste will be a difficult and time-consuming task. If site characterization shows the proposed repository site to be suitable, it will be at least 2010 before spent fuel and/or high-level waste can be placed in the Nation's first geologic repository.

National Energy Strategy

The National Energy Strategy, published in February 1991 by the U.S. Department of Energy (and updated in 1992 and 1993), lays the foundation for a more efficient, less vulnerable, and an environmentally sustainable energy future. It provides a roadmap to a more secure and cleaner energy future through greater energy and economic efficiency and new technology.

Among the goals contained in the National Energy Strategy are key goals to establish an effective high-level nuclear waste program by siting, obtaining a license for, and operating a permanent waste repository, and to develop options to ensure the availability of a transportation system for safe transport of spent fuel and high-level radioactive waste to the facilities. The National Energy Strategy includes a plan for developing the U.S. nuclear waste management system called for in the Nuclear Waste Policy Act of 1982, and amendments, and as described in this unit.

Unit 3 discusses initiatives and accomplishments as a result of the Strategy related to implementation of the Nuclear Waste Policy Act.

In Unit 4, you will look in depth at the key elements of a successful high-level waste management system — the safe transportation

of high-level waste, the geologic repository, and the multi-purpose canister system. Emphasis will be on the public safety aspects of transporting spent fuel and high-level radioactive waste, the technical considerations involved in permanent disposal in a repository, and the design and proposed uses of a multi-purpose canister within the waste management system.